# AN EXPLORATION OF CREATING NEPANTLA IN PHYSICS SPACES FOR TRANSFER STUDENTS OF COLOR: OUR COLLECTIVE CHOICES IN MAKING PHYSICS *LA COMUNIDAD*

**By**

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**ABSTRACT**

Students who begin their scientific careers at Associate Degree Granting Institutions (ADGIs; also known as community colleges) navigate two challenges: becoming a scientist while also navigating the institutional barriers between the culture of ADGIs and Bachelor Degree Granting Institutions (BDGIs). In this dissertation, I explore Gloria Anzaldúa's theory of Nepantla (2015) in the context of Transfer Students of Color in Physics. I interweave the path of *conocimiento* from Aguilar-Valdez et al. (2013) with Transfer Receptive Culture (Jain et al., 2011). The path of *conocimiento* gives insight to the continuous interpersonal interactions that make up individual journeys through physics. While Transfer Receptive Culture imagines institutions that have shifted away from centering the ideologies and practices of historically privileged groups in higher education. Aguilar-Valdez and collaborators recognize the importance of the path of *conocimiento,* specifically the state of clashing realities, as a call to help others in the community who are experiencing *Nepantla*. As part of national research collaborations centering ADGIs and Transfer Students of Color, I use an extended case method (Burrow, 1998; Morales-Doyle, 2017) to examine the interplay between interpersonal interactions with Transfer Students of Color and the Nepantleras who support the students navigating the path of *conocimiento*. These extended case studies are based upon a series of field observations and interviews. Decolonizing principles are embedded in our research design – having an ebb and flow of data collection and data analysis. The cycle moves between data collection with STEM Transfer students and the Nepantleras that support STEM Transfer students to **describe the labor** of creating a space for navigation of the path of *conocimiento*. The coupling of the theoretical frameworks (Nepantla including the path of *conocimiento*, and Transfer Receptive Culture) in the context of Transfer Students of Color in STEM allows me to describe the collective choices that Nepantleras make to support *la comunidad*.

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# Introduction

## Physics has a dominant culture that is white, male, and wealthy that assumes the lonely scientist following a well-defined path

### Whiteness and the Exclusion of People of Color Pervades Physics Culture

In her seminal book, *Beamtimes and Lifetimes,* Sharon Traweek challenged the common narrative that physics culture is a culture of "no culture" by contrasting the practices of high-energy physicsists in Japan and those in the United States. Traweek argued that the U.S. culture of physics emphasizes individual achievement, celebrating self-reliance, competitiveness, and hard work. Since that foundational work, science education scholars have linked these narratives of "grit" (A. Robertson et al., 2026) and expertise to a broader culture of whiteness (A. D. Robertson et al., 2025).

It is therefore not surprising that whiteness continues to dominate the culture of physics. Historically, the figure of the physicist has been portrayed as a white, wealthy, man—from historical figures such as Plato and Nicholas Copernicus to the continued demographic dominance of white faculty within many physics (to my dissertation committee, I would appreciate another citation suggetion here(Ong, 2023)). Because the majority of physicists have historically been white, the culture  and narratives of physics have also developed within predominantly white contexts. Moreover, physics culture has often perpuated a race-neutral narrative of the discipline that ultimately sustains white supremacy (A. D. Robertson et al., 2023, 2025).  Drawing a parallel in mathematics education, Gutierrez (2015) similarly argues that disciplinary cultures can reproduces structures of white supremacy and calls for systemic change within STEM fields (Gutierrez, 2015).

The lack of representation in physics contributues to a culture in which diversity is not fully valued. Over time, this dynamic perpetuates the dominant representation of white physicists through the systemic marginalization of people of Color (Ong, 2023). Within physics culture, there is often little recognition of—or accountability for—the ways in which whiteness continues to shape the field when the discipline is not critically examined for its role in sustaining exclusionary practices. For example, when departments convene committees to admit students into their programs, do committee members question whether the requirements may unintentionally exclude future physicists of Color? Similar questions could be raised in other institutional contexts, such as faculty hiring practices, the recruitment of staff scientists, or decision-making within agencies such as the Department of Energy's Office of Science.

## A History of Wealthy Men Defining Physics

In parallel with the history physics being predomoninately white, the field has also been historically male dominated. One illustration of this dynamic is the 1927 Solvay Conference, where Marie Curie was the only woman among 29 attendees. Although this example reflects the male dominance of physics in Europe at the time, similar patterns persist today. In the United States, women represent only 20% of physicists (Mulvey & Nicholson, 2020; Potvin et al., 2023; *Statistics on Diversity in Physics | American Physical Society*, n.d.). At the same time, the physics community does little to challenge the subtle cultural narratives within the field—for example, the persistent association of "cleverness" with masculinity (Francis et al., 2016).


Caption for the image: "The 1911 Meeting of Albert Einstein and Marie Curie that Changed Physics Forever" History on the Net

November 19, 2025 https://www.historyonthenet.com/the-1911-meeting-of-albert-einstein-and-marie-curie-that-changed-physics-forever

We could continue making this numerical argument—examining trends for women and non-binary students in physics over the past several decades—and the overall story would remain unchanged (Graves, 2000; *Statistics on Diversity in Physics | American Physical Society*, n.d.). However, arguing that the culture of physics is masculine is not simply a matter of numbers. Scholars have demonstrated that the discipline itself carries strong masculine connotations (Danielsson, 2012; Gonsalves et al., 2016). Women of color often experience this

culture even more acutely, facing a “double bind” of exclusion from physics culture among multiple dimensions (Ong, 2023).

Participating in physics also carries unspoken expectations about time and financial capacity for contributing to the production of physics knowledge (Avraamidou, 2022; Zhang, 2021). Students are expected to devote significant time to learning concepts through extensive reading and lectures, and additional time to applying those concepts to problem solving. The cumulative time required for these activities assumes access to financial resources that allow students to prioritize their studies. As a result, many students have limited time available for paid employment or leisure outside of their academic commitments.

## Objectivity & Individualism

The culture of physics has largely aligned with the *majority* paradigm of positivism (Sin, 2014). *Most* physics experiments and theories are grounded in the assumption that a single object reality exists. As a result, physics as a culture has pursued the goal of defining and describing that one reality. Within this paradigm, there is little room for the consideration of multiple realities, particularly in the education and training of future physicists. In this continued pursuit, the role of people in constructing scientific knowledge is often overlooked. It is, after all, physicists who do the intellectual labor of defining and interpreting this “one reality.”

In both physics’ courses and research practices, there is a strong emphasis on mathematical and numerical representation. Physicists strive to explain physical phenomena through mathematical formulations and quantitative models, to the point that these representations become the dominant mode of communication within the field (Redish & Kuo, 2015). Other forms of explanation—such descriptive language or figures—are used far less frequently. Consequently, physics culture tends to return repeatedly to mathematical and numerical representation as the primary way of expressing and validating knowledge.

Another dominant narrative within physics is the importance of objectivity (Gonsalves et al., 2016, 2021; Wooley et al., 2021), which assumes that a single reality exists independent of the lived experiences of physicists themselves (Prescod-Weinstein, n.d.). Within this framework, physicists may be primarily motivated to produce mathematical and numerical descriptions of the world. However, this orientation can also contribute to exclusionary communication practices, where knowledge expressed outside mathematical forms may be undervalued. Because people generally do not communicate primarily through mathematical notation, this emphasis can unintentionally distance the discipline from the human relationships that shape scientific work. As a result, physics culture may place relatively little emphasis on how physicists build relationships with one another or how these relationships influence the production of knowledge.

Considering the dominant narrative of physicists portrays them as white, wealthy, masculine individuals pursuing the definition of a single reality through mathematical and numerical representation, this narrative also extends to the myth of the scientist—and particularly the physicist—as someone who works alone (Harding, 1986; Terrali, 1998). Within physics culture, many major theories are named after a single individual, with the occasional exceptions involving two collaborators (Graves, 2000). In reality, however, advances in physics are the result of extensive collaborations. Despite this, historical recognition and prestige—such as the awarding of the Nobel Prize in physics—have often reinforced the narrative of the lone

individual advancing the field. In practive, these celebrates figures frequently collaborated with other physicists, scientists, and mathematicians whose contributions were not fully recongized due to the socio-cultural norms of their time (Graves, 2000). This narrative continues to shape how students  encounter the discipline; as they begin their careers in physics, it can appear as though most major advances were achieved by a single physicist working alone to contribute new knowledge to the field..

### Achieve "physicist" status by following a well-defined path

Students who are interested in physics are often told that the path in the United States begins with a bachelor's degree in science, followed by a master's and/or Ph.D., and ultimately leads to a faculty position similar to those held by the professors who teach them (Heron et al., 2016). This educational trajectory is the most commonly communicated pathway into physics. However, several assumptions underlie this path. One assumption is that students have the capacity to devote more than eight years to higher education. This implies that students have the financial means to sustain themselves through this period of university study, including access to housing, food, and other necessities. Another implicit assumption is that students are able to enroll as full-time students and devote substantial time—both inside and outside the classroom—to studying physics, often independently.

When students begin coursework for a bachelor's degree in physics there is also an unspoken sequence of courses that is generally expected because the majority of undergraduates follow this order (Heron et al., 2016). Typically, the first set of courses includes thermodynamics or statistical mechanics (depending on what your institution offers) alongside classical mechanics. This is followed by a second set of courses, often quantum mechanics and electromagnetism. Professors frequently rely on this assumed sequence when teaching. For example, in a quantum mechanics course, an instructor might reference operators introduced in classical mechanics when explaining Hamiltonians. Culturally, both students and faculty alike tend to assume that students have followed this sequence and are therefore able to recognize the conceptual connections between these paired courses.

While this narrative of a well-defined pathway into physics is commonly shared, it has increasingly been challenged in the physics education literature. Research in the early 21$^{st}$ century suggests that the common narrative of a physics major beginning with an introductory physics course in high school and then continuing along a linear path into a physics degree is not representative of most students' experiences (Aiken et al., 2019). Additionally, the vast majority of students who earn a bachelor's degree in physics do not continue on to graduate study in physics (Arion & College, 2021; Mulvey & Nicholson, 2020; *Statistics on Diversity in Physics | American Physical Society*, n.d.). Furthermore, more than half of students complete their coursework in sequences that differ from the order assumed by most physics' programs (to my dissertation committee, I could use help with a reference here).

## The Non-Dominant Cultures that Exist within Physics

A non-dominant culture (Anzaldúa, 2015b) in physics can be understood as the experiences and narratives of physicists whose identities and trajectories do not align with the

dominant norms of the field. Non-dominant culture is not simply the opposite of the dominant culture. Rather, it encompasses narratives and experiences that allow individuals to draw from multiple cultural influences in ways that align with their authentic selves. To make these non-dominant cultures visible, it is necessary to examine both the people who participate in physics and the institutional structures that shape their experiences.

In this section, I describe several areas of non-dominant cultures that I explore throughout the dissertation. First, I examine how the non-dominant research practice of collective reflexivity recognizes the historical discrimination against community colleges and the ways this discrimination continues to impact research today (Chapter 2). Next, I explore how re-voicing collective communities and culture resists the university's tendency to prioritize individualism and reinforce the narrative of the lone scientist (Chapter 3 and Chapter 4). Finally, I examine spaces where transfer students create communities that allow them to share resources and knowledge based on their own experiences of navigating an educational system that continues to reward white, wealthy, and male-centered forms of competitive individualism (Chapter 4). To begin the discussion, this section introduces these non-dominant cultures broadly as they appear in physics.

## Creating Physicist Outside the Historically Communicated Path: Community Colleges

In the United States, physics education often emphasizes standardization across institutions (see Phys21). However, the sequence in which courses are taken is not the same for all students. Many courses are not offered every semester or quarter, and depending on when courses are available, students often enroll in them when they are offered rather than following an assumed or idealized sequence.

Some students develop an interest in physics while in high school, although not all high schools in the United State offer physics courses. In addition, not all students who graduate from high school immediately continue their education. According to data from U.S. institutions of higher education, in fall 2024 only 62% of the 19.28 million high school graduates immediately enrolled in higher education. Of these students, approximately 45% enrolled in universities and 17% enrolled in community colleges (Hanson, 2025).

Community colleges are often viewed as institutions that expand access to courses may not be available in the nation's high schools (Duncheon & DeMatthews, 2023). As a result, not all physicists begin their academic careers at a bachelor's degree-granting institution; some—approximately 13%, according to Pold & Mulvey (2025)—begin their studies at a community college. Students who start their physics education at a community college must often navigate multiple course options and, in order to continue toward a bachelor's degree, may need to carefully select courses that will transfer appropriately course (Bahr et al., 2017). In addition, many community college students balance multiple responsibilities alongside their education (see, for example, in Wickersham & Wang, 2016)). The commonly assumed pathway for transfer students is that they spend two years at community college and then transfer to a university to complete their degree (Dachille & Quan, 2024). However, this pathway does not reflect the experiences of the majority of community college students (Bahr et al., 2017).

## Doing and Learning Physics in Collaboration

While community colleges can improve access to physics courses across the nation, they can also challenge the narrative of the isolated physicist. Community colleges tend to be smaller institutions, which can create opportunities for more collaborative and community-oriented learning environments (Cosby et al., 2025). The physical scale of these campuses often allows students to become more integrated into campus life, both socially and administratively. In addition, community colleges frequently provide a range of resources designed to support students in succeeding in their educational goals.

Outside of the formal educational settings, practicing physicists—both theorists and experimentalists—also rely heavily on collaboration to advance the frontiers of physics knowledge (Gonsalves et al., 2021; Prescod-Weinstein, 2020; Traweek, 1992). Historically, however, sociopolitical contexts have often attributed scientific advances to a single individual. In reality, many contributors—including women and people of color—have not received full recognition for their roles in advancing scientific knowledge. Nevertheless, the development of physics knowledge has consistently depended on collaboration, collective experimentations, and shared intellectual work.

Within collaborative environments, physicists have opportunities to communicate and negotiate their understandings of physics with others. These interactions help build the capacity to recognize the importance of each member within a research team or collaboration in sustaining the broader enterprise of physics. Similarly, collaborative spaces foster coalition-building, where physicists come to understand how each person makes sense of physics. Through these exchanges, physicists share their paths into the field and articulate how their individual personal values intersect with their participation in the physics community.

## Creating Spaces for the Gender, People of Color, and the Non-Wealthy

Collaborative environments in modern-day physics have also created counterspaces that support the participation of women in the field. One example is the APS Conference for Undergraduate Women and Gender Minorities in Physics (CU*iP, (Beckford et al., 2020; Hazari & Rodriguez, 2024)), which emerged as a response from the physics community to better support women pursuing physics as a career. While high school physics courses often enroll roughly equal numbers of women and men, the proportion of women drops significantly at later stages of the physics pipeline, with women representing only about 20% of undergraduate physics majors and remaining underrepresented in graduate programs and faculty positions. CUWIP—previously known as CU*iP and the context on which this research draws—functions as a counterspace that positively impact s participants' sense of belonging and community within physics (Hazari & Rodriguez, 2024).

Creativity is an important driver of progress in physics, and culturally heterogenous can foster new ways of thinking and problem-solving. When the culture of physics becomes more welcoming to Black, Indigenous, and People of Color (BIPOC), the field benefits from the diverse cultural experiences and perspectives that physicists bring to their work. Williams et al. (2019), for example, describe informal performing arts spaces as counterspaces that have positive impacts on Black physicists' development of a physics identity.

Scholars such as Clausell Mathis and collaborators have also examined the importance and challenges of implementing Culturally Relevant Pedagogy in physics education. Mathis et al. (2023) expand on how Culturally Relevant Pedagogy engages three interconnected dimensions: conceptions of self and other, conceptions of social relations, and conceptions of knowledge. Their work also highlights the importance of physics teachers critically reflecting on whether "knowledge" in physics is treated as purely objective or as something shaped by human perspectives and experiences, as this framing can influence teaching practices. At the same time, Mathis, Southerland, et al. (2023) identify significant challenges and barriers that educators encounter when attempting to implement these approaches in physics classrooms.

Black women in physics have also created their own counterspaces in order to navigate and persist in the field (Rosa & Mensah, 2016). Rosa and Mensah describe how communities of support are critical for scholars of color. In their study, one participant, Allyson—a researcher working for the United States government--referred to her “Black Mafia” not only as a study group for learning physics but also an intentional support network created to address experiences of systemic exclusion. These exclusions ranged from interpersonal dynamics with white peers to broader institutional discrimination encountered during graduate study (Rosa & Mensah, 2016, p. 10).

Taken together, these examples illustrate the contrast between dominant and non-dominant spaces that support historically marginalized individuals within the scientific enterprise of physics. A continuing challenge for the field is understanding how these contrasting spaces shape the everyday culture of physics. Much of our current understanding comes from comparing these spaces and from comparing these spaces and from the experiences of historically marginalized physicists who regularly navigate between dominant and non-dominant cultures within the discipline.

## Contrasting the Dominant and Non-Dominant: How do we navigate these tensions?

In this first section, I highlighted how the dominant culture of physics is characterized by whiteness, masculinity, financial privilege, objectivity, individualism, and the reinforcement of hierarchical structures. These cultural narratives permeate physics and shape the experiences of students navigating the field, particularly those pursuing a bachelor’s degree in physics. Students whose experiences align with non-dominant cultures—such as those who begin their post-secondary education at Associate-Degree-Granting Institutions, those who emphasize collaboration in their physics learning, and those whose identities include students of color, women and gender minorities, or students with disabilities—often find themselves navigating between dominant and non-dominant cultural expectations with little or no support.

Navigating these dominant and non-dominant cultures involves questioning the dominant norms of the field: why they exist and why alternative ways of participating in physics are less visible or valued. It may also involve resisting pressure to conform to dominant cultural expectations, particularly when doing so would require rejecting important aspects of one’s identity. Nepantla, as Anzaldúa imagined it, is a process in which a person is “rewriting narrative of identity, nationalism, ethnicity, class, gender, sexuality and esthetics… [is] how transformation

happens" (Anzaldúa, 2015a, p. 7). However, many students choose not to engage in Nepantla without support—either consciously or unconsciously—and instead seek out other spaces that are more supportive of non-dominant cultures and identities.

For students who remain in physics, navigating between dominant and non-dominant cultures often involves finding value in drawing from both. For example, students may come to appreciate the usefulness of viewing the world through a positivist lens. However, this navigation can also lead to unintended harm when the dominant narratives of physics encourage the belief that all physicists think in similar ways or share personality traits. When dominant cultural characteristics of physics –such as objectivism and individualism—are uncritically applied and adopted across different areas of life, they can lead individuals to unconsciously or consciously reproduce exclusionary practices.

Enculturation into physics also invovles many unspoken norms. As individuals journeys into the field, they encounter cultural expectations that may conflict with the other cultures and identities they inhabit. Belonging to multiple cultures is not inherently problematic; tensions arise when these cultural expecations come into conflict. Examining the influence of physics culture therefore requires considering how science itself—and the way it is taught in classrooms—shapes these experiences.

Aguilar-Valdez et al. (2013) introduce the concept of Nepantla into science education resaerch within the K-12 context. Their work anticipates a later call from Szostkowski & Upadhyay (2019) to reimagine science education spaces as sites of healing and as places that center communitarian forms of justice. Both studies highlight how science is frequently taught as an entirely "objective" subject, while failing to acknowledge the historical power structures and systems of oppression that shape what is recognized as scientific knowledge. This absence of contextualization can be particularly harmful for historically marginalized groups in science education (Aguilar-Valdez et al., 2013; Szostkowski & Upadhyay, 2019).

Szostkowski & Upadhyay (2019) philosophically frame equity in science and science education research as a form of moral work. The authors begin by engaging with what they describe as the tradition of "moral activism" within Critical Race Theory scholarship (Szostkowski & Upadhyay, 2019, p. 344), and then carefully develop a framework for moral decision making that guides their argument throughout the paper. Their work echoes earlier calls emphasizing the need to remain attentive to the ways science education can reproduce exclusions for historically marginalized (Atwater, 2000; Maulucci & Fann, 2016).

At the same time, Szostkowski & Upadhyay (2019) recognize the historical challenges associated with invoking moral justice in U.S. education. Efforts framed around moral reform have often been entangled with religious and conservative social agendas that produced harm for marginalized communities. For example, Native American students were forced to assimilate to a predominantly white culture through educational systems designed to erase Indigenous identities. In response to these histories, Szostkowski & Upadhyay (2019) conclude their discussion of morality in science education by drawing on Applebaum (2005) to encourage white educators to focus on relational patterns and "to be evervigilant and existentially uncertain…so that they can continue to interrogate their own complicity." (Szostkowski & Upadhyay, 2019, p. 345).

Building on this framework, Szostkowski and Upadhyay (2019) argue that equity work in science education should move beyond narrowly defined, goal-oreinted approaches and instead

engage with a communitarian form of justices "that necessarily engages with the past and present and does not obfuscate power relations" (p. 345). In practice, this approach calls for science educators to engage students in ongoing dialogue about the relationship between society and science, including questions about whether the outcomes of scientific literacy are intrinsically good. Creating space for these discussions allows counter-story narratives to emerge and invites students and teaches to examine the moral dilemmas embedded within science. In this way, science education can become a space for critically examining Modern Western Science (Aguilar-Valdez et al., 2013)and its romanticism (Mutegi et al. (2022).

Aguilar-Valdez et al. (2013) similarly argue that science is often treated as an unexamined Anglocentric concept and mode of teaching. In contrast to Szostkowski & Upadhyay (2019), the authors explicitly name the power structure embedded in this framing—Anglocentrism—and identify the harms that arise when science and science teaching remain unexamined. Within Anazladua's framework, this harm is described as *El Arrebato*, a stage in which a person experiences a sudden and deeply unsettling rupture of fragmentation that propels them into Nepantla (Aguilar-Valdez et al., 2013, p. 829). The authors further explain that, within science education spaces, teachers navigating Nepantla can act as curandar@s (healers) who support sutdents as they move through the Nepantla stages. In particular, the final stages—putting *Coyolxauhqui* back together, clash of realities and shifting realities—serve as pathways for healing and transformation within science learning environments.

Aguilar-Valdez et al. (2013) provide an illustrative example of how this healing process can unfold in a classroom. In their study, a Neplanter@ teacher recognized a moment of *arrebato* when a student submitted the "wrong" moon observation as part of their homework. The student later explained that he had been told to go to bed before completing the observation, so he drew what he assumed the "right" answer should be and struggled to hold back tears back when he shared with his peers. As he shared what he drew, other students joined the conversation and collectively realized that the previous night had been a new moon. This moment sparked a classroom dialogue about the importance of recording what students acutally observe instead of what they believe is expected of them. As the school year went on, these discussions expanded beyond the assignment itself. Students began sharing *consejos* (wise advice) from their grandmothers about not dating during a full moon, integrating familial and cultural knowledge into classroom conversation. The ongoing dialogue about the moon led students to seek out additional resources, eventually exhausting the school library's books on the topic. Families were advised to reach out to local libraries, and many reported that observing the moon had become a shared family activity. In this way, the classroom activity not only deepened students' engagement with the scientific observation but also created a space where family knowledge and cultural experiences became part of the science learning process in the United States.

Anzaldua's framework, as a process that supports science education in community—as illustrated by Aguilar-Valdez et al. (2013)—can also be understood as an accessible figured world in which people collectively participate. Holland et al. (2001), drawing on the work of L.S. Vygotsky and M.M. Bakhtin in the aftermath of the Soviet Revolution of 1917. A Marxian framework to examine identity and agency within cultural activity. In their analysis, Holland and colleagues emphasize action as a central analytic lens. They argue that actions provide a more productive approach for understanding how individuals participate in cultural worlds because,

consistent with “Marxian analyses of capitalism and other historically specific modes of production, activity theory pays more attention to the articulation of activities in larger systems of power and privilege” (Holland et al., 2001, p. 57)

At the same time, Holland et al. (2001) distance themselves from certain collectivist cultural approahces that focus primarily on the development of consciousness, which is the core aspect of Aguilar-Valdez et al.’s (2013) framework. Click or tap here to enter text.Their discussion also creates a tension with of Bordieu’ss perspective that a field “is its own functioning independent of politics and the economy” (p. 58), while simultaneously acknowledging that an individual’s social position is shaped through relationships with others. Despite these tensions, the concept of figured worlds remains valuable because it provides a framework for understanding how individuals’ actions, cultural production, performances, disputes, and interpretations are situated within broader social contexst.

Aguilar-Valdez et al. (2013) extend this idea through the notion of *Ciencia en Napantla* which conceptualizes science learning as a space where *conocimiento* leads toward healing through stages such as *putting Coyolxauhqui back together* and *shifting realities*. Within this framework, the stage of *clashing realities* becomes particularly important, as it highlights interactions individuals experience within Nepantla itself—not only as a social condition but also as a lived space where multiple cultural realities intersect.

Physics Education Research (PER) has increasingly engaged in critical examination of the field of physics over the last three decades. Much of this research has worked to establish the systemic marginalization experienced by many groups within physics. Nepantla offers a theoretical framework that provides PER with tools for supporting both novice and experienced physicists in addressing the needs of historically marginalized populations through everyday interpersonal interactions.

Nepantla is Gloria Anzaldua’s theory (Anzaldúa, 2009, 2015b) that describes the liminal space between dominant and non-dominant cultures. It is understood as a state of mind in which individuals question existing beliefs, acquire new perspectives, and changing world views. Within this framework, individuals who navigate this state of mind are described as Nepantleras.

Educational research has begun to apply Nepantla as a theoretical framework. For example, Nancy Acevedo's work (Acevedo, 2020) examines high school teachers who act as Nepantlera/o/xs who are supporting Latinx students to apply to community college. The paper describes the roles and actions that teachers took in a low-income urban neighborhood. Nepantlera/o/xs do every day work to support students to mitigate the demands of the educational system that is not inclusive of their culture.

Lastly, Nepantla has been represented within physics education research. It has been presented during different years of the field’s conferences. In 2018, Idaykis Rodriguez and Brian Zamarripa-Roman did the presentation about their autoethnographies of the work entering into the Physics Education Research field itself. In 2022, Tamara Young presented about the importance of using Nepantla to understand the experiences of marginalized physicists in the field. In 2025, Idaykis Rodriguez, Tamara Young, Anne Leak and I presented work of how we are integrating Nepantla into the physics education research field. However, no research papers have been published yet.

# My Experiences Navigating these Tensions: Positionality Related to Navigating Cultures

Let me illustrate some of the challenges in my own path into physics while also sharing with you my positionally within Physics Education Research. (Hint: this is a practice of qualitative researchers to communicate with you, the reader, a baseline of my worldviews that would be relevant for the upcoming research.) I will do so in the form of a story because it will be able to better illustrate the challenge of being between dominant and non-dominant worlds in physics. The story I tell in the remainder of this section describes the journey of a Colombiana, woman of color, navigating the uncertain and uneasy path between the dominant and non-dominant. As I share this story, I draw attention to the dominant cultural narratives in physics described in the following sections and how my journey in navigating the in-between can be understood through the theory of Nepantla.

## University Modeling Physics: A bridge between the dominant and non-dominant and clashing realities

My first physics course was at university level, I later found out that it was called Modeling Physics I & II. I did not take high school physics, although my high school did offer it, because the teacher was a known sexist and I had no interest in dealing with that. Besides, in high school I was convinced that I would pursue a medical degree so I did not need a physics class. Later, as a biology major in the university, I learned that I needed to take physics course for the part of the MCAT, a standardized medical exam for entry to medical school. My first day in that introductory physics course, the professor said “Welcome, there are no lectures and no book for this course.” The course was not the standard or dominant way that most physicist start their path.

Modeling Physics I & II is a series of two semesters of introductory physics with a very active participatory pedagogy. Grounded in theory the course imitates how expert physicist approaches solving frontier physics problems of the field (Brewe, 2008). The course has a cycle that starts with exploring physics constructs phenomenologically, then integrates the math and numerical representations and ends with applying the knowledge to sample problems. The representation go onto a large set just for the course to communicate the phenomenology beyond only math and numerical representations, for example it includes “words”, pictures, graphs (McPadden & Brewe, 2017). The words representation is several sentences to explain the phenomenon with plain language and simultaneously introduces physics jargon. That is the conceptual cycle that the course is structured to have.

Now the participatory aspect of the course is how these cycles are accomplished by both the students and the instructional team. Rather than emphasizing individualism and the solitary leaner, the course emphasized collectivism in learning. The course had about 100 students and an instructional team, the instructor of record and three graduate students. The three phases of the cycles are collectively constructed by the students. First, the students work in groups at their tables, and their work is done on whiteboards, they look like a sheet that lays on the tables. There were also negotiations on how to the work in general, the choices on how to set up equipment and data analysis. At some point the instructional team says it is time to gather

for board meeting where four tables gather in a circle and brings their boards to communicate with the rest of the other tables (Brewe, 2008; McPadden et al., 2020; McPadden & Brewe, 2017). Depending on where in the cycle, all the tables were working on the same sheet and same problem or same sheet and different problems. When we were working in the problems the instructional team would be in proximity to help, only if needed.

My favorite part of the course were those that emphasized colelctive understanding - whiteboard meetings for the disruption of moving during our learning and then the discussion about what we were learning. Rather then doing all the learning on our own. The whiteboard meetings is a very tangible way of tracking our learning because we had to voice to our peers what we had been doing in the last activity and it was also a space where I could ask questions that had not been addressed yet. At the same time, it was nice to have about 3 minutes of conversations not related to physics with my peers while we wobbled into the whiteboard discussion. I was able to learn who was also thinking of medical school or chat with the graduate students about their physics courses – allowing the course to expand beyond "introductory physics" and into other spaces in my life. I noticed that I was able to communicate my ideas better or have more patience for someone else to understand what I was communicating something as I was learning it. Nepantla is a process when we are feeling unease about change that is imposed on us or not, physics takes time to learn and I never felt like I was behind. Instead I was able to ask all the questions when I am in a curious head space. While we were in the whiteboards meeting, it was so helpful because sometimes I was so curious about physics that I willing to ask questions for clarification. Other times, I was a bit lost or would be following along with the course material but a person would ask a question that helped me learn the material better or more clearly. So I would quickly jot down the notes on my notebook. Questions like why is the data fitting better in an even function vs. an odd function. Or what is the new unit we just learned, omega is the ration of 1 cycle over the time. Hence the units are 1/s and the symbol is ω.

In the whiteboard meeting, we would also challenge the physics dominant narrative that mathematics are the only way to understand. Instead we would discuss how the representations had to be consistent within each other (McPadden & Brewe, 2017) resisting to rely on *only* math representation. When doing acceleration for kinematics, we would discuss the relationship between graphs that represented position (r vs.t), velocity (v vs. t) and acceleration (a vs.t). As you moved through the order of this graphs it was the integration of the previous one. As you moved in the reverse order of the graphs you would do the rate of change, or derivative. As the material progressed, we would continue to have detailed conversations about how the representation would be consistent among them. Whenever, the questions came up for homework, I was able to go during office hours or right after class to ask more clarifying questions.

As a student in Modeling Physics, I was in constant conversation – constantly collaborating in my learning with different people, either peers in my classroom or someone from the instructional team or other students in a physics lecture course. Mainly with my peers we would be making sense of what we just observed and negotiating what would be the best way to represent what we were learning onto the whiteboard. During the beginning of the first semester, I would mainly stay at my table having conversations to make sense of the math and would ask instructors for support. By the end of the first semester, I would walk across the

classroom to chat with someone that I had been able to work well with before to make sense of the math to then go back to my table and communicate what I had just learned. During the whiteboard meetings, the conversation was among other peers so I could ask clarifying questions to other people to hear how they were thinking about it.

As the class evolved, I would know which person in the instructional team to go to. If I wanted to get the jargon, some of the graduate students would easily give me the jargon. If I wanted to understand why an activity was structured that way, there was on graduate student who would tell me her reasoning for the activity and I what I was intended for me to learn. If I wanted permission to leave the class ten minutes early because as a biology major in a pre-med club, I was hosting conversations about systemic oppression in medicine, then I would ask the instructor of record. I still remember the day asked him, he didn't let me finish my entire persuasive argument. Instead he quickly replied, without having heard my reasoning, only the ask to leave ten minutes earlier from the end of class, "you can leave early, you are on top of the learning in the class and you turn your assignments on time, you will be fine leaving early" Seventeen years of talking to instructors, few maybe a handful of them, would engage with me as a person with a life outside of their classroom. To me this was a gesture of trust, he had noticed that I do dilligent work in a classroom of about 60 students and did not hesitate to trust me again. Heck, my physics professor threw in compliments of my work consistency, that I was not ready for, when all I wanted was an agreement of me leaving 10 minutes earlier of 90 minutes course. In his own way he was, and still is, a Nepantlero. He recognized how the commitment outside of the classroom was important for me and did not ignore it instead he acknowledged how imporatnt it was and within his power of influence gave me the permision to miss out on 10 minutes of class time, I was just a physicist to him I was also an aspiring medical student.So for eight weeks of the course, I would get up and leave earlier so I could go to lead my pre-med club.

This experience in introductory physics challenged the dominant discourse of what I expected physics to be – another lecture course dissimentating knowledge through telling me what I needed to know, while emphasizing mathematics, objectivity, and individualsim. Instead, this course moved me into a clash of realities on the first day – "there are no lectures and no textbook". As I navigated the course I found myself shifting realities and *enjoying* the course, sometimes whishing the course lasted longer, and the physics that I was learning. As I moved through this course I was navigating a state of Nepantla where many of the dominant narratives about physics were challenged.

## Beginning research: Arrebato, Shifting Realities, and el Compromiso

During the two semesters of introductory physics in the Modeling classroom, I asked the graduate student enough questions about the class activities that she offered me the opportunity to re-write some of the curriculum with her. I did not know it then but that was also my introduction to Physics Education Research. One semester, I did curriculum development with her, writing new activities for connecting linear kinematic to angular kinematics. The next semester, I was back in the course but this time as part of the instructional team. As part of the instructional team, Dr. Geoff Potvin (the lead instructor) was talking to me about what physicists learn in their courses. At this point I was still a biology major planning to apply to medical school. Around this same time, the graduate student I was working with introduced me to Dr.

Zhara Hazari because I had mentioned that people were not doing research about the questions that I had in mind, what motivates people to learn physics or STEM for that matter.

Dr. Zhara Hazari and I started working together in the spring of 2016. In the remandier of this chapter. I will continue to refer to Dr. Zhara Hazari as Dr. Hazari as a form of reminder to my reader about a woman of color who is a scholar in physics education research. She was doing quantitative research in physics identity with a nation wide survey. She introduced me to coding in R studio and quantitative research methods. I did my first descriptive analysis and then we did a linear regression analysis in which we accounted for gender, physics identity and pre-med interest (Monsalve et al., 2016). This work concluded that women who have interest in their career outcomes having a social impact are less likely to have a physics identity. Concurrent with the analysis, Dr. Hazari introduced me to the reality of the systemic marginalization of women and people of color - both in education and research. She mentioned how I had good ideas and writing skill but research journals are asking for a particular kinds of writing. I began to wonder what would a career in physics education would look like.

At the end of Spring 2016, I was still working with Dr. Hazari and I graduated with my bachelor's in science in Biological Sciences. Dr. Hazari and Geoff worked in the same office so I was constantly engaging in conversations with Geoff about what a career in PER would look like. Will there be jobs for me? What is the pay like. My plans was to continue my education it was gong to be med-school but I began to wonder. The plan was to finish working on the paper I was writing with Dr. Hazari and attend the corresponding research conference in the summer of Physics Education Research. Then, take Fall 2016 semester off because I was tired of giving it my all to a STEM degree. By the time Spring 2017 arrived I enrolled in my first semester of a physics bachelors with the long term goal of going to graduate school for PER.

Reenvisioning myself from the biological sciences medical school bound student to a student of physics education did not happen overnight. The navigation of the clashing realities of both physics and myself as a student, the arrebato that happened as I considered following a new and different path, el compromiso when I realized that I could be asking and answering the questions that I most cared about. And finally the shifting realities where I began to see myself on the path towards graduate school to do PER.

## Modern Physics: Physics culture reasserting its dominance and my navigation of el arrebato, coatilcue, and conocimiento

I had learned the foundations of physics in the introductory physics course, and my mentors told me a physics degree would be redoing the curriculum that we did but with more depth and more math. So for my first semester in physics, I took Modern physics, simulateneous with advance lab and calculus three. Mentally, I promised myself that if I got through this first semester then I will pursue my doctoral degree despite all the barriers from the oppressive system of education that I was going to be affected by as Colombian American pursing a physics degree.

Entering advance lab for a physics major was a moment of physics dominant culture reasserting itself: I am one of the two women of the total of six students, I had no lab partner and was expected to work on my own. I was one of the two people in the class who knew how

to code. The lab was asynchronous with the course, so there is learning that I have to get ahead of lecture to make sure I succeed in lab. Learning to code is not done during the lab time.

Modern physics was taught lecture style – emphasizing indvidiualism, objectivity, and the centrality of mathematics as the language of physics. In a class period, the professor wrote and spoke for fifty minutes. He might stop and see if there were questions but not when I had one. During lecture, there is no conversation about the material, there is no co-constructing knowledge. What he mainly wrote was math followed by a few words that kind of connected to the math. Then more math, sometimes he wrote a graph other times he did not. I was not sure what the point of me being in the classroom was. Other than the professor saying I was going to miss *something*.

Doing the homework from modern physics was the first time I was attempting to solve a problem without peers to talk about the problem even less the professor. On my own I had to multiple physics problems that each had about 5 questions. It was hard, infuriating that I had to wait after class to first attempt to interact with the content. What was the point of doing it alone? Even, when I got to office hours of the professor half of the time they were making sense and WHY WAS NO ONE USING REPRESENTATIONS?!?!? Also, why was the concept with the math only representation written first before an explanation or set up of what we were discussing. Also, why was it all separate first the math and then an explanation, why weren't this happening simultaneously like we did in Modeling. Could I be a physicist if this is what is expected of me?

The challenge on being in the traditional lecture and lab courses brought on a restless and painful experiences everyday, I was definitely in my state of Arrebato. For me to be a physicist, should I not used the representations that helped me learn in Modeling Physics. I appreciated being able to collaborate with my peers and get to ask intentional questions to the instructional team, do I have to do all this work on my own, don't my peers in the physics course want to learn together, I was definetly experiencing my Nepantla. If I go on my own to recreate Modeling physics, will I be able to provide both sides of the conversations that help me learn. Of course not, I am not an expert in physics, yet. I was in my own Coatlicue State about how I could continue learning physics: an individual or community manner.

I thought the point was the physicist collaborated in doing work together, are the instructors of the lecture and lab not physicist "enough." There is so much work alone that goes into lab, it does not align with the topics taught in lecture. So I am learning asynchronously from the lecture to keep up with the lab, and it takes such a long time to find the bugs in my code. I am back in the state of Arrebato, I felt my free time between classes was all for finding the bugs in my code for the lab class. I had to confine to how this professor believed learning happened on our own and struggeling. To the point that the other three students in the class did not want to collaborate to learn how to code python. I had to break apart my wilingness to learn with my peers how to code in python collaborations and learn "individually" to code in python by going to every office hour or anytime he is in his office. This consume so much time that I dismissed my other courses, this was a painful reality of what taking course would be like for the next five year, two in undergrad and three years in graduate school.

There was a moment of choice to accept that I will never be in a classroom again that is set up like Modeling Instruction. I chose conocimiento, I wanted to understand what does the physics community hold so dearly to continue teaching in lecture modes. For here on, I will be

learning physics courses traditionally, in the lecture mode. I have no interest in learning all of this just for myself, I want to be able to have conversations about the content. Remebering that Modeling course prioritized conversation and now in lecture classes was always back into the state of Arrebato. Just like I was able to do so in Modeling Physics, I had conversation even outside of the classroom about physics because I felt comfortable already in having them in class.

This exact argument was part of my conversation with Dr. Idaykis Rodriguez who is the only Latina in my physics department, answer back by saying I need friends to study with in the course. As people were exiting the course near her office, she said hi to a students caught up with them and followed up with what courses he was taking. Idaykis replied, she is also in modern physics, you two should study together. Idaykis had just introduced me to two people who would become part of my study physics journey towards a Ph.D. I did not know if then but I had just met other Nepantleros navigating the physics communities.

## Recreating Modeling Instruction Outside the Classroom: Putting Coyolxauhqui Back Together

In these upper division courses learning physics in lecture did not provide the opportunity to learn how to talk about physics, so I did not feel comfortable talking about physics, in or outside of the classroom. This was an Arrebato each time, I had learned in the physics space on talking through my reasoning to learn physics, now I had to be quiet and passively accept the physics content. There was no way for me to check my understanding since the course only provides the notes form the professor which do not necessarily align with the book content. The only way for me to check my understanding was “too late” - after my professor had graded my homework would I know if I did it “right.” The problems that I did “wrong,” there was no further dialogue with the professor for me to understand where I went wrong. Let me clear, this does not mean that I did not go to office hours. Yet there is a mismatch on getting the feedback after spending time of learning it. Even though the course was already two weeks later and I had learned more since, I still needed to revise my learning on what mistake I did, two or three weeks ago. Why the class periods during which I ask all the questions that I have for the homework problem sets? I did not have a way to check-in more continuously with my understanding of physics. Not through making sure that my representations were consistent, not through dialogues with my peers, and not through a dialogue with the instructor or the instructional team.

I chose that for this semester, I would give it my all - my physical and emotional wellness. I will prioritize every activity and course material that is needed. I will notice the grief of never learning again in a collaborative manner. At the same time, I was in this moment navigating Nepantla. I was willing to give this semester my everything, but I was not buying the narrative that you have to sacrifice who *you are* to be a physicist. I was a physicist in introductory physics with a job and an active family life. I knew there is no need to abandon life when pursing degrees in physics, instead I recognized the need for the physics community to abandon the lonely scientist narrative and create better ways of communication. I would have walking conversations about the objectiveness of the courses and the challenge of seeing that people

wanted to collaborate but the course was not set up for collaboration and it is hard to sustain people collaborating over long period of time.

Based on all the research that I learned about working with Dr. Hazari, I knew that I am supposed to be one of maybe two or three women in these courses. Yet, I decided I will not stop talking about physics, instead within my study group we will collectively solve the problems. I will happily model how to collectively do the homework problems and how to make sense of the notes that we had taken that day or three days earlier.The consistent representations and collaboration are what supported my initial learning in introductory physics and I will continue these practices to learn physics without the support of the physics professor. I will get comfortable with being one of the few women in the group. I have a support community to guide me through obtaining a physics degree.

My study group was a diverse set of people, we were all part-time workers. Two of us, had work on campus. The other two, worked off campus. One person had finished at the local community college, I had finished my first bachelors. Another was a Marine veteran who wanted his physics degree. Another person was… Two of us wanted to pursue PhDs right after our bachelors, the rest were thinking on how to make life work with continuing their education. There was this wonder of what else would you do with a physics degree? Why wouldn't you want to continue onto a PhD. After having been to Physics Education Research Conference, I knew there were multiple people wanting to change how physics community functions.

I had to re-create the social structures that Modeling Instruction created in the classroom, outside all the upper division courses for physics.

## Entering Graduate School: Studying the navigation of dominant and non-dominant

I continued on to graduate school, and again there were struggles. But for this positionality statement I'm going to stay in the undergraduate time. What I want to communicate is that I brought these experiences into my desire to study physics education research in my PhD program. I wanted a way to understand how to change the culture of physics to ask my own physics community to change. My guiding research question for this dissertation is informed by this goal recognizing where in the system change can be made to have a more welcoming physics culture.

In this dissertation, I will use the theory of Nepantla to delve into the experiences of transfer students of color navigating STEM. In Chapter 2 I will situate the work of partnerships between Community Colleges and Universities, describing a research tool that centers the voices of and knowledge of the community college and universities to sustain a partnership. This work is mainly guided by de/colonizing methodologies – challenging the dominant narrative of research done on participants to move toward the non-dominant narrative of *doing research in partnership with partnerships*. In Chapter 3, I wil spiral out to the Nepantleras who act as guides for TSOC at the university setting. Adapting the work of Nancy Acevedo (2020) to the setting of transfer students of color at the university. I will extended the existing work of Nepanteras supporting students to navigate a STEM bachelors at a predominently white institution. In Chapter 4, we will dive into the story of a space that was created to provide STEM Transfer Students of Color an opportunity to navigate Nepantla – the space inbetween the

dominant and non-dominat. I will share the story of a physics student – Pablo – who asked for his idea to be considered by a group of physicists. The goal of the Trasnfer Advocacy Group is to change university to better support for STEM Transfer Students of Color. In Chapter 5 I will retrun to the question of how this helps me address the changes of physics culture. What have I learned and what I welcome you to conisder.

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**Partnership Profile Template: A Tool of Reflection to Honor the Labor of People Sustaining Partnerships among Community Colleges and Universities.**

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Abstract

In this article we introduce a tool, the *Partnership Profile Template*, that describes partnerships among community colleges and universities, and how it is interweaved with de/colonizing methodologies. We humbly approach this labor by considering the research framework from an NSF S-STEM Research Hub studying these partnerships and de/colonizing methodologies. In this article we expand on how the tool: is flexible to describe the different partnerships, integrates strength-based feedback, lowers the barrier to entry for the research process and practices transparency for our community college partners, and finally how various stakeholders might use the tool. The *Partnership Profile Template's* purpose is to support university researchers to reflect and acknowledge people, both community college and university stakeholders, who are sustaining these partnerships. The structure of the *Partnership Profile Template* intentionally disrupts the invisible boundary between the researcher and the *researched*. We unpack the importance of evaluating the impact of using the tool and the future design iterations of *Partnership Profile Template* to be a collaboration with community college colleagues. We also suggest ways to expand further into the de/colonizing methodologies. Lastly, we offer considerations for how the *Partnership Profile Template* might be used by various stakeholders in cross-institutional partnerships.

**Plain Language Summary**

In this article we share a tool that we call the *Partnership Profile Template*, that describes partnerships among community colleges and universities and challenges researchers of community colleges to see our community college's colleagues as partners of research. We describe the historical relationship between community colleges and university researchers who often study them and recognize how the power dynamics in those relationships continue to be present today. We share the design of a tool and describe how intentionally slowing down research practices supports the work of acknowledging the power in these relationships and the people who are being studied, in particular our community college colleagues. We expand on how: the tool is flexible to describe the different partnerships, integrates strength-based feedback,

lowers the barrier to entry for the research process and practices transparency, and finally how various stakeholders might use the tool. We offer the *Partnership Profile Template* as a tool that can be used in the practice of slowing down and acknowledging the asymmetry in power between the researchers and the people being studied in the partnership among community colleges and universities. We communicate clearly how and why this tool is designed so that others can continue this work.

**Key Words**

Reflect, Tool, De/Colonizing Methodologies, Partnerships, Hidden Work, Strength-Based Feedback, Beloved, Intentional, Power, Community Colleges, Universities, Transfer, Colleagues

## Introduction

Universities and community colleges in the United States serve distinct yet interconnected missions in educating diverse populations at the tertiary level. This paper focuses on partnerships that support students pursuing degrees in science, technology, engineering and mathematics (STEM). The collaborations featured in this paper have been funded through the National Science Foundation Scholarships in STEM (NSF S-STEM) program, which aims to support STEM students with financial need. Research is a required component of these grants. Too often, staff and faculty at community colleges report that university-based researchers take an extractive approach to data collection and publishing. As university-based researchers, in this article we introduce the *Partnership Profile Template*—a tool intentionally interwoven with equity oriented and de/colonizing methodology components designed to guide researchers in acknowledging the people whose labor sustains these partnerships, specifically our community

college colleagues. We describe in particular Bhattacharya's work on de/colonizing as it has helped us both in the design of the template and to make sense of what the template is doing to remove the boundary between the researcher and the participant. We also provide an example of a university research team engaging humbly with an area of the de/colonizing literature, while not being experts in the literature area as a whole. We hope to inspire more researchers to engage with the lessons found in this body of literature. We close with implications for practice that consider how stakeholders multi-institutional partnerships might use the *Partnership Profile Template.*

Partnerships among universities and community colleges in the United States have existed for just over a century. The first public community college, Joliet College in Illinois, was founded in 1901, while universities had been formally established as early as the 1600s. These relationships have historically revolved around the exchange of students, faculty, curricula, and ideas. Over time, however, social and legal pressures have alternately expanded and restricted access to higher education. As Jain et al. (2020) note, "Historically, both [institutions] were designed for those who could legally attend higher education at that time: White, upper-class, heterosexual, cis-gender, Christian, able-bodied men (Smith, Altbach, & Lomotey, 2002)." (p. 3, citation in original).

The educational institutions' history—rooted in racism, sexism and exclusion—continues to shape how community colleges and universities relate to one another. Today, community colleges uphold a mission of open access and broad educational opportunity, while research—intensive universities prioritize research productivity and advancement. These differing missions create ongoing tensions that partnership members must navigate as they balance competing institutional responsibilities. We must keep in mind the historical root of the tension, when

conducting research about partnerships among community colleges and universities, like PROSPECT S-STEM.

### *PROSPECT S-STEM*

The PROSPECT S-STEM grant (Collaborative Research: Practices and Research on Student Pathways in Education from Community College and Transfer Students to STEM; EDU-2138084, -2138058, -2138120, -2138074. -2138066) is an S-STEM Research Hub created to investigate partnerships between community colleges and universities that support STEM transfer students with high financial need. To guide this work, the team constructed a framework drawing from partnership capital (Amey et al., 2010), community cultural wealth (Yosso, 2005), co-equitability (Gutiérrez, 2012), and de/colonizing (Bhattacharya, 2009). We describe Amey, Yosso, and Gutiérrez more briefly to help the reader make sense of the *Partnership Profile Template* but take an extra focus on Bhattacharya. As part of the project, the PROSPECT S-STEM subgroup of researchers conducted campus visits to seven partnerships across the continental United States and created the *Partnership Profile Template* to help scaffold a "report" back to those campuses.

The development of the *Partnership Profile Template* was inspired by earlier collaborative work between Wendy Smith (Author 3) and Matthew Voigt (Author 4), who, along with their colleagues, created reports to share findings back with their research sites. Building on this idea, Camila Monsalve Avendaño (Author 1) and Vashti Sawtelle (Author 5) envisioned a similar reporting tool—one that would explicitly acknowledge and honor the ongoing labor of sustaining partnerships. They were particularly mindful of their own colleagues at community colleges who perform the often invisible, everyday work that keeps collaborations functioning. Lastly, with the addition of Destinee Cooper (Author 2), the team collectively refined the

template to further interweave structures that both recognize and center the people doing this essential work. The *Partnership Profile Template* followed the theoretical framework of the PROSPECT S-STEM team and is rooted in four key areas: partnership capital (Amey et al., 2010), community cultural wealth (Yosso, 2005), co-equitability (Gutiérrez, 2012), and de/colonizing methodological principles as defined by Bhattacharya (2009).

As researchers, we sought to create a humanizing space through, with, and within the template—one that recognizes the hidden work (Amey et al., 2010) of maintaining relationships as acts of resistance against oppressive systems. We viewed it as our responsibility to support fellow researchers in making this hidden labor visible through crafted prompts embedded in the *Partnership Profile Template*. Drawing from Bhattacharya's call to "break apart oppressive regimes and nullify their effects" (Bhattacharya, 2009, p. 108), we designed the prompts in the template to center people who do the hidden work for the partnership. Rather than evaluating whether a partnership neatly fits within existing theoretical categories, the template embodies de/colonizing methods by creating "spaces where multiple colonizing and resisting discourses exist and interact simultaneously" (Bhattacharya, 2009, p. 108). In doing so, the template opens an intentional space for multiple forms of discourse to coexist and provides an explicit structure through which research participants can contribute to the research process beyond the traditional interview.

Our goal was to encourage researchers to not reproduce hierarchical power dynamics through templated reports that confine partnerships within rigid theoretical definitions. Rather, we aimed to help researchers craft partnership reports that center the people—those whose everyday labor sustains these collaborations in particular our colleagues at the community colleges. In this process, two overlapping systems of oppression are at play: the colonizing

research system within which the research team operates, and the educational system that shapes the experiences of partnership members. We are all individuals navigating—and attempting to humanize—systems that often suppress our shared humanity.

In this paper, we explain the necessity of centering people who support the sustainability of partnerships among universities and community colleges. We begin by unpacking the historical and methodological motivations for employing de/colonizing methodologies. We then articulate the four key conceptual frameworks at play in designing our tool— partnership capital (Amey et al., 2010), community cultural wealth (Yosso, 2005), co-equitability (Gutiérrez, 2012), and de/colonizing (Bhattacharya, 2009), and the broader landscape of community college—for partnerships among community colleges and universities. Finally, we describe the structure and purpose of the *Partnership Profile Template* and demonstrate how its components align with the de/colonizing methodologies. We conclude by highlighting the tool's potential to bridge the divide between researcher and researched, dismantling traditional boundaries between community college colleagues as only participants in research and university researchers. We then explore implications for various stakeholders in multi-institutional partnerships and consider how they might use the *Partnership Profile Template* as a tool for reflecting on their partnerships.

## Why De/colonized methodologies? The History of Associate Degree-Granting Institutions in the United States

Bhattacharya (2021) defines six tenets for de/colonizing methodologies in educational research. In this paper, we focus specifically on the tenet of *Beloved and Problematic Communities*, which "urges an honest interrogation of the cultural assets and problematic constructs that enable **multiple structures of oppression and that are connected to our**

**colonizing thinking and actions past and present**" (p. 14, bolded for emphasis). Our focus on this single tenet reflects both intentionality and constraint—intentionality in our desire to engage deeply and ethically, and constraint in the reality of the capitalist pressures within U.S. academia that privilege speed and productivity over reflective, liberatory practices. Here we illustrate a snippet of the history of community colleges considered for designing the *Partnership Profile Template*.

There are more than one thousand community colleges across the United States, most of which confer associate's degrees, with a growing number also offering bachelor's degrees. In this article, we focus on the community colleges that confer associate degrees. To maintain clarity, we refer to these colleges as *associate degree-granting institutions* (ADGIs). We use the term *community colleges* only when directly citing research that does so. In this section, we briefly outline the historical and current role of ADGIs, examine how research about them is often conducted, and discuss the importance of employing de/colonizing methodologies in studying these institutions.

ADGIs were originally established to prepare students to transfer universities (Jain et al., 2020; Taylor & Jain, 2017). The founding of these institutions was with the vision for students to begin at junior colleges and transfer to an institution to engage in their major academic coursework (Kisker et al., 2023). Many of these institutions designed their curriculum with the intention of students transferring to complete their degree programs. Although ADGIs have evolved over time, societal narratives persist that frame them as subordinate to universities—institutions that are often viewed as more prestigious or legitimate within higher education.

Today, ADGIs are often considered the most "democratic" of educational institutions because their mission is to serve diverse learners with varied educational goals. Of the 19.28

million students enrolled in U.S. institutions of higher education in fall 2024, new high school graduates, 62% of whom immediately enroll in higher education, tend to enroll more in universities (45%) than ADGIs (17%) (Hanson, 2025). The U.S. National Center for Education Statistics similarly reports historical trends (back to 2012) showing that, for students aged 18-22, approximately 10% are enrolled in ADGIs, and approximately 30% are enrolled in universities (National Center for Education Statistics, 2024). Yet, ADGIs represent some of the most diverse institutions in the landscape of higher education in the United States (Taylor & Jain, 2017) as the primary access point to higher education for low-income students (Bailey et al., 2005; Hoxby & Turner, 2013) and offer localized essential support for their students such as, robust mental health services, on-campus childcare and flexible scheduling. Similarly, ADGIs serve as crucial access point to higher education for historically racially marginalized students who represent 42% of the 6.5 million students that enrolled in ADGIs in 2016. In comparison, historically racially marginalized students represent only 31% of the 11 million students who enrolled at a university (Ginder et al., 2019).

Within their mission to expand access, ADGIs continue to play a critical role in supporting *vertical transfer*—students who begin their studies at an ADGI and continue to a bachelor's degree-granting institution (BDGI -We use BDGI to include institutions that award bachelor's degrees, in addition to those institutions that also award master's and/or doctoral level degrees.) NCES Integrated Postsecondary Education Data System (National Center for Education Statistics, 2023) reports approximately 1.2 million transfer students per year, across various institution types, representing approximately 6% of college students overall. IPEDS shows enrollment in U.S. institutions of higher education this century has remained fairly steady in terms of the ratio of students in bachelor-degree granting institutions (or higher) vs ADGIs

(2:1). Velasco et al. (2024) analyzed data from the National Student Clearinghouse to find that, although 80% of students starting at ADGIs indicate an intent to eventually earn a bachelor's degree, only one-third of ADGI students do transfer to a BDGI, and fewer than half of those transfer students earn a bachelor's degree within six years. The fraction of students earning a bachelor's degree who transferred from ADGIs, reflects both the challenge and accomplishment of supporting students who transfer from an ADGI to a BDGI.

As for how research is conducted about ADGIs, similar to other research areas, it is largely completed in an extractive manner by research intensive BDGIs and/or national centers. Researchers, either from national institutions or research-intensive BDGIs, collect data about ADGIs to produce publications that advance their own careers and institutions. In this dynamic, BDGIs function as resource-rich institutions engaging in colonizing practices that reinforce an entrenched hierarchy: ADGIs as data sources and BDGIs as knowledge producers. The knowledge extracted from ADGIs is analyzed, repackaged, and published in ways that sustain BDGIs' dominant status within academia.

Historically, partnerships among ADGIs and BDGIs have been shaped by this hierarchical dynamic— often collaborative in form but extractive in practice. De/colonizing methodologies offer a framework for disrupting these patterns and for reimagining research as a process toward liberation and relational accountability. These approaches encourage researchers to confront their complicity in colonizing practices, one side of the spectrum, and to make intentional choices that move toward healing and justice, the other side of the spectrum.

We therefore offer this paper as a humble attempt toward embodying the tenet of *Beloved and Problematic Communities* within de/colonizing educational research. This attempt emerges from an already funded study, PROSPECT S-STEM, which investigates partnerships

between ADGIs and BDGIs supporting STEM transfer students with high financial need. In the pages that follow, we describe the reasoning behind the structure of the *Partnership Profile Template*, the ways it centers the work of partnership members, and how its design aligns with the *Beloved and Problematic Communities* tenet. We close with implications for practitioners who would like to consider using the *Partnership Profile Template* as a tool to examine their own partnerships. We also recognize that this effort represents only one moment in an ongoing process—work that must continue well beyond the use of this particular tool.

## Conceptual Framework: De/colonizing Education Research methodology in studying Associate and Bachelor Degree-Granting Partnerships

### *What we are drawing from De/colonized Methodologies: Bhattacharya*

In Othering Research, Researching the Other: De/colonizing Approaches to Qualitative Research, Bhattacharya (2009) describes qualitative research history from a methodology perspective through what she calls "moments"—periods marked by distinct methodological and epistemological shifts. She emphasizes that these moments are not linear or finite; they coexist, overlap, and interact. In this paper, we focus on the sixth and seventh moments, which together characterize the current landscape of qualitative inquiry. The sixth moment centers on a crisis of representation, legitimization and praxis, while the seventh moment emerges as response to that crisis. Researchers working in this space navigate these tensions by representing their work beyond text, embracing multidimensional findings, and privileging messiness, contradictions, and tensions.

Bhattacharya complicates this chronology by arguing that qualitative research can easily become an automatized process where oppression is perpetuated even as it simultaneously holds the potential for liberation and agency within its epistemologies and methodologies. More

intentionally, Bhattacharya (2021) calls on educational researchers to work toward de/colonizing practices by both recognizing the colonizing aspects of research practices and by actively creating liberatory alternatives. Colonizing research practices often involve repackaging the knowledge of the researched into neatly structured academic outputs that primarily benefit researchers rather than participants. In this case, the "researched" are the partnership members whose knowledge sustains educational collaborations but are too often decontextualized in academic publications.

Bhattacharya (2009) underscores how research is deeply interwoven with the worst of colonialism and urges resistance to the systemic inequalities that sustain "Othering"—the process of creating artificial separation among researchers and the communities they study. As qualitative researchers, we are tasked with breaking the boundary that creates "Othering" apart and nullifying their effects.

The work to break with "Othering" is not without challenge. As Shah (2022) reminds us, we must "consider complexities and complicities that exist within historical and contemporary power asymmetries."(p. 54) . Jain et al. (2020) describe how these asymmetries shape community colleges in the United States, positioning them within enduring hierarchies. Within these hierarchical structures, partnership members remain co-creators of knowledge about sustaining cross-institutional collaborations, even as they operate under unequal conditions. When researchers from research-intensive BDGIs engage within these partnerships, power imbalances inevitably surface. From the participants' perspectives, research often concludes with a published anonymized research paper in which participants' insights are repackaged for academic audiences—stripped of context and divorced from their lived realities.

The *Partnership Profile Template* was designed, in part, to address the tenet of *Beloved and Problematic Communities*. It does so by naming de/colonizing aspects of research practice and by offering a structure that guides researchers toward liberatory reflection and action. The tool invites researchers to recognize both the oppressive and liberating dimensions of their work—before knowledge is abstracted and anonymized for publication. Through this process, the template connects the historical and contemporary realities of partnerships among ADGIs and BDGIs and foregrounds the ethical commitment to honor the people whose labor and wisdom sustain them, in particular the community college colleagues. It also embraces the multidimensional findings and is an attempt to remove the barrier between researcher and researched, respectively the research-intensive university researcher and our community college colleagues.

### *Landscape of Associate and Bachelor Degree-Granting Partnerships*

The concept of partnership is often broad and frequently applied to a relationship between individuals; some research has been focused on partnerships that are characterized by involving educational institutions. For example, Diaz et al. (2015) analyzed partnerships between educational institutions and industry, developing a model based on existing literature. Similarly, Bordogna (2018) studied transnational partnerships among higher education institutions, proposing a model that emphasized the importance of sustained communication and in-person engagement at various stages of collaboration. More recently, Yeh & Wetzstein (2020) developed a model of partnerships among community colleges and BDGIs in the United States. Their model presents a continuum of partnership stages and offers a way to situate a partnership along that continuum.

Understanding the dynamics of sustaining partnerships, however, requires frameworks that move beyond structural descriptions to account for interpersonal relationships, and power dynamics among stakeholders. In particular, faculty and staff at ADGIs must continually navigate these power dynamics while sustaining both their institutions and the partnerships themselves. Casale et al. (2024) illustrate this imbalance through the example of a BDGI faculty member who "did not fully cooperate with promoting a transfer to their university. In that case, the administration attended meetings and visibly supported the lead [associate degree-granting] faculty" (Casale et al., 2024, p. 107). In this situation, faculty members at the BDGI did not listen to their ADGI counterparts, much less treat them as equals, until administrative authority intervened to legitimize the collaboration.

Although existing partnership models capture the complexity of the dynamics along with the corresponding challenges and outcomes, none of these models explicitly address the power dynamics that exist among ADGIs and BDGIs. Casale et al. (2024) acknowledge an example of this tension, yet the broader literature remains largely silent on the structural inequities and interpersonal politics that shape these relationships. Our work responds to this gap by explicitly examining how power operates within partnerships among ADGIs and BDGIs that support high financial need STEM students who intend to transfer to obtain their bachelor's degrees.

Recentering the voices and experiences of the most marginalized people within these partnerships aligns with the principles of de/colonizing methodologies. We take inspiration from Sweet (2019), who argues that:

> Delinquent writing refuses the taken-for-granted regarding existing methods and methodologies. Those who write delinquently do so with an ethics in the making that is beholden not to overseeing and disciplining structures such as colonizing methods and

> silencing voices of those already marginalized, but rather to relational ethics of collaboration that works against repression and toward liberation. (p. 278)

In this spirit, the *Partnership Profile Template* disrupts the researcher's default tendency to critique and analysis alone. Instead, it moves toward acknowledging and recognizing the persistent, often invisible labor of partnership members who sustain collaborations across institutional hierarchies, specifically the extra labor done by our community college colleagues.

**Our Site of Study: PROSPECT S-STEM**

The development of the *Partnership Profile Template* was created to support the PROSPECT S-STEM grant, which investigates partnerships among associate degree-granting institutions (ADGIs) and bachelor's degree-granting institutions (BDGIs) that support low-income transfer students pursuing STEM degrees. The project includes seven such partnerships across the continental United States. The grant proposal authors developed a framework grounded in three foundational papers: partnership capital (Amey et al., 2010), community cultural wealth (Yosso, 2005), and co-equitability (Gutiérrez, 2012). These three works are referred to throughout this paper by their corresponding frameworks: partnership capital, community cultural wealth and co-equitability, respectively, or by the lead authors' names.

As part of the PROSPECT S-STEM project, researchers conducted site visits to the participating ADGIs and BDGIs to collect data. Partnership members were interviewed using two types of protocols: one protocol to interview faculty and staff, and a second protocol to interview students. The interviews were informed by the PROSPECT S-STEM theoretical framework, which is briefly described in the next section.

**Brief Description of the PROSPECT S-STEM Conceptual Framework**

Amey et al. (2010) propose a three-stage model for understanding the partnership capital framework in the context of partnerships among higher education institutions. The first stage, getting started, explains the necessity for multiple forms of capital, clarified goals and objectives for all members to have a common vocabulary and understanding. The second stage, partnership development, explains how there is negotiation of the member's roles and how administrative support of the institutions assists the partnership. The third stage, incorporating the partnerships, describes the dynamic of personnel changes and the ongoing efforts required for sustainability—what the authors refer to as "hidden work," which is "considered 'extra,' seen as [a] service obligation of being a good citizen, and does not always fit into a typical work criteria" (Amey et al., 2010, p. 343).

In the community cultural wealth framework, Yosso (2005) defines six forms of capital that students from communities of color bring into educational environments. Aspirational capital helps maintain dreams and hopes despite barriers, while resistant capital is knowledge and skills to challenge inequality and create a more just world. Social capital is a network of people and community resources who support and guide. Linguistic capital is a capacity to communicate in more than one way, it extends with and beyond speaking English, including different forms of English. Navigational capital is knowledge of navigating social institutions with hidden rules and hierarchical structures. Familial capital is the cultural knowledge that nurtures among families that carry a sense of history, memory and cultural intuition.

The co-equitability framework proposed by (Gutiérrez, 2012) defines equity in reference to learning mathematics. Gutiérrez uses two axes to describe equity: the dominant axis is composed of access and achievement, and the critical axis is composed of identity and power. She notes the consequences of these two axes in society. She argues that students who can play

the game are working on the dominant axis which indicates membership in the community, while exercising the critical axis can challenge the community through power and identity.

### *PROSPECT S-STEM as a Set of Site Visits and Case Studies*

The PROSPECT S-STEM project is a multi-institutional research collaboration, with each participating team studying a partnership among ADGIs and BDGIs. The primary goal of the grant is to understand how these collaborations sustain long-term partnerships that support student success. Research teams conducted interviews and collected data at each site to document how these partnerships function and to develop case studies that illustrate the processes through which the partnerships are maintained.

The *Partnership Profile Template* was developed as a guide for researchers to engage in less oppressive and more reflective research practices within these site visit structures. Within a week of conducting a site visit, researchers were asked to complete the template to capture their initial impressions and observations while the experience was still fresh. This immediacy not only supported accurate reflection but also ensured the partnership members received their *Partnership Profile* promptly—as an intentional gesture of gratitude for their participation in the study.

The completed *Partnership Profile*—a collaboratively accessible Google document—provides both a record of the partnership's dynamics and an opportunity for reciprocal engagement. All partnership members are given access to read and edit the document, transforming what might otherwise be a unidirectional research report into a shared space for co-created knowledge.

***Positionality of the Authors***

The researchers at PROSPECT S-STEM were all traditionally trained in qualitative research methods within research-intensive BDGIs, with the exception of Matthew Voigt (Author 3) who is trained in mixed methodology. To be clear, our training is grounded in methodologies with colonial roots—approaches that often extract knowledge from participants, repackage it for academic audiences, and circulate it through publications that primarily benefit the researchers.

As authors of this paper, we each have colleagues who work at ADGIs. Our guiding question throughout this project was: What would we want the *Partnership Profile*—the product of this template—to say about our own colleagues? Centering that question grounded our approach and shaped every design choice. We wanted the same care and acknowledgment we hoped for our colleagues to be extended to all partnership members represented in this work.

To illustrate how we interwove de/colonizing methodologies into the template, we created vignettes of two people with characteristics that represent the work our colleagues at an ADGI do to sustain the partnership. These vignettes serve as narrative stand-ins for real people who co-create and sustain partnerships every day. Later in this paper, we draw on these vignettes to demonstrate how the *Partnership Profile Template* helps researchers center and honor the labor of ADGI colleagues.

*Vignette of Alex and Sam: Colleagues at an ADGI*

The first vignette introduces Alex, who has collaborated with BDGI partners for many years and possesses a deep understanding of the transfer requirements for ADGI students. Alex has cultivated a trusted network across institutions, staying attuned to the policy and procedural changes that may affect students' abilities to transfer. Known as the go-to person for getting

things done, Alex bridges internal and external efforts, ensuring continuous administrative buy-in and partnership momentum. They are also a deeply student-centered practitioner—writing recommendation letters, celebrating student successes, and supporting students in countless unseen ways (a list that could easily fill another paper). Additionally, Alex is constantly thinking about the financial future of sustainability of the partnership, so they collaborate on submitting grants.

The second vignette features Sam, whose behind-the-scenes work is indispensable to the partnership's daily operations. Sam coordinates events, reserves spaces, ensures meals arrive on time, and monitors the disbursement of student scholarship funds. They maintain close relationships with students, understanding their individual challenges and needs.

Throughout the development of the *Partnership Profile Template,* the authors met regularly to ensure the tool would authentically highlight and honor the invisible labor of colleagues like Alex and Sam. Our discussions were guided by admiration and respect for the depth of their contributions, and by a shared commitment to represent their work with accuracy and care. We hope that this spirit of recognition and reciprocity is reflected in every *Partnership Profile* created through the use of this template.

## Examining the Partnership Profile Template as a process for De/colonized methodologies

The PROSPECT S-STEM is a large, multi-institutional collaboration and onboarding researchers to engage in this work differently—through a de/colonizing lens—requires time and reflection. In this process, we enacted the tenet of *Beloved and Problematic Communities* by inviting researchers from research-intensive BDGIs to recognize and confront their own colonizing research practices. We shared our motivation to honor our colleagues' labor and

designed intentional structures within the *Partnership Profile Template* to help researchers critically examine how they describe and interpret partnerships.

In the sections that follow, we first describe the design and location of the template itself, then explain how its structure intentionally supports three key aims: flexibility in use, strengths-based feedback, and accessibility to the PROSPECT S-STEM theoretical frameworks.

### *Description of the Template*

The template is housed in a Google document consisting of six main sections:

(1) Instructions for the authors of the partnership profile
(2) Executive Summary of the Partnership Profile
(3) Partnership Profile Purpose
(4) [Project] Partnership Profile
(5) Appendix
(6) References

[Figure 1 near here]

Figure 1 illustrates the *[Project] Partnership Profile* section of the template where the research team and partnership members can co-create knowledge; partnership members typically engage with this content later in the process. The bolded left-aligned title represents the main headings, each of which contains several subsections. For example, in Figure 1, the main heading is *[Project] Partnership Profile* followed by four subsections.

Throughout this manuscript there, we use terminology that is intentionally de/colonizing—both to reflect the philosophical grounding of this project and to articulate the purpose and structure of the template itself. The terms are:

- **Partnership members**: people who work at both the ADGI and the BDGI and support the partnerships among associate and bachelor degree-granting institutions, like Alex and Sam. Instead of simply naming the research participants, the *Partnership Profile Template* supports acknowledging their role both in the education system and their investment to the partnership which is the "hidden work" (Amey et al., 2010, p. 343). Instead of including faculty vs. staff, administrator vs. faculty and BDGI faculty vs. ADGI faculty, every person working in the partnership is contributing toward the collaboration of connecting among themselves to support STEM transfer students.
- **Research team**: people working at research-intensive BDGIs who are part of the PROSPECT S-STEM project and conduct partnership members' interviews. The research team embodies the colonizing practice of collecting data during the site visits. The choice of extractive research is a colonizing aspect of the research practice, which can be further exacerbated by BDGIs that value publications over partnerships.
- **Template**: a Google document designed to guide the research team in reflecting on and articulating the "hidden work" of partnership members. It serves simultaneously as a research tool intended to bridge the artificial barriers of Western academic practice. Once the artifact—the *Partnership Profile*—is developed from the template, the same Google document is shared with partnership members to promote transparency and collaborative engagement.
- ***Partnership Profile***: an artifact written by the research team to describe the partnership between ADGI and BDGI to be shared with all partnership members, inviting those members to edit the document. The *Partnership Profile* document is divided into six **sections,** labeled to draw attention to various aspects of the partnership. During creation

of the *Partnership Profile*, the research team used additional **subsections** to guide the draft of the partnership profile. The subsection headings and prompts were deleted before sharing the *Partnership Profile* with partnerships members.

- **Researcher**: a term drawn from Bhattacharya's work referring to those who conduct research, it specifically refers to the research team involved in the PROSPECT S-STEM project.
- **Researched**: a term drawn from Bhattacharya's work referring to those about whom research is conducted. For this case, the researched are the partnership members (people who work at both the ADGI and the BDGI and support the partnerships among associate and bachelor degree-granting institutions).

***Facilitates Flexibility to describe the different Partnerships being studied***

The main heading *[Project] Partnership Profile* (see Figure 1) and its four subsections are designed to guide researchers toward flexibility in describing partnership members, rather than constraining the partnership within rigid definitions derived from the three theoretical frameworks (Amey et al., 2010; Gutiérrez, 2012; Yosso, 2005). A problematic research practice is to fit a partnership neatly into a single category—reducing its complexity to align with established theory. The *Partnership Profile Template* intentionally resists this practice by providing subsections scaffolded with prompts and a "*Text for this section,*" as illustrated in Figure 2.

[Figure 2 near here]

The flexibility of the sections of the *Partnership Profile Template* is supported by two structures. First, the template explicitly states in the Instructions for the authors of the partnership profile section to alter the prompts to prioritize centering the people's "hidden work" (Amey et

al., 2010, p. 343). Second, to further guide the researcher team on changing the prompts, each subsection includes a brief description for the researcher, along with the framework being considered (i.e. partnership capital (Amey et al., 2010), community cultural wealth (Yosso, 2005), and co-equitability (Gutiérrez, 2012). These structures enable the researcher team to make informed decisions about how to adapt the subsections to center the "hidden work" (Amey et al., 2010, p. 343) that sustains these partnerships. For example, if a person from the research team who interviewed Sam learns about Sam's ongoing engagement with students, the researcher is encouraged to revise or delete prompts and replace them with a description of how Sam's consistent communication and support contribute to partnership sustainability.

The non-categorical prompts align with Bhattacharya's (2009) assertion that multiple discourses can co-exist within research spaces. By combining theoretical framework constructs (research as colonizing practice of categorizing) with de/colonizing intent (centering the partnership members' "hidden work"), the template invites researchers to describe the characteristics of partnerships rather than forcing alignment within a single category. The research team is encouraged to articulate their understanding of the partnership's dynamics, discuss how these align—or do not align—with the frameworks, and explicitly acknowledge that they are not the experts on the partnerships' inner workings; instead, the partnership members are the true holders of that knowledge. For example, a person from the research team who interviewed Alex might describe how the partnership is collaborating on a new grant proposal while also navigating a personnel transition at their institution. This reflection could note that the partnership aligns with Stage Two of Partnership Capital (Amey et al., 2010) in terms of collaboration, but Stage Three (Amey et al., 2010) in terms of sustaining efforts through staff changes.

Finally, the subsection titled "Text for this section" (see Figure 1) provides a dedicated space in the Google document for the research team to draft paragraphs from their responses to the prompts. This built-in mechanism encourages researchers to slow down—to reflect deliberately on how they describe the partnership in relation to the frameworks and to ensure that the work of ADGI colleagues like Alex and Sam remains at the center of the narrative.

### *Communicating Strength-Based Feedback*

The *Partnership Profile Template* prompts encourage researchers to provide strength-based feedback by centering the work of the partnership members, like Alex and Sam. This emphasis on recognizing strengths challenges the habitual academic impulse to problematize observations. Unlike the flexibility described in the previous section, the strengths-based guidance asks researchers to uplift by describing the partnership members' work of sustaining the partnerships rather than only focusing on perceived gaps or deficiencies.

As shown in Figure 1, the template includes prompts designed to help researchers reframe their analyses through a strengths-based lens. Instead of reproducing the colonizing tendency to categorize partnerships rigidly within Amey and colleagues' (2010) partnership capital stages, researchers are asked to consider the defining features of each stage and to allow for the possibility that multiple stages may coexist. Figure 3 illustrates this approach, where prompts 1 and 2 invite researchers to reflect on each partnership capital marker separately.

[Figure 3 near here]

The language of the template intentionally centers strength-based feedback and operates from the assumption that partnership members are already engaging in the "hidden work" (Amey et al., 2010, p. 343) required to sustain their collaborations. This framing aligns with Bhattacharya's (2009) critique of "knowledge production favored over others" (p. 107) by

resisting the urge to privilege abstract categorizations over lived practice. Instead, the focus remains on how individuals contribute to different partnership capital stages in real and nuanced ways. For instance, researchers might document how Sam regularly meets with students, learning their names, following up on emerging needs, and remembering what motivates each student—whether a passion for their major or a desire to support their family's future. By capturing these details, the prompts help researchers highlight the relational, embodied, and emotional labor that is too often invisible in traditional academic reporting.

***Lowering the Barrier to entry for the Research Process and practicing Transparency***

Guided by Bhattacharya's (2009) call to consider the researcher's responsibilities in maintaining the trust and consent of the researched, we were inspired to include two additional sections in the template: the *Partnership Profile Purpose* (a section before the *[Project] Partnership Profile*) and *Appendix* (a section after the *[Project] Partnership Profile*). These sections describe, in detail, the research focus and theoretical frameworks of the PROSPECT S-STEM project with the intention of being transparent. The inclusion of these sections allows partnership members such as Alex and Sam to access more context and background information if they wish to further understand the foundations of the Partnership Profile.

The Partnership Profile Purpose section has three parts:

- Creation and Intent
- What is okay and what it is not okay
- Communication avenue

In the *Creation and Intent* part, we explicitly include the name of the project, ADGIs, and BDGI to describe the *Partnership Profile*. When listing the institutions, we intentionally name

the ADGIs first to emphasize their central role in the partnership. We then outline three key intentions guiding the creation of the *Partnership Profile*:

- First, the partnership profile was an expression of gratitude toward the partnership members having shared their time when interviewed by the research team.
- Second, we sought to be explicit about what could and could not be done with the contents of the *Partnership Profile*, recognizing that it represents ongoing research.
- Third, the *Partnership Profile* is an initial understanding of the partnership, and the research team was open for feedback.

In the *What is Okay and What it is Not Okay*[1] part, we provide clear examples to guide the ethical use of the *Partnership Profile* by partnership members. For instance, it is appropriate for Alex or Sam to share the profile within their partnership community to celebrate their collective work. However, it is not appropriate for partnership members or institutions to make claims based on the Partnership Profile in external or institutional contexts without collaboration or consent from the research team.

The C*ommunication Avenues* part explicitly invites partnership members to engage with the document by offering feedback, edits, or questions. If Alex or Sam wish to discuss specific content or gain deeper understanding, they are encouraged to contact a researcher directly using the email provided. For those comfortable navigating Google Docs, they may also edit the document or assign comments to the research team, reinforcing shared ownership and transparency.

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[1] Inspired from Brené Brown's website term and conditions of sharing a podcast's transcript.

The *Appendix* part remains identical in both the template and the final *Partnership Profile* to reduce barriers to accessing research. This design choice removes the traditional separation between researchers and researched by providing an accessible overview of the project's goals, frameworks, and research questions. The appendix includes a brief summary of the PROSPECT S-STEM's research focus, followed by concise explanations of the three foundational frameworks—partnership capital (Amey et al., 2010), community cultural wealth (Yosso, 2005), and co-equitability (Gutiérrez, 2012). These summaries condense more than fifty pages of academic literature into eight readable pages, acknowledging that institutions may face paywall restrictions that limit access to scholarly work. This structure ensures that if, for example, Alex becomes curious about the profile's reference to Stage Two of Partnership Capital, they can easily scroll to the appendix and find a succinct, accessible summary of Amey and colleagues' (2010) work.

## Discussion: The Partnership Profile Template as a Bridge Between Researchers and Researched

The *Partnership Profile Template* serves as a reflective tool for researchers to interrupt their research practices when understanding partnerships and the people who sustain them, in particular our community college colleagues. It functions as a bridge between research and the researched — a means of communicating research insights with our community college colleagues before they are distilled into a finalized, publishable manuscript. Structured intentionally, the template supports researchers in centering the partnership members who perform the labor of sustaining these collaborations and in articulating that labor back to them. This centering is deliberate, time-intensive work that challenges traditional research practices and assumptions about authorship, expertise, and voice.

The template draws inspiration from Bhattacharya's (2009, 2021) work on de/colonizing research methodologies, which recognizes the entanglement of oppressive and liberatory agendas within any research space, and from Amey and colleagues' analysis of the often hidden work (Amey et al., 2010,) carried out by partnership members in particular at the community colleges. Building on the objectives of the PROSPECT S-STEM project and our own collaborative experiences, we created the *Partnership Profile Template* to make visible this hidden work long before it becomes anonymized or decontextualized in academic publication. In this way, the template serves as a bridge between researchers and the researched, explicitly structuring opportunities—through the *Communication Avenues* section—for partnership members to communicate with researchers about the profiles that represent their work.

The research team is guided by the template's flexibility, its emphasis on strength-based framing, and its integration of PROSPECT S-STEM's theoretical foundations. These components ensure that partnership members have meaningful access to the research process itself, disrupting extractive research practices (that lead to "Othering") and redistributing power through transparent, reciprocal communication with all partnership members.

Ultimately, the *Partnership Profile Template* is a tool of reflection—an invitation to pause and acknowledge the labor that sustains partnerships between associate and bachelor degree-granting institutions. Writing through the template becomes both a colonizing act (as it documents and analyzes partnership dynamics) and a de/colonizing one (as it honors the human relationships, care, and commitment embedded in those dynamics). In doing so, it offers researchers a framework for seeing across institutional tiers, recognizing complexity, and centering the people and practices that make partnership sustainability possible.

**Limitations**

The *Partnership Profile Template* was developed by BDGI researchers for BDGI researchers, without the direct collaboration of faculty or staff from ADGIs. As the majority of us are traditionally trained researchers, we first needed to critically reflect on our own colonizing research practices before inviting others into the process. Through this reflection, we recognized the need to disrupt the established norm of producing unilateral research reports. This awareness motivated us to actively co-create a more reflexive and relational tool—the *Partnership Profile Template*. We recommend that future iterations of the template be co-developed with ADGI faculty and staff as collaborators, and that their participation be compensated for their intellectual and emotional labor.

While this paper describes the development and structure of the *Partnership Profile Template*, the impact of its application—the *Partnership Profile* itself—has yet to be evaluated in an academic format . The PROSPECT S-STEM grant has now produced several *Partnership Profiles* which have been shared with partnership members and their corresponding researchers. However, the research team has not yet gathered feedback from partnership members regarding their experiences with the profiles, nor do we know whether the process has fostered meaningful interaction between researchers and the researched. Future research should evaluate these impacts and ideally co-author such studies with ADGI faculty and staff.

The *Partnership Profile Template* did not interweave the remaining five tenets conceptualized by Bhattacharya (2021)work of the Par/Des(i) framework. The remaining tenets are active work for researchers to engage in the detangling colonizing and de/colonizing research practice specific to their local communities. Similarly, the making of *Partnership Profile Template* did not engage with the de/colonizing and/or de/colonizing methodologies literature review at large. Camila Monsalve Avendaño (Author 1) first interacted with Bhattacharya (2009)

work to create the template and later found Bhattacharya (2021) to better describe the values guiding the decisions made in co-creating the template.

As we noted in our introduction, we are humbly engaging with an area of the de/colonizing literature, focused around Bhattacharya's work. A larger body of literature exists globally, including North American Indigenous-led areas of Tribal Crit and other work on decolonizing. We plan to continue to expand our engagement with this literature.

Finally, we chose to digitally locate the *Partnership Profiles* in Google documents. We found Google documents to be more easily shared across institutions in ways that allow concurrent editing by multiple people than OneDrive, Box, or Dropbox (the other file-sharing platforms we could collectively access). However, over 90% of U.S. public institutions subscribe to a single platform at the enterprise level, making each a "Google campus" or a "Microsoft campus" (Craig, 2024). In this way, sharing Google drive files with individuals who do not have institutional Google accounts necessitated sharing files with personal email addresses, or with non-Gmail institutional email addresses; the latter led to some difficulties with those individuals accessing the Google document. Without a universal document-sharing-and-editing platform, there is not a clear way to address this limitation. In our experience, more ADGI faculty and staff had difficulty accessing the Google documents than did BDGI faculty and staff.

**Conclusion**

The *Partnership Profile Template* is a small step in the direction of de/colonizing methodologies in recognizing the unspoken labor of sustaining cross-institutional partnerships, especially the work of our community college colleagues. Our main motivation was creating a space that acknowledged the historical power asymmetries among universities and community colleges while also recognizing the often not talked about labor to sustain a cross-institution

partnership. Creating a space where the researcher and researched can interact, we explicitly included norms written in the front half of the template. This paper is an intentional sharing of the careful consideration of colonizing practices by researchers at research-intense universities and intertwining de/colonizing methodologies' principle of *Beloved and problematic communities*. The aim for the *Partnership Profile Template* was an attempt on supporting our colleagues at research-intense universities to acknowledge the work of sustaining a partnership that is already being done by our colleagues at ADGIs.

*Research Implications and Recommendations*

De/colonizing methodologies guide our research practice to account for the history of both community colleges and universities in the United States and how it is embedded today in their partnerships. De/colonizing methodologies supports researchers in confronting the historic power dynamic among ADGIs and BDGIs that is exacerbated in the research process. Rather than ignoring it, the *Partnership Profile Template* is designed to slow down the routine research practices of criticizing and/or problematizing observations by asking questions to instigate descriptions of the work that people do to sustain the partnerships, in particular our community college colleagues. The *Partnership Profile Template* is intentionally designed to guide researchers on how to slow down the research practice to acknowledge how partnership members sustain cross-institution partnerships.

The *Partnership Profile Template* is a tool to be used by anyone, whether a researcher or a member of a partnership among community colleges and universities. For researchers, the *Partnership Profile Template* supports slowing down research practice in recognizing the hidden labor of sustaining a partnership. For partnership members, the *Partnership Profile Template* is an individual or collaborative space to reflect on the extensive labor and roles people have that

support a cross-institutional partnership. For administrators and faculty, the *Partnership Profile Template* can act as a guide to understand what your colleagues or institution is doing in a partnership. The *Partnership Profile Template* is a tool that intentionally guides a reflection about people who sustain a partnership and modifiability on what each user intends to reflect about cross-institutional partnerships.

As researchers from a research-intensive university studying the partnerships among BDGIs and ADGIs, we must acknowledge the enduring hierarchies that perpetuate the power asymmetry between these institutions. While in our privileged position, attempting to move towards more liberatory research practices in which our partnership members, in particular our community college colleagues, are recognized in their already existing role of co-creators of the knowledge in sustaining the cross-institutional partnerships. The *Partnership Profile Template* is designed to communicate the multidimensional findings of the labor to sustain cross-institution partnerships by uplifting the work of all partnership members sustaining partnership across both institutions as a humble attempt on using de/colonizing methodologies.

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**Declaration of Interest Statement**

*The authors report there are no competing interests to declare.*

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**Figures**

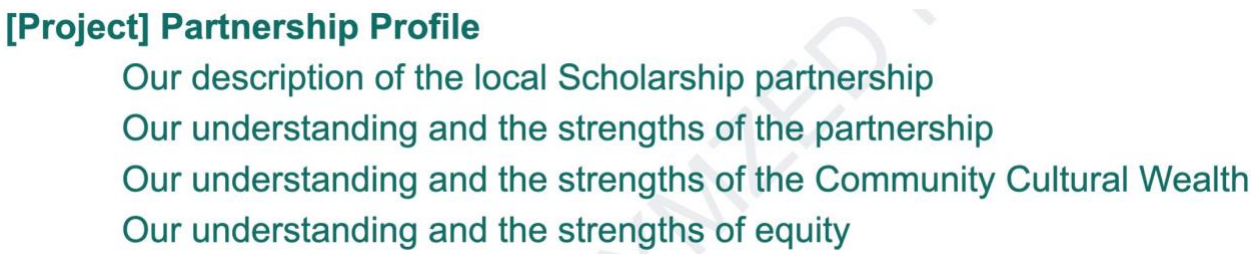



Figure 1. Screenshot of the *Partnership Profile Template*'s section titled [Project] Partnership Profile

Note: This is a screenshot of a section titled [Project] Partnership Profile which has four subsections. Notice the choice of word of 'our,' to communicate that it is the researcher's point of view.

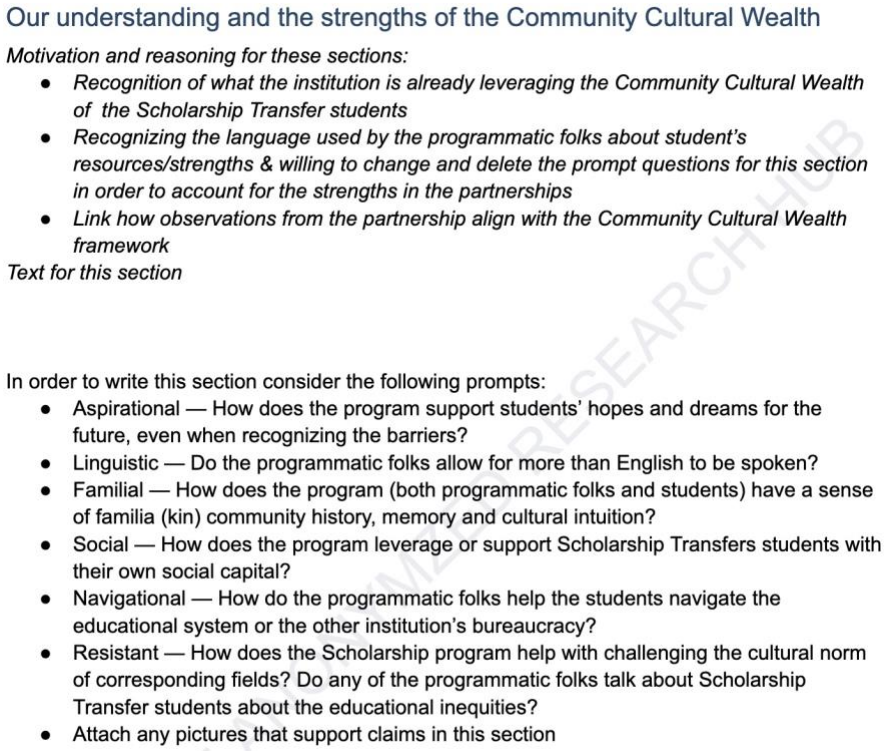
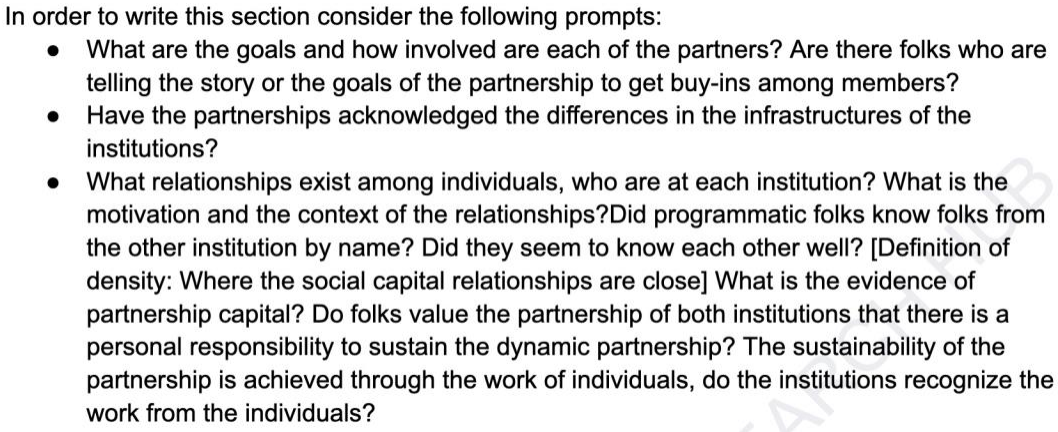



Figure 2. Template's Section: Our Understanding of Community Cultural Wealth

Note. This is a screenshot of the subsections to show how the research team is guided through the framework as brainstorming from the interviews of the site visit.


In order to write this section consider the following prompts:

- What are the goals and how involved are each of the partners? Are there folks who are telling the story or the goals of the partnership to get buy-ins among members?
- Have the partnerships acknowledged the differences in the infrastructures of the institutions?
- What relationships exist among individuals, who are at each institution? What is the motivation and the context of the relationships?Did programmatic folks know folks from the other institution by name? Did they seem to know each other well? [Definition of density: Where the social capital relationships are close] What is the evidence of partnership capital? Do folks value the partnership of both institutions that there is a personal responsibility to sustain the dynamic partnership? The sustainability of the partnership is achieved through the work of individuals, do the institutions recognize the work from the individuals?

Figure 3. Screenshot of the Template's Prompts for

Note. Prompts about the partnership capital (Amey et al., 2010) in the section *Our Understanding and the strength of the partnership* for the research team to answer.

**Appendix: Partnership Profile Template**

**Partnership Profile**
**from the**
**PROSPECT S-STEM Site Visit**
**[Dates]**

**Authors of Pilot Site Visits**
[Name of people, Institutions]

**Table of Contents**



# Instructions for the authors of the partnership profile

- A tenet of this profile is to be a strength-based description of the partnership. Meaning we highlight, uplift and record the "hidden" hard work (Amey et al., 2010, p. 343) of

building and maintaining partnerships, specifically equitable partnerships. Therefore, if there are prompts of this template that we are answering as areas of growth or suggestions on what the site *should* or *can do* or *could do*. Then, do not include them or find a way to phrases as questions of curiosity/wonder in the Communication Avenue section. (Battacharya, 2009, 144)
    - As researchers we are used to giving feedback and advice. Framing feedback from a wonder and curiosity or not aligning it to the theory of the frameworks we are using is very hard. Feel free to reach out to someone in the team to find the words of curiosity and wonder for your feedback.
- In each section of the partnership profile, authors will find three sections.The first subsection is Cami's reasoning and motivation for the section, so as authors of this profile you could understand the section's purpose. Second section, is a space to write out the partnership profile we like to give back in the time agreed upon as a group. Third section, are prompts for the authors to contemplate or guide the writing that could go in the previous section.
    - Once the second section has been filled with your observations of site visits, please feel free to erase the first and third section
    - Also delete this entire section titled "Instructions for the authors of the partnership profile"

# Executive Summary of the Partnership Profile

*Reasoning and motivation for this section:*

- 

*Text for this section*

In order to write this section, consider the following prompts:

# Partnership Profile Purpose

## Partnership Profile's Creation and Intent

*Reasoning and motivation for this section:*

- *Not having be research happening behind a curtain – programmatic folks (univ and CC) can understand the research, we are flies on the walls for what you are trying to do. Trying our hardest to be not colonizing.* (Bhattacharya, 2009)
- *I do not want to go in and tell areas of growth, I want to name strengths or describe the hidden/unnoticed work that institutions are already doing* (Amey et al., 2010; Gutiérrez, 2012)

*Text for this section*

We want to thank all the folks for sharing your time with the site visit team. We are interested in communicating what we did over the past few days, how this partnership profile is created and our intent with this partnership profile. We interviewed with both students and folks that participate and support, respectively the [NAME OF COLLABORATION]. Similarly, we

made observations of the [NAME OF THE CC] in general. During the last day of the visit, all researchers shared and discussed our initial thoughts of the partnership between [NAME INSTITUTIONS] for XX hours. We were interested in creating this partnership profile with a two-fold purpose. First, we are thankful for making time to have met with us over the past few days. We would not be able to conduct research without your collaboration. Second, we are interested in supporting the partnership as much as possible, therefore we created a list of what can and cannot be done with this partnership profile in the sections named "What's Okay and What's Not Okay to do with this Partnership Profile." Lastly, the intent of this partnership profile is to communicate what we are initially observing and coming to understand about [NAME OF COLLABORATION].

In order to write this section, consider the following prompts:

- What are the behind the scenes work that we observed happening in this program/ supporting transfer students beyond the program? (e.g. regular meetings with students and program directors; administrative support buying food for all meetings)
- What did we observe on how this program guides students through the transfer process? (e.g. transfer workshops, 1-1 meetings about individual student pathways, whole student support)
- What did we observe of the programmatic folks interacting with the transfer students?
- Did any of the folks explicitly mention barriers and/or challenges that the partnership has?

## Partnership Profile Use

*Motivation and reasoning for the partnership profile:*

- *Reflection for the site visit team and give back to the programmatic folks who shared their time with us.*
- *Spectrum of how partnerships can happen. Could be useful to have this partnership profile be centered on an institution, or on the S-STEM program that spans campuses, or a mix of both.*

*Text for this section*

This partnership profile is the writing result of a discussion about the collected observations at [NAME OF THE CC]. Here we want to communicate what we have initially observed and how we want to use the observations to align with the research about partnership models, cultural community wealth and equity to answer research questions. We also want to be transparent with you, hence in this partnership profile we have split as much as we can the research intentions and observation in the following sections:

- What's Okay and What's Not Okay in this section of the partnership profile we are communicating how this partnership profile could be used by [NAME OF THE CC].
- Communication Avenue in this section of the partnership profile we want to establish a mode of communication in case we missed valuable information about [NAME OF COLLABORATION].

- Our understanding and the strengths of the partnership in this section we have compiled observations that align or are related to the partnership model based (Amey et al., 2010).
- Our understanding and the strengths of the Community Cultural Wealth in this section we have compiled observations that align or are related to the community cultural wealth (Yosso, 2005).
- Our understanding and the strengths of equity in this section we have compiled observations that align or are related to the equity theory in mathematics (Gutiérrez, 2012).
- Appendix in this section we have included the overall research questions PROSPECT S-STEMM is aiming to answer and a brief summary of the three research papers we are using as guides to conduct research. Lastly, we have cited all three papers (Amey et al., 2010; Gutiérrez, 2012; Yosso, 2005) if you are further interested.

In general our initial observations

In order to write this section, consider the following prompts:

- What does the research team think about having a partnership profile that goes out to [NAME OF COLLABORATION] or to each institution individually?
- We are interested in highlighting the strengths of the partnership building that the 2YC has done. Can we all talk sufficiently about the strengths of the 2YC, 4YC and/or partnership? If not, is it worth giving feedback at all?
- Attach any pictures that support claims in this section

## What's Okay and What's Not Okay to do with this Partnership Profile

*Motivation and reasoning for this section:*

- *Creating a list of 'what is okay' and 'what is not okay' that the site visit team feel comfortable doing*
    - *In the 'what is okay' include the idea of equity, specifically identity (mirror and windows) and power (agency to change the partnership, CC or university, or both) (Gutiérrez 2012), being transparent about intent and creation of this partnership profile, being mindful that these are researcher's initial thoughts about the partnership (extending grace).*
    - *'what is not okay' do not publish these results since they are initial thought from the site the visit, making claims to outside personnel about the observations of the partnership profile…more ideas.*
    - *Inspired from the East Bay partnership profile in which it was written "Please don't distribute this." The statement is vague – what if they do want to share this up internally with other people (Gutiérrez, 2012).*

*Text for this section*

We are interested in supporting the [NAME OF COLLABORATION]. We understand there is a lot of labor that goes in forming, sustaining and justifying a dynamic collaboration between [NAME INSTITUTIONS OF COLLABORATION]. Therefore, we want to be clear about what can be done with this partnership profile.

What is Okay

- Share internally with the institutions to justify why the program is important to support STEM Transfer students to pursue their bachelors
- Share with all the programmatic folks to celebrate all the hard work
- Share…

What is not Okay

- Make claims out from this partnership profile
- Use the partnership profile externally or in the media
- …

In order to write this section, consider the following prompts:

- Did anyone from the site visit team specifically hear about challenges on justifying the partnership or communicating the importance of the program? (If so make sure to include the name of person/unit in the list of What's Okay)
- What are reasonable ways this partnership profile could be shared?
- Where are the places we are not interested in seeing the partnership profile?

## Communication Avenue

*Motivation and reasoning for this section:*

- *Perhaps open up a dialogue for CC to have agency when performing the research* (Gutiérrez, 2012)
    - *Could sound like it is repetitive but we went to be aware of the power differential in the partnership* (Amey et al., 2010)
    - *empowering/motivational for CC to communicate back to the research team any ideas, outliers, concerns, irregularities, misalignments* (Bhattacharya, 2009)
- The format of the report will be a google doc were all (site visits, PROSPECT S-STEM PI and folks from visit get to make comments)

*Text for this section*

*The PROSPECT S-STEM team cannot do this research without your contribution of time and sharing your experiences of sustaining a partnership. We have highlighted a selection of the central partnership-related observations that we made in our site visit. However, we might have missed something that you (all) consider important too. So please feel free to reach out to…*

In order to write this section consider the following prompts:

- Who would be the point person to receive feedback about the partnership profile?
- Could two people be included here, one from the partner institution and the non-partner institution?

# [Project] Partnership Profile

## Our description of the local S-STEM partnership

*Motivation and reasoning for this section:*

- *A written description or pictures of the partnership and the challenges they navigate, like geographical, political or social*
- *Give the visiting site team an opportunity to provide enough context of the partnership to address the rest of the prompts of the profile (Gutiérrez, 2012)*

*Text in this section*

In order to answer this section consider the following prompts:

- *Who is participating? How many students, who are the administrative people? What roles are filled and who has them? Names and titles of key stakeholders?*
- *What and where are the institutions involved in the institutions? Does the partnership support only S-STEM scholars?*
- *What is the situation for courses and shared programming?*
- *Where are they physically located? What are the implications to the partnership based on the geographical distribution?*
- Attach any pictures that support claims in this section

## Our understanding and the strengths of the partnership

*Motivation and reasoning for this section:*

- *Clearly outline the theory being used and the observations from the partnership and decolonizing the work, the partnership might be in multiple stages of this framework, not fully categorized into one stage only.* (Bhattacharya, 2009)
- *Flexibility in this section is two-fold: (1) recognizing what the institutions are already doing and (2) willingness to alter the framework.*
- *Willing to change and delete the prompt questions for this section in order to account for the strengths in the partnerships*

*Text for this section*

In order to write this section consider the following prompts:

- What were the resources that the partners were able to share? Does the partnership have: resources, power, influence, authority, communication systems and other aspects that help facilitate the partnership?
- What relationships exist among individuals, who are at each institution? What is the motivation and the context of the relationships?Did programmatic folks know folks from the other institution by name? Did they seem to know each other well? [Definition of density: Where the social capital relationships are close] What is the evidence of

partnership capital? Do folks value the partnership of both institutions that there is a personal responsibility to sustain the dynamic partnership? The sustainability of the partnership is achieved through the work of individuals, do the institutions recognize the work from the individuals?

- What was observed as social capital? [Definition of social capital: *Social capital usually* has two commonalities in organizational behavior. First, it is connected to a social structure. Second, facilitates certain actions of actors within the organizational partnership. The social connections include components of trust, closeness, amount of interaction between actors, personal power, respect, commitment and integrity]
- What are the goals and how involved are each of the partners? Are there folks who are telling the story or the goals of the partnership to get buy-ins among members?
- Have the partnerships acknowledged the differences in the infrastructures of the institutions?
- Does the partnership celebrate/share successes, highlighting and showcasing effective examples of outcomes and strategies? Does the partnership have a culture of its own? Is this culture embedded in the administrative process in the college?
- Do the programmatic folks know about student's academic performance and their set of skills to succeed?
- What characteristics does this partnership have that fit with a Stage I, Stage II, Stage III description of the partnership model? See the appendix for the description to each, notice the partnership might be at *multiple* stages.
- Attach any pictures that support claims in this section

## Our understanding and the strengths of the Community Cultural Wealth

*Motivation and reasoning for these sections:*

- *Recognition of what the institution is already leveraging the Community Cultural Wealth of the S-STEM Transfer students*
- *Recognizing the language used by the programmatic folks about student's resources/strengths & willing to change and delete the prompt questions for this section in order to account for the strengths in the partnerships*
- *Link how observations from the partnership align with the Community Cultural Wealth framework*

*Text for this section*

In order to write this section consider the following prompts:

- Aspirational — How does the program support students' hopes and dreams for the future, even when recognizing the barriers?
- Linguistic — Do the programmatic folks allow for more than English to be spoken?
- Familial — How does the program (both programmatic folks and students) have a sense of familia (kin) community history, memory and cultural intuition?
- Social — How does the program leverage or support STEM Transfers students with their own social capital?

- Navigational — How do the programmatic folks help the students navigate the educational system or the other institution's bureaucracy?
- Resistant — How does the S-STEM program help with challenging the cultural norm of STEM fields? Do any of the programmatic folks talk about STEM Transfer students about the educational inequities?
- Attach any pictures that support claims in this section

## Our understanding and the strengths of equity

*Motivation and reasoning for these sections:*

- *Recognizing how the partnership is equitable based on the Gutiérrez framework*
- *Recognize how does the programmatic folks support the Transfer S-STEM students equitably*
- *Willing to change and delete the prompt questions for this section in order to account for the strengths in the equity work that folks are doing*

*Text for this section*

In order to write this section consider the following prompts:

- Recognizing equity learning in the transferring community
    - Dominant axis — How do students have access to the transfer information that the program has? Are students explained the transfer process? How much support do the students have from the S-STEM program to make the transfer to a 4YR? How are the programmatic folks up to date with the transfer requirements for S-STEM Transfer students?
    - Critical Axis — Do the S-STEM students see themselves as part of the program? Do the students see a possibility of their curiosity being explored along with the transfer process? How does the program advocate for changes in the institutions to support the S-STEM Transfer students? What are the watts that the program has taken up suggestions or ideas or interests from the S-STEM students want in the program?
- Attach any pictures that support claims in this section

# Appendix

## Goals

The *Collaborative Research: Practices and Research on Student Pathways in Education from Community College and Transfer Students to STEM* (PROSPECT S-STEM), an S-STEM Research Hub proposal, is organized thematically around the development of a network of S-STEM projects to empower low-income STEM students who transfer from two and four year colleges. Part of the research team visited the [NAME THE COLLABORATION] in the past few days to begin this big collaboration. We are interested in understanding (1) how the partnership between institutions are supporting S-STEM Transfer students and (2) creating a community between faculty to learn from each other and collectively explore how to support low-income STEM transfer students. The PROSPECT S-STEM could not do the research without the support and collaboration from [NAME COLLABORATIONS and/or INSTITUTIONS]

## Brief Summaries of the Frameworks

### Partnership Model

The authors Amey, Eddy and Campbell (2010) propose a three stages model to understand the implications of policies on educational practices, particularly noting key levers of change and potential trouble spots.

- *Stage I: Getting Started* — The partners need to know their antecedents (could include but not limited to: resources available to each partner, motivation for partnering, policy context in which they are operating and existing relationships. Each organization has organizational and social capital and these add dynamics to the partnership. ***Social capital*** usually has two commonalities in organizational behavior. First, it is connected to a social structure. Second, facilitates certain actions of actors within the organizational partnership. The social connections include components of trust, closeness, amount of interaction between actors, personal power, respect, commitment and integrity. Where these relationships are close, they can be defined as ***density***. In this case, density means the closeness of relation in the early stages of proposing a partnership. These relationships can bear the notion of trust, flexibility, understanding, grace, forgiveness and promises. Individuals in the social connections may or may not be more central to carrying out the partnership goals, these differences are referred to as ***centrality***. Now, ***organizational capital*** can, but does not have to include social capital, refer to resources, power, influence, authority, communication systems and other aspects that

help facilitate the partnership. Organizational capital can draw unevenly distributed resources, power, influence, authority, communication systems and other aspects of the partnership. Both social and organizational capital are essential for the beginning of the partnership. Factors such as available resources, trustworthiness for follow-through and genuineness of missions and goals, then these can be conducive toward collaborative arrangements. The initial motivation of the partnership can be a co-product of already established relationships or could be state mandates. Either way, there will be a difference on how much social and organizational capital will be leveraged. These will help navigate the tensions of building a partnership. However, the dynamics of the partnership will continue to change and there is a need for effective and consistent communication to establish the context and clarify goals and objectives, which will help to create common vocabulary and understandings.

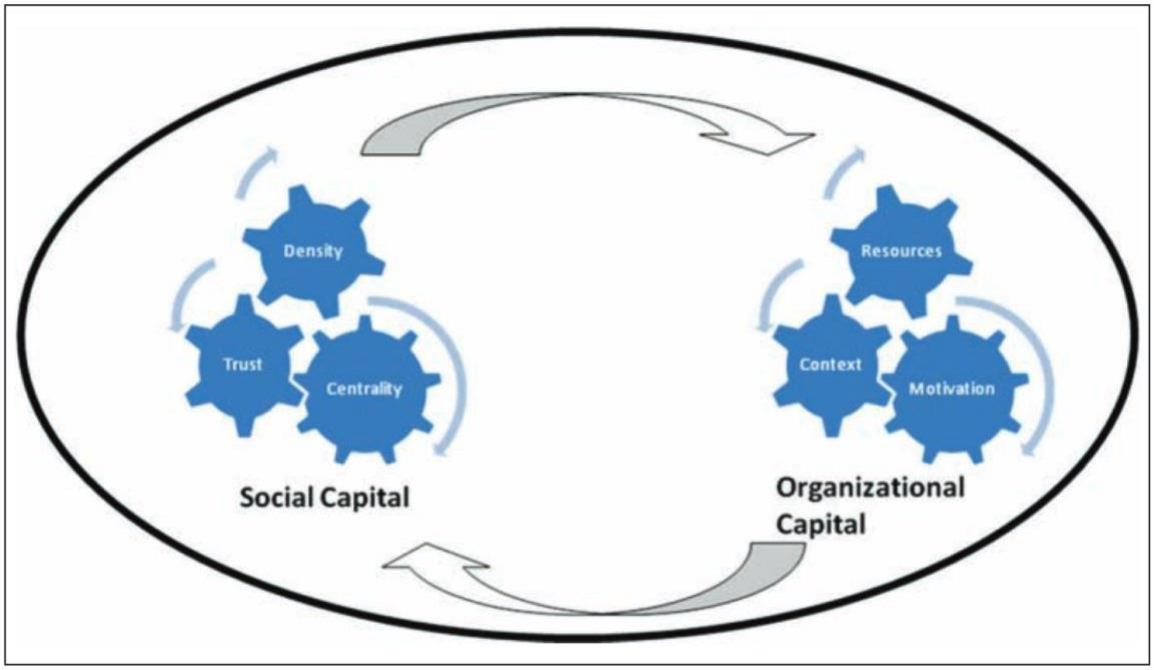



**Figure 1.** Partnership antecedents

- *Stage II: Partnership Development* — In this stage of the partnership, there will be a negotiation of intentions and involvements. Differences of intention or motivation will leverage social capital. Also these differences might threaten the partnership. Through several negotiations, there can be an establishment of roles, which allows for accountability and sustainability. Meaning, the partnership has distinct roles that are objective and aligned with the reason of the partnership. Similarly, the institutions have different infrastructure that changes how each institution enact their goals or their goals differ, meaning the outcomes of their partnership may not be uniform. In this stage it is also important that many people are communicating the meaning and purpose of the partnership and generating buy-in among members. Therefore the leaders need to seize opportunities to celebrate partnership success, such as highlighting and showcasing

effective examples of the outcomes and strategies. Lastly, there needs to be consideration of the champion,  which is an individual or group that advocates for the initiative of the partnership. The champion role to be more inclusive of the personal, organizational and social capital is often what contributes to success. However, an established commitment between the partnership culture and the administrative process of the community college is vital to sustainability. The balance of these two will give the partnership more stability in the future.

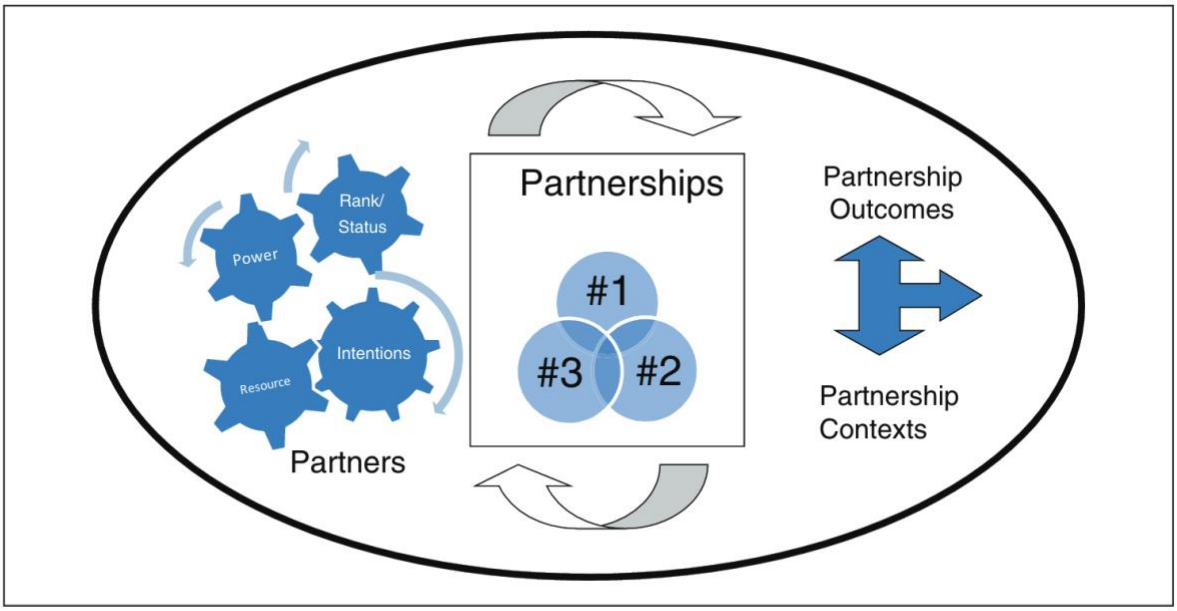



**Figure 2.** Partnership development

- *Stage III: Incorporating the Partnerships* — A partnership has been established when there are agreed norms, beliefs, and networking that align processes among the institutions. The ***partnership capital*** with these collaborations is when both partner's social and organizational capital align. The evidence for it is when the networking that allows the shared beliefs regarding the focus and processes of the partnership is created. However, all individual actors have different power, rank or status, resources and intentions. These dynamics make the partnership more institutionalized. Allowing for more partnership capital to accumulate or diminish depending on an individual's fluctuating social and organizational capital. Nonetheless the partnership capital also depends on how individuals value it and see themselves responsible for the partnership itself. Meaning, individuals work limited time making it difficult if the partnership demands personal time. The sustainability of the partnership tends to be hidden or undervalued work. In the partnership, each institution will become more familiar with the other's values and thresholds for their student's academic performance. Even when a partnership has been institutionalized, there is still energy expended on justifying the partnership and maintenance to the bureaucratic infrastructure of each partner's educational institution.

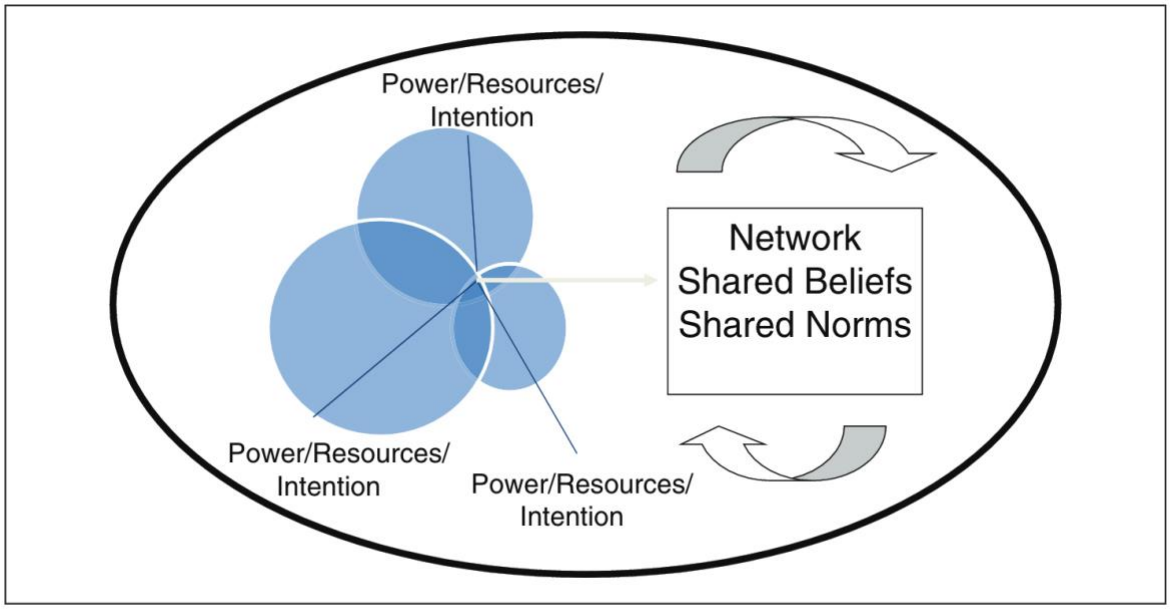



**Figure 3.** Partnership capital

In the conclusion paragraph, Amey, Eddy and Campbell (2010) recognize the importance and effectiveness of the partnerships for the overall educational enterprise.

> “Members of community college partnerships often identify shared values and goals, active participation, aligned processes, successful outcomes, mutual respect, highly focused passion, and good working relationships as the reasons why partnerships continue to exist. If these partnerships are mutually beneficial, if they achieve desired outcomes, and if they are important in the long run, then leaders need to find ways to stabilize and sustain the partnerships beyond temporary funding or the efforts of a single champion." (p. 344)

## Community Cultural Wealth

In this article Yosso (2005) first explains the history of Critical Race Theory (CRT) and emergence of it within education. Therefore, she explains Daniel Solórzano five tenets (with the potential to be a principle) to inform the field of education. First, the intercentricity of race and racism with other forms of subordination. Second, the challenge to dominant ideology. Third, the commitment to social justice. Fourth, the centrality of experiential knowledge. Fifth, the transdisciplinary perspective. The collection of these concepts allow for a theory to centralize and value the experiences of People of Color in education. Yosso (2005) then proceeds to use the education tenets of Solòrzano to criticize Bourdieuen cultural capital theory, which centers the white middle class as the standard for students to perform scholarly. Therefore, the six sources of community cultural wealth in communities of color are aspirational, familial, social, navigational, resistant, linguistic and cultural.

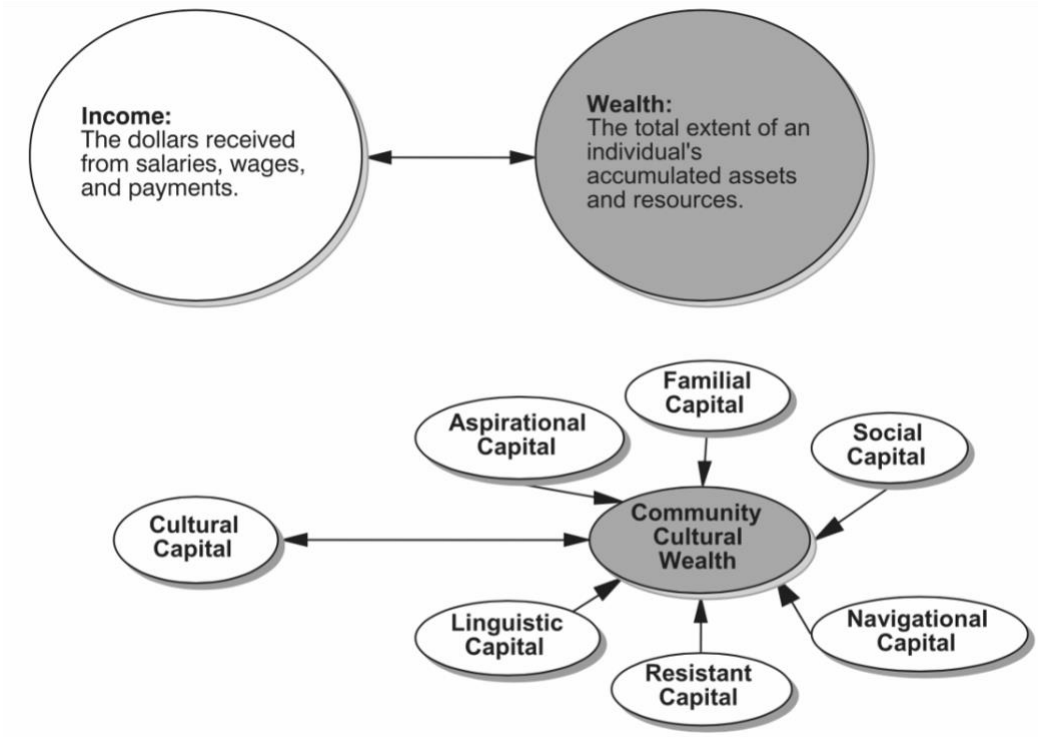



Figure 2. A model of community cultural wealth. Adapted from: Oliver & Shapiro, 1995

| | |
|---|---|
| **1) Aspirational Capital:**<br>*You can maintain your hopes and dreams for the future, even when you run into barriers.* | **4) Social Capital:**<br>*You have networks of people and community resources who support & guide you.* |
| **2) Linguistic Capital:**<br>*You can communicate in more than one way. Example: Speaking more than one language - including different forms of English; Sharing stories (cuentos); Visual art, music, or poetry.* | **5) Navigational Capital:**<br>*You can maneuver / navigate social institutions sometimes not made for you like your school or your doctor's office/clinic.* |
| **3) Familial Capital:**<br>*You have cultural knowledges nurtured among familia (kin) that carry a sense of community history, memory and cultural intuition. You receive support, guidance & resources from your family and/or community.* | **6) Resistant Capital:**<br>*You have knowledge and skills to challenge inequality when you see it. You are part of creating a more just and equitable world.* |

## Equity Framework

Gutiérrez (2012) in the first section of the article communicates the importance of equity and what it means in reference to learning mathematics. In the article she argues and defines equity, as well as mathematical contexts for learning and discusses how these can be done by teachers in a classroom. Additionally, by explaining the context of learning math, she also argues how it can be used as a humanizing tool. She explains and justifies the importance of learning context which supports the complexity of teaching in the United States, rather than generalizing for the sake of generalizing. Gutiérrez definition,

> Equity means fairness, not sameness. So, when we look for evidence that we are achieving equity, we should not expect to find that everyone ends up in the same place.(p.18)

She also acknowledges that current aspects of how equity is defined as a means to use characteristics as race, gender, class, ethnicity, beliefs, proficiency, and sex as to predict mathematical achievement. When considering equity we can think beyond the classroom and into the world. Operationalized, the definition of equity to include the following four dimensions:

- ***Access*** — includes substantial resources that are available to students like: “high-quality math teachers, adequate technology and supplies in the classroom… a classroom environment that invites participation, reasonable class sizes and supports for learning outside of class hours” (Gutiérrez, 2012, p.19). She also adds on access alone is not enough to define equity
- ***Achievement*** — is defined as the tangible measure of a student's mathematical level. Recognizing that achievement in mathematics does have a direct impact in students' life like career opportunities and a different economic future for them.
- ***Identity*** — Gutiérrez uses the metaphor of a mirror (the capacity of students to see themselves in the curriculum) and window (math to be a tool to understand the world, like the statistics of social justices issues of a community). In the classroom there needs to be an attention directed towards what ideas are 'socially valorized' and creating opportunities for students to share from their linguistic and cultural resources.
- ***Power*** — not defined but is measured in the classroom by: voice in the classroom, opportunities for students to use math as an analytical tool to critique society, alternative notions of knowledge and rethinking the field of mathematics as a more humanistic enterprise.

Then Gutiérrez explains how these four characteristics of equity can be arranged in two axis:

- ***Dominant axis*** is composed of access and achievement. Gutiérrez then cites herself "mathematics that reflects the status quo in society, that gets valued in high stakes testing and credentialing, that privileges a static formalism and that is involved in making sense of a world that favors the views and perspectives of a relatively elite group. (Gutiérrez 2007a , p. 39)" (p.20)

- ***Critical axis*** is composed of identity and power. Again Gutiérrez cites her own work, "mathematics that squarely acknowledges the position of students as members of a society rife with issues of power and domination. Critical mathematics takes students' cultural identities and builds mathematics around them in ways that address social and political issues in society, especially highlighting the perspectives of marginalized groups. This is a mathematics that challenges static formalism, as embedded in a tradition that favors the West. (p. 40)" (p.21).

She notes the consequences of these two axes in society. The *dominant axis* are indicators to society that students can play the game of mathematics. While the *critical axis* can affect how the mathematical community can change. Students of historically marginalized communities who, after having demonstrated to the experts of the communities of practice of mathematics, will belong in the community. Yet, Gutiérrez (2012) argues that is not enough. They can exercise the critical axis in the mathematical community to represent their own communities when they have both identity and power. Therefore, no one dimension or axis of equity is more important or relevant than another. They will all rise and subside within a student's mathematical career.

## Research Questions

The following research questions of the PROSPECT S-STEM grant has set out to answer about two-year institutions and four-year institutions partnerships throughout the nation.

Research Question 1: In what ways does partnership capital, cultural wealth, and the individual institutional context of equity shape the development and sustainability of co-equitable partnerships between two-year and four-year colleges focused on supporting STEM transfer students?

Research Question 2: What are effective strategies, programmatic activities, policies, and resources leveraged by partnerships between two-year and four-year colleges that support low-income STEM transfer student success?

Research Question 3: What support from S-STEM programs and two-year and four-year do S-STEM students characterize as most helpful in their pursuit of a STEM degree (associate's/bachelor's)?

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# Nepantleras

## Introduction

The path towards a bachelor's degree for transfer students of color in Science, Technology, Engineering and Math (TSOC-STEM) is shaped by numerous barriers, some of which may be mediated by individuals at bachelor's-degree-granting institutions (BDGIs). Institutional racism remains pervasive in STEM education and manifests across both interpersonal and structural domains (McGee & Bentley, 2017). Our project engages TSOC-STEM in group discussions about how institutional racism operates within BDGIs, while also creating opportunities to promote institutional change aligned with the principles of Transfer Receptive Culture (Herrera & Jain, 2013; Jain et al., 2020; TRC). These discussion groups also include faculty and staff members who support TSOC-STEM in navigating their STEM degrees at BDGIs. In this study, these individuals are referred to as institutional advocates.

### Introduce Nepantla as a Theory – as a Way of Navigating the In-Between of the Dominant/Non-Dominant

*Nepantla* is a Nahuatl word that describes an "in-between" space. In Gloria Anzaldúa's (Anzaldúa, 1993, 2009, 2015) work, Nepantla refers the space between a dominant and non-dominant worlds. In this study, we conceptualize Nepantla as the space between competing narratives about how students earn a bachelor's degree at a predominantly white institution (PWI). Specifically, we position Nepantla as the space between the dominant narrative of a first-time-in-any-college (FTIAC) science student navigating the degree pathway and the non-dominant narrative of a science student of color who began their postsecondary education career at an associate degree granting institution. In this paper, we describe the path of TSOC-STEM path towards a bachelor's degree as a journey through Nepantla.

Within the theoretical framework of Nepantla, individuals who sustain themselves within this in-between space are referred to as *Nepantleras*. The term *Nepantlera* has linguistic roots in both Nahuatl and Spanish. Accordingly, Spanish grammatical conventions related to gender are often applied to the term: masculine words typically end in "o," while feminine words end in "a." Additionally, the plural form in Spanish is indicated by adding "s," and the plural terms generally reflects the gender of the majority of the group. For example, Nepantleras may refer to a group in which the majority are women. Some Nepantleras pass through the in-between space only briefly, while others remain within it in order to support others navigating multiple realities. In this paper, we examine how institutional advocates function as Nepantleras who support TSOC-STEM students navigating Nepantla on their path toward earning a bachelor's degree in STEM.

### Transfer students of Color in STEM/BDGIs as dominant/non-dominant

TSOC often encounter systemic barriers as they navigate pathways toward a bachelor's degree. Some of these barriers may be mediated by institutional advocates—individuals who understand how the university functions and who actively support TSOC in navigating the process toward earning a conferred bachelor's degree. Many BDGIs are primarily designed to

serve students who enter as FTIAC students. In our work, we define transfer students as those who begin their postsecondary education at an associate degree granting institution (ADGI).

TSOC who begin at ADGIs often have extensive experience navigating educational systems compared to their FTIAC peers (Laanan et al., 2010). However, when they transfer to a BDGI, they encounter a new institutional context that may be unfamiliar in terms of its structures, expectations, and requirements for earning a bachelor's degree in STEM. As a result, these students must navigate their pathway within a system that often assumes the dominant trajectory of FTIAC students, while drawing on the non-dominant experiences shaped by beginning their education at an ADGI.

Institutional advocates are faculty, staff, and advisors at an institution that support TSOC-STEM. These institutional advocates provide support while maintaining awareness of the students' needs and the demands of the institutions. For TSOC-STEM students, these needs and institutional demands can sometimes be in tension. In this study, we examine how institutional advocates resist dominant perceptions of scientists and instead support students in reconciling their personal needs with the expectations of the institution.

In this paper, we begin by extending the work of Acevedo (2020). Her research focuses on high school teachers who act as Nepantleras in supporting students in continuing their education beyond high school. Our work extends Acevedo's coding framework into the context of BDGIs. Within this setting, we conceptualize Nepantleras as faculty and staff who support TSOC-STEM in successfully completing their STEM bachelor's degrees.

We interweave this extension of Acevedo's (2020) work with insights from Aguilar-Valdez et al. (2013), who describes stages along the path of conocimiento for K-12 STEM teachers. Drawing from these two bodies of literature, we introduce two emergent concepts that characterize how Nepantleras support TSOC-STEM at BDGIs: *Mestiza consciousness* and *thoughtful language*.

## Our context of study: Nepantla for TSOC navigating a Predominantly White Institution

As we have described above, we contextualize Nepantla as a space between competing narratives about earning a bachelor's degree in STEM—a space that TSOC must navigate and within which they are often support by institutional advocates. Below, we provide a representation of Nepantla as it is experienced by TSOC when entering a BDGI. Our intention in this representation is to communicate the complexity of what the theoretical space holds and also as a guide on what will be discussed in this study.

In order to describe Nepantla, it is first necessary to outline the dominant and non-dominant narratives that shape this space. In this study, the context is a PWI BDGI in the Midwest. At this institution, the normative narrative for earning a bachelor's degree in STEM centers on the experience of a FTIAC student who follows a highly structured course plan and graduates within four years of entering the institution. This dominant narrative is further characterized by courses taught through a Eurocentric framework of science and by assumptions that students maintain full-time enrollment. Additionally, the dominant narrative assumes that students pursuing a bachelor's degree come from socially and economically privileged backgrounds—often white, financially secure, and supported by strong family networks.

In contrast, the non-dominant narrative of earning a bachelor's degree may begin with a student who began their post-secondary education at an ADGI, with a mix of courses transferring

for major and general education credit. The non-dominant narrative may also include courses or educational experiences that incorporate perspectives beyond Eurocentric frameworks of science. Students who follow this pathway are often students of color, may come from lower socioeconomic backgrounds, and may not have access to socially or financially privileged social networks—for example, first-generation-college students. Additionally, students who initially enroll at associate-degree-granting institutions tend to represent diverse populations across gender, race, and ethnicity (Ginder et al., 2019).


*Figure 1 A representation of the dominant and non-dominant aspects for the experience of transfer students of color. 1. Aguilar-Valdez et al. (2013); 4. Yosso (2005); 5. Garza et al. (2023); 6. Taylor & Jain (2017).*

# Literature Guiding Our Work

## Agents of Change – Curanderas

Equity work does not occur in a vacuum (Morales-Doyle, 2019). In our work, we attempt to capture the dynamic of equity in the sociopolitical space that transfer students and especially TSOC must navigate to pursue a STEM career. Systemic racism permeates the transfer process, which is fraught with institutional and structural barriers (e.g. articulation agreements, accessing financial aid). Institutional racism is pervasive in STEM education and manifests across interpersonal and structural domains (McGee & Bentley, 2017). STEM spaces are often white and patriarchal (Leyva, 2021) and "white male dominance in STEM fields…is deeply seated within instructional and institutional practices" (Wang, 2020, p. 130). As a result, TSOC-STEM often find themselves questioning their sense of belonging and wondering if they fit within these environments (Wang, 2016).

Szostkowski & Upadhyay (2019) call for science educational spaces to function as sites of healing that center a communitarian form of justice. Both Aguilar-Valdez et al. (2013) and Szostkowski & Upadhyay (2019) argue that science is taught as an "objective" subject and emphasize the harm of not contextualizing the power and oppression to achieve scientific "objective" knowledge, specifically to historically marginalized groups (Aguilar-Valdez et al., 2013; Szostkowski & Upadhyay, 2019). Szostkowski & Upadhyay (2019) conceptualize equity as moral work from the context of science and science education research.

Aguilar-Valdez et al. (2013) argue that science is an unexamined Anglocentric concept and mode of teaching. In contrast to Szostkowski & Upadhyay (2019), the authors explicitly label the power holder and the harm of the unexamined science and teaching material. Aguilar-Valdez et al. (2013) explicitly draw from Anazladua's framework of Nepantla and describe this harm as *arrebato*. *El arrebato* refers to a state of mind in which a person experiences a sudden

and deeply unsettling rupture or fragmentation that leads them into Nepantla (Aguilar-Valdez et al., 2013).

At the same time, Aguilar-Valdez et al. (2013) calls for science education to be a space for healing. They describe how teachers can act as *curanderas* (healers) to science students by helping them navigate Nepantla stages. This work requires a deep commitment to social change (Basile & Azevedo, 2022; Nasir et al., 2021) where a "teacher Nepantlera holds back nothing to help her/his students in Nepantla" (Aguilar-Valdez et al., 2013, p. 831). In this role, *curanderas* or Nepantleras not only support students as they navigate changing educational environments but also serve as bridges to support TSOC-STEM in navigating the last three states of Nepantla (putting *Coyolxauhqui* back together*,* clash of realities, and shifting realities*)*. In doing so, they act as healing guides for science students.

## Transfer Receptive Culture

We ground our work in the framework of Transfer Receptive Culture (TRC; Jain et al., 2011). TRC, developed from Critical Race Theory, imagines institutions that move away from centering ideologies and practices of privileged people, historic and contemporary, in higher education (Jain et al., 2011). In their book, *Power to the Transfer,* Jain and collaborators (2020) explain that a core principle of transfer receptive culture is "the notion that race and racism should be centered at all times when examining and strengthening the transfer process" (p. 16).

In Jain and colleagues' earlier work (2011), they call for the principles of TRC to permeate both the sending institutions (ADGIs) and receiving institutions (BDGIs) institutions. In our work, we focus on three elements at the receiving institution, referred to as post-transfer elements, to evaluate the alignment (or not) of a BDGI with the TRC. Those three elements are "financial and academic support" – where transfer students can and should expect to have programs and resources that support them; and "community and family support" where transfer students would feel welcomed to bring their families and "their community backgrounds are honored," (Jain et al., 2020, p. 261); and "research and assessment" at the receiving institution that is contextual to evaluating, assessing and enhancing programs that support transfer students of color to extended the scholarship. In our analysis, we intertwine these post-transfer elements—understood as institutional principles—with the actions of the institutional advocates who function as Nepantleras supporting TSOC-STEM. Through this approach, we provide a fine-grained examination of the practices that help sustain and enact these three elements of the TRC framework.

## Nepantleras Supporting Students

While navigating Nepantla, a Nepantlera develops the *mestiza consciousness*. Mestiza is a Spanish term often used to describe many Latines[1] of mixed Indigenous, Spanish, and African ancestry who regularly navigate multiple cultural worlds simultaneously. *Mestiza consciousness* refers to the depth of knowledge and wisdom that emerges from navigating these multiple cultural realities. This consciousness enables a Nepantlera to resist pressures toward assimilation. Within STEM contexts, *mestiza consciousness* centers the strengths and knowledge of historically marginalized communities within modern Western science (Aguilar-Valdez et al., 2013).

[1] This paper aligns with the Diaz et al. (2022) work about the evolving nature of gender inclusive language.

Accordingly, Nepantla and the path of *conocimiento* involve both unpacking TSOC-STEM experiences and healing from them. Students may move through states along the path of *conocimiento* beginning with *arrebato* and eventually reaching nos/otras. In the state of nos/otras, individuals come together to enact change. As Anzaldúa (2000) mentions in an interview: "The future belongs to those who cultivate sensitivities to differences and who use these abilities to forge a hybrid consciousness that transcends the 'us' versus 'them' mentality and will carry us into a nos/otras position bridging the extremes of our cultural realities" (Anzaldúa, 2000, p. 254).

In our exploration of how Nepantleras support TSOC-STEM along this path toward healing, we draw heavily from Nancy Acevedo's work (Acevedo, 2020; Acevedo-Gil, 2017; Conchas et al., 2019). In particular, we build on Acevedo's (2013) work examining Nepantlera educators who support Latine students in continuing their education beyond high school. This study was part of a larger research project in which Acevedo collected oral histories, semi-structured interviews, and weekly ethnographic observations of students in an urban high school. Most relevant to our work, Acevedo employs both inductive and deductive coding to analyze the practices of Nepantlera educators.

Acevedo's (2020) work describes the collective effort of high school teachers and principals acting as Nepantleras to support Latine high school students who want to enroll in community college. Her study illustrates how Nepantleras use multiple resources and collectively work to assist students through the application process. This work includes tangible tasks such as reviewing college and writing recommendation letters. Nepantleras also engage in less visible forms of support, such as maintaining asset-based perspectives and holding high expectations for Latine students' college aspirations. Their efforts extend to meeting with community college recruiters, finding funding for students, and adopting course curricula so that college application materials become part of classroom assignments.

Our work builds on Acevedo's (2020) foundational research on how Nepantleras (high school teachers) support Latine students in enrolling in community college. We extend this framework to examine how Nepantleras, conceptualized here as institutional advocates at BDGIs, support TSOC-STEM as the work toward completing their bachelor's degrees. Using Acevedo's coding framework as a starting point, we investigate what Nepantleras are actively altering within BDGIs to support TSOC-STEM, what aspects of the institution remain unchanged, and how Nepantleras learn which institutional structures and practices require transformation.

## Research Questions

In this paper, we build from the work of Acevedo (2020) and Jain et al. (2011) to explore how institutional advocates support transfer students of Color in STEM (TSOC-STEM) in navigating the Nepantla between narratives about earning a bachelor's degree in STEM. To structure our study, we examine two primary research questions.

1. What are the practices that institutional advocates use to tend to TSOC-STEM with care at a predominately white BDGI?
2. How are the institutional advocate's practices as a Nepantlera aligning with TRC at the BDGI? What can we learn from them?

# Methods

We use the extended case method (Burawoy, 1998; Morales-Doyle, 2017) to focus on analysis of three institutional advocates. In this work, we extend Acevedo's (2020) work on high school teachers acting as Nepantleras who support transfer students of color in STEM as they navigate a BDGI. Acevedo's work developed a description of identifying how high school teachers acted as Nepantleras in students' college applications and aspirations to attend college. We blend this work with that from Aguilar-Valdez et al. (2013) to situate Nepantleras in supporting TSOC-STEM at a BDGI.

We build on this foundation by integrating insights from Aguilar-Valdez et al. (2013) to situate the concept of Nepantlera within the context of science and STEM education. Finally, we incorporate the institutional framework of Transfer Receptive Culture to better understand how the practices of Nepantleras are embedded within, and interact with, the broader institutional culture.

## Data Collection

The project's initial research stage focuses on understanding the context of a large PWI land-grant BDGI in the Midwest. Although the institution itself is predominately white, our project recruited participants from a program within one of its colleges where 94% of the students identify as students of Color. At this institution, approximately 30% of STEM-degree seeking students transfer from ADGI. At the time of this study, the institution had only recently begun shifting its culture toward a more TRC.

## Participants:

### Three Faculty and Staff Who Were Already Supporting Transfer Students of Color

This paper draws on data collected as part of a larger project examining how institutional advocates support TSOC-STEM at a BDGI. Because this was the primary goal of the project, the interview protocol of the interviews was organized into three categories: (1) the background of the interviewee and their role and connection to the BDGI; (2) the interviewee's perspective about how the institution supports transfer STEM students; (3) how the institution supports TSOC-STEM. The protocol was intentionally flexible in order to capture the perspectives of individuals occupying different roles within the university and to understand how institutional actors perceived the institution's support for TSOC.

Recruitment for the interviews focused on faculty, staff, and advisors who were known to support transfer students and transfer students of color navigating the pathway toward a bachelor's degree. Personal connections were used to solicit participation in the interviews, and participants represented multiple roles and positions at the BDGI. The interviews were conducted one-on-one lasting between 30 minutes and 90 minutes. All interviews were collected over Zoom and transcribed. While the framework of TRC informed the design of the interview protocol, the theoretical framework of Nepantla was introduced during the analysis stage. Nepantla helped us interpret the tensions we observed between dominant and non-dominant narratives shaping how Nepantleras supported students navigate the pathway toward a bachelor's degree.

The data informing this paper come from interviews with three participants at the institution – Dreamward, Mike, and Reese. Each participant brought different levels of experience with the institution as well as varying degrees of direct engagement with TSOC-STEM.

### Descriptions of the three participants in this study

Each of our interviewees, Dreamward, Reese, and Mike (all three are participant's self-selected pseudonyms) held formal roles at the BDGI where some fraction of their time was meant to support transfer students. However, supporting transfer students of color in STEM was not the sole responsibility for any of the participants in their institutional role. Another key distinction among participants was the degree of proximity their roles had to STEM students of Color.

Dreamward works closely with transfer students as they navigate their path into a BDGI in her role as an advisor in an established program. Within this program, she maintains both formal and informal contact with students as they progress through their bachelor's degrees. The program in which she works is housed within a STEM college and serves a student population in which approximately 94% identify as students of Color. Additionally, Dreamward also identifies as Black or African American and previously earned her own bachelor's degree in STEM from the same institution.

Reese works at the college level as a transfer STEM student advisor. She is in a position that is brand new within the college, and she was hired from a different college within the same institution. Reese works with students who reach out to her for guidance; however, there is no structured programming that requires students to meet with her. As she described in her interview, reaching TSOC can be challenging because her interactions with students occur primarily through voluntary engagement. Reese identifies as Black or African American.

Mike works at the university level as a director focused on transfer students rather than within a single college. At the time of the interview, his position had been recently established. In this role, he works directly with transfer students and has access to institutional data, including the list of incoming transfer students each semester. Mike identifies as Black or African American and was himself a transfer student of Color at the same institution.

## Analytic Methods

Nepantla as a process is non-linear and can be conceptualized as a spiral that becomes tighter as one moves along the path through it. Accordingly, we present the analysis and findings of this study in a spiral structure, revisiting key ideas to add layers of complexity and nuance to the work that Nepantleras do in supporting TSOC-STEM as they navigate the path to a bachelor's degree. When discussing this structure, I refer to first spiral, second spiral and so on as a way of guiding the reader through the analysis. In Figure 2, however, the spiral is represented in a downward direction, offering a side view description of a spiral that expands as it moves downward.

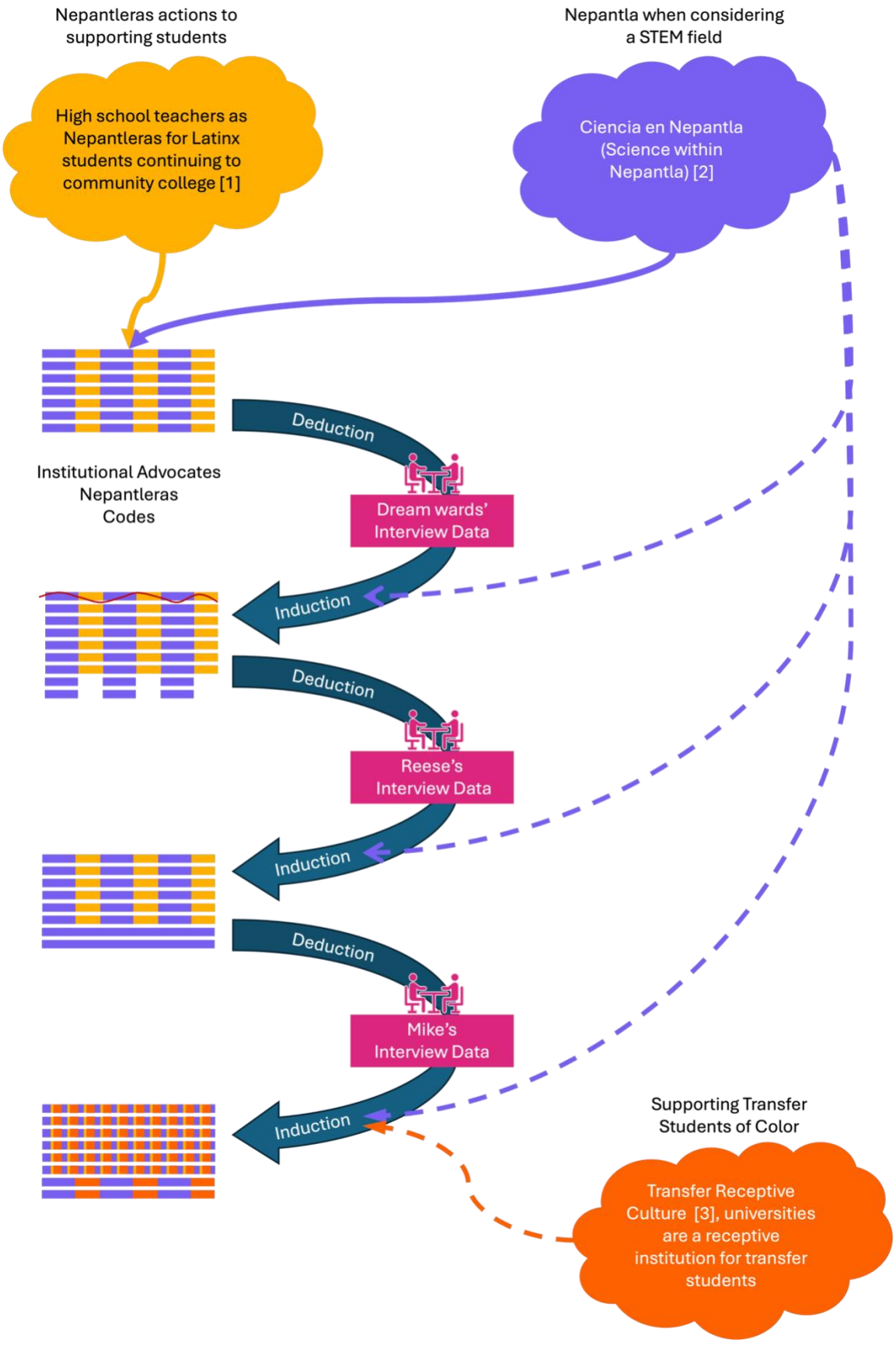
Nepantleras actions to supporting students
High school teachers as Nepantleras for Latinx students continuing to community college [1]
Nepantla when considering a STEM field
Ciencia en Nepantla (Science within Nepantla) [2]
Institutional Advocates Nepantleras Codes
Deduction
Dream wards' Interview Data
Induction
Deduction
Reese's Interview Data
Induction
Deduction
Mike's Interview Data
Induction
Supporting Transfer Students of Color
Transfer Receptive Culture [3], universities are a receptive institution for transfer students

*Figure 2. Data analysis representation about Nepantleras and Nepantlero supporting Transfer Students of Color at a bachelor's degree-granting Institution. Shows creating the a priori codes followed by a repetition of deductive and inductive analysis of the participants*

The first spiral of analysis builds on the work of Acevedo (2020) and Aguilar-Valdez et al. (2013), extending their frameworks to examine how institutional advocates support TSOC-STEM navigating a BDGI. Acevedo's (2020) work identifies the practices of Nepantleras who support students navigating the bureaucratic processes of education, particularly during the transition from high school to community college. Drawing from this work, we adapted and extended the codes presented in that study to encompass (Burawoy, 1998; Morales-Doyle, 2017) the actions of institutional advocates supporting TSOC-STEM at the university level.

We began the analysis with seven *a priori* codes derived from combining insights from these two publications. In Figure 1, these initial codes are represented as bars with two colors (purple and gold). The first set of seven codes is labeled as follows:

- College aspirations for students
- Personal experiences with college
- Roadblocks in fostering college
- Motivation for supporting students
- Changing curriculum to incorporate college guidance
- Seeking support
- Supporting TSOC with financial support

The second spiral of analysis involved a deductive analysis of Dreamward's interview using those seven codes. In Dreamward's interview, we found no evidence supporting the code "supporting TSOC with financial aid" - represented in the Figure X with a red wavy line on top of the first row of the purple and yellow bar. We then revisited Dreamward's interview with an inductive analysis of Dreamward's interview, allowing for new ideas to emerge from the data that were aligned with the Nepantla and TRC framework. In this process two new codes emerged that described the work Dreamward does to support TSOC, these are represented through the two new dash-lines at the bottom codes. After this initial process, six a priori codes remained and we added two additional emergent codes.

The third spiral of analysis returned to the deductive process – this time with Reese's interview. Similar to Dreamward's interview, there were no mentions of supporting TSOC with financial aid so there were no quotes for this code, which confirmed the removal of this code from the set. Then, we engaged in an inductive analysis of Reese's interview remaining seven a priori codes were more detailed and extended to support TSCO navigate a bachelor's-degree-granting institution. The emergent codes from Dreamward's interview were further expanded based on their alignment with Aguilar-Valdez & collaborators work to support TSCO navigate a bachelor's-degree-granting institution.

The fourth spiral of analysis focused on Mike's interview. While Mike's interview confirmed the deductive codes from Dreamward and Reese, his interview was also filled with rich descriptions about the support of transfer students at the institutional level. As a result, in this fourth spiral when we turned to inductive analysis, we added elements Transfer Receptive Culture (Jain et al., 2011). This process added more depth of the definitions of the codes and including the use of Supporting students with financial support code. At the end of this process, we arrived at a rich set of eight codes that representing the practices of institutional advocates to support transfer STEM students of Color.

# Limitation

This study was conducted within the context of a larger project with a different primary objective. As a result, the interview protocol was designed for the goals of the broader project and was not developed specifically to address the research questions of this paper. However, the structure of the interview protocol provided a useful scaffold for the present analysis. The protocol first focused on understanding the participants' institutional roles and positions, then moved to questions about how the institution supports transfer students in STEM, and finally addressed how the institution supports TSOC-STEM. This layered structure allowed us to make analytic claims across multiple levels of institutional practice. Specifically, it enables us to examine how the institution supports transfer students broadly while also identifying distinctions in how support is provided to the transfer students of color in STEM.

# Findings

As we begin presenting our findings, we remind the reader that the purpose of this study was to identify exemplars—curanderas already working within the institution who support TSOC-STEM as they navigate the path toward a bachelor's degree. We highlight this intentionality in our research design because it is not surprising that many of the practices identified in Acevedo's (2020) study of high school Nepantleras are also reflected in the work of the institutional advocates in our study. What we want to highlight is that individuals engaged in this work are already ***present*** at the institution. In the findings that follow, we highlight the practices these advocates are enacting in order to elevate and amplify their work.

## Extending Our Understanding of Nepantlera to Institutional Advocates for TSOC-STEM

1. What are the practices that institutional advocates use to tend to TSOC-STEM with care at a predominately white BDGI?

We began this study by exploring how the work of Acevedo (2020) and Aguilar-Valdez et al. (2013) could be extended to the context of institutional advocates supporting TSOC-STEM at a bachelor's degree granting institution. Through a process of adapting codes and conducting deductive analysis, we identified six of these codes within the interviews of our three participants. In this section, we present examples illustrating how these codes emerged in our data, along with representative quotes that demonstrate how participants described these practices.

| Name of the Code | Description of the code from Acevedo (2020) paper | Educated guess about institutional advocates | Quote from Dream Ward |
|---|---|---|---|
| **College aspirations for** | Teachers have asset-based … and high expectations of | Transfer Advocates have asset-based ideologies and high | "…if [transfer students are] encountering academic difficulty in |

| | | | |
|---|---|---|---|
| **students** (Acevedo, 2020, p. 5) | Latino/a/x students' college aspirations (Acevedo, 2020, p. 5) | expectations of transfer students of color aspirations | the material, you know, in their classes … they understand that the learning responsibility is ultimately theirs…" |

In this paper, we highlight several codes that appeared across all three interviewees to illustrate how the codes developed in Acevedo's work can be extended from a high school context to BDGI.

*Scholarship and financial aid (paying taxes and each semester balancing personal budget)*

The initial code from Acevedo's work described how Nepantleras helped students identify and secure funded internships during high school that would provide financial resources as they prepared to transition in college. Both Dreamward and Reese did not describe institutional or programmatic financial assistance specifically for TSOC at the BDGI. However, this shifted in the analysis of Mike's interview. Mike described intentionally gathering and allocating funds specifically to support TSOC. This practice aligns with the third element of TRC, which we discuss in greater detail later in the paper. For the purposes of this section, we highlight how Mike, acting as a Nepantlera, intentionally worked to secure financial resources to support TSOC navigating the institution.

*Arranging cohorts in classes for STEM students of color*

The initial code from Acevedo's work described how Nepantleras as high school teachers integrated college-going materials into their coursework so that assignments aligned with the timelines and requirements of college applications. Dreamward recognized that she could support transfer STEM students of color by carefully structuring the sequence of courses they take each semester. In particular, she attempted to ensure that students took the same courses together, allowing them to move through key classes as a cohort. Rather than waiting for the institution to formally create a cohort-based program, Dreamward used her advising role to intentionally organize cohorts among the STEM students of Color she advised.

*Community in school*

In Acevedo's work, one code describes how Nepantleras collaborated with college representatives to ensure they had up-to-date information about college applications and then shared that information with colleagues within the high school. In our study, this practice appeared in a different form. All three emphasized the importance of fostering community within the PWI BDGI.

Dreamward, in particular, highlighted that a sense of community is important for all students' success. However, she emphasized that for STEM students of color this sense of community becomes even more critical within a PWI context. Both Reese and Dreamward recognized that the institution is historically structured to support middle- and upper-class white students succeed at their institution and they still wonder and intentionally in their sphere of influence. Despite this structural reality, they intentionally worked within their spheres of influence to make the institution more transfer receptive.

In practice, this meant recognizing the importance of creating spaces where transfer students of Color could experience the sense of community that family and social networks often

provide outside the university. Dreamward, Reese, and Mike each described efforts to cultivate this sense of belonging by altering what they could within their respective roles at the institution.

## Emergence of Institutional Advocate's Mestiza Consciousness

In our spiral analysis of the data from these three institutional advocates, we also saw the emergence of a code we dubbed *mestiza consciousness* as it aligns with the work from (Aguilar-Valdez et al., 2013). Key to *mestiza consciousness* is the awareness of how multiple realities can exist. It reflects the challenge of existing in multicultural spaces while recognizing the different sources of knowledge that shape those spaces. *Mestiza consciousness* allows individuals to exist within multiple cultural spaces simultaneously and to navigate cultural spaces that differ from the dominant culture.

In our analysis of the institutional advocates' interviews, the code of *mestiza consciousness* emerged when as:

> *Institutional advocate is familiar with and continues learning in-depth knowledge about the bachelor-granting institutions structural support (or lack thereof) towards transfer students. Institutional advocates also wonder and imagine what the institution can do to reduce the barriers or friction for transfer students of color to be successful. There is a deep knowledge of the actions and choices TSOC-STEM make to navigate traditionally white-academic STEM paths at a bachelor-degree granting institution.*

### Dreamward

To exemplify this emergent code, we turn to the data from Dreamward. In her interview, Dreamward demonstrated deep knowledge of the institutional infrastructures that both support and inhibit the success of TSOC-STEM, while also showing an awareness of the broader STEM pathway within a large WPI BDGI as reflected in the three quotes below. She understands the requirements for completing a bachelor's degree as well as the steps necessary for students who wish to pursue education beyond the undergraduate level.

Her knowledge extends to processes such as applications and requirements for medical school and graduate programs. Beyond understanding these structures, Dreamward actively works to create additional supports for TSOC-STEM and identifies ways to reduce friction along their educational and career pathways. One example of her work as a Nepantlera is intentionally fostering opportunities for TSOC-STEM to build community within the PWI.

*...So if you're on your way to graduate school, you know you want to beczzome a research scientist. You have to make sure you're getting the research experience. You know, that's going to make you stand out. Also as a part of that research experience, professionalizing that research experience. So, you know, getting out there talking. And that's something else that I've been talking about a little bit more of my students, because part of development is learning how to advocate for yourself, [Mmm mhm] talking to your PI, or mentor, your research mentor… so similar, like advice as it relates to like pre health students…*

*...transfer students when I first started working with them. [Got it] Like learning about it, I kind of understood why. And it was like, you know, they didn't get a welcome, you know, FiTIAC students, they get a welcome, you know. You know, they get a orientation, um, and transfer*

*students were just kind of like thrown [Yeah] and, you know, expected to just be like, you know, like returning students, but it's not the same…*

*…processing those transcripts. Lord have mercy! They can take forever, right? [Okay] and so just making sure that the transcript get process and the get process accurately. I would actually like to see Michigan State be a little bit more proactive about, um, evaluating courses at other institutions…*

## Mike

Throughout the interview, Mike demonstrated extensive insight into both students' experiences and the ways the institution is beginning to change in order to better support and understand the needs of transfer students of color in STEM. Notably, Mike's *mestizo consciousness* – his awareness of the institution's current limitations while also recognizing its capacity to evolve and become more responsive to the needs of TSOC-STEM.

Mike's quote describes the importance of recognizing that the institution must develop a deeper understanding of TSOC-STEM experiences. To address his need, he supported the organization of the focus groups with students. This example highlights his—his awareness of the institution's current limitations while also recognizing its capacity to evolve and become more responsive to the needs of TSOC-STEM. Mike said,

*…We interviewed transfer students of color. And some of the experiences they shared in these listening lab focus group sessions were just the importance of having a mentorship, improving the credit evaluation process, being also connected to faculty in other transfer students as well…*

This code also overlaps with Acevedo's (2020) concept of seeking support, where high school Nepantleras collaborated with community college recruiters or other educators to ensure they had up-to-date information to guide students. In our context, Mike enacted a similar practice by directly engaging TSOC-STEM to understand the kinds of support they would like to see from the BDGI. This approach also aligns with the framework of TRC (Jain et al., 2011) which emphasizes the importance of research and assessment within the receiving institution. In the quote above, Mike points to the need for the institution to better understand TSOC-STEM experiences in order to inform changes that could improve their pathways through the institution.

## Reese

Reese's *mestiza consciousness* is largely oriented toward the responsibilities of her role rather than explicitly centering TSOC-STEM. She recognizes the importance of community for TSOC-STEM but does describe how such a sense of community is created or sustained on campus. Similarly, she acknowledges the value of formalized institutional relationships yet does not discuss specific ways she engages with community colleges or other external/internal stakeholders. Reese does, however, describe how she helps students navigate the university system by directing them to campus resources, such as mental health services or tutoring. In doing so, she positions herself as someone who can help students located the support structures necessary to succeed within the institution.

Reese exemplifies aspects of *mestiza consciousness* through her awareness of both the institutional structures and the experiences of students navigating them. At the same time, her comments reveal a tension between institutional accountability and the impact of institutional practices. This tension becomes visible in how she discusses transfer students. Like mentioning that transfers students—for example, when she frames the need for additional support as a result

of students not meeting the university's preferred standards of performance in mathematics courses. Reese said,

*…Students that have to take math classes they are needing additional resources with instructional help, tutoring, navigating those math classes. Also, I've seen an increase of students needing mental health services. Several of the students have contacted me asking where do they get a mental health check-in. They like to talk to some professionals regarding that. Also, accommodations. If students need accommodations for test, we need more extra time or how to view the test, they're asking for accommodations as well…*

Similarly, she mentioned that students did not engage at the BDGI is differently (bolded in the quote), implicitly she is comparing transfer STEM students to their peer counterparts, STEM FTIAC, when she says

*…Well, students have shared with me their experiences, can be overwhelming at time. They have definitely learned some lessons on their journey, and* ***they struggle sometimes to become engaged****…*

and

*…Seems like students sometimes are unwilling to share. So that might be some resistance. But, again, if we create a comfortable welcoming space for them that they feel comfortable sharing hopefully, that would be eliminated, but that would be the only thing I can think of off the top of my head…*

Resee notes that transfers students need additional help and support because they are not meeting the university's preferred standards of performance in mathematics courses. While she identifies one areas in which the institution could provide support for transfer students, there is limited questioning of whether the institutional expectations themselves might also need to change.

## Emergence of Thoughtful Language

The second emergent code from our data analysis was *thoughtful language*. On the surface, this code might appear to capture simple care in defining or naming ideas. However, our analysis of interviews of the interviews suggests that it reflects something deeper than careful wording. Aligned with the *mestiza consciousness* demonstrated by these institutional advocates, this code reflects their awareness of the actions and decisions TSOC-STEM make as they navigate traditionally white academic pathways. The advocates in our study demonstrated an awareness of their own practices and articulated how using *thoughtful language* could impact students. We define *thoughtful language* as follows*:*

*Institutional advocates are mindful about the word choice or intonations or clarifying popular connotations of popular phrases when describing experience of transfer students both at the bachelor's degree-granting institution and/or community colleges. Their thoughtful language is considered when talking to either transfer students of color or about transfer students of color to their colleagues at the same institution.*

## Dreamward

Dreamward demonstrates intentionality in her language and word choices when describing TSOC-STEM experiences and their intersecting identities within the BDGI. As illustrated in the quotes below, Dreamward reflects carefully on the implications of particular terms. For example, she contrasts language such as "behind" with phrases like "priority areas to work on" (bolded in the quote), recognizing how these linguistic choices can shape how students understand their progress and abilities. She also considers how students' individual goals may or may not align with the dominant narrative about the expected timeline for completing a bachelor's degree in STEM. Dreamward's thoughtful language helps to reduce potential barriers that can arise between TSOC-STEM and institutional advocates, demonstrating how careful word choice can foster more supportive and affirming interactions.

*...And you also have to be very careful about the language that you use. Not, never saying somebody is behind or anything like that. Never using language that is shaming or anything like that. But, {inaudible} I tell 'em we're going to review your progress but it's with the, with the, [Mhm] with the purpose of creating goals. So Yes. We're going to see, where you're at and then that can help us identify some, you know,* ***like priority areas for you to work on****...*

*...if they're encountering academic difficulty in the material, you know, in their classes, they're more ready to blame the professor [Mhm] or, you know like, blame whatever structure, you know, is there. Not to say, and I don't want to dismiss that, because yes, not everybody's learning style, [Yeah] you know, and teaching style matches…*

*...So for transfer students. But again, I want students to make their academic goals and typi, and those academic goals typically, you know, is graduating within a certain period of time. And so we will work on that to the degree possible…*

## Reese

For the *thoughtful language* code, Reese also demonstrates moments in which she highlights the strengths that transfer students bring with them. For example, she stated:

*...The great thing about these students is they know how to be college students. So they take their experiences from other colleges that can be applied to [BDGI]. They might have found some study strategies that worked for them, they figured out a certain routine, organization system that have or haven't worked for them. So the great thing is, like I said, they bring that college student know how…*

This quote reflects Reese's recognition that transfer students arrive with valuable experiences and strategies developed in prior institutions. At the same time, her comments also suggest that she may be in earlier stages of developing *mestiza consciousness*. While she highlights students' strengths, some of her language elsewhere in the interview implies deficit-oriented framing, and there is limited recognition of how institutional structures or expectations shape transfer students' experiences.

### Mike

For the *thoughtful language* code, Mike extends the concept beyond discussions of transfer students themselves. His reflections also include the colleagues he collaborates with across the institution and the broader institutional efforts to support transfer students. At the same time, Mike spoke frankly about the institution's limitations. He acknowledges the steps the BDGI has taken to support transfer students while also recognizing that the experiences of transfer students of color continue to lack adequate support.

> *…some of the experiences they shared in these listening lab focus group sessions were just the importance of having a mentorship, improving the credit evaluation process, being also connected to faculty in other transfer students as well…*

and

> *…Whether that'd be increasing the amount of transfer students of color to STEM, but then also providing the necessary support mechanisms once they get here on campus, whether it be through interactions with faculty, with other students, engagement with administrators. So, my understanding of this … group is how do we build an environment that is very inclusive, that recognizes the value and just success of our transfer students of color in the STEM field…*

## Layering of Transfer Receptive Culture

Mike's work as a Nepantlero at the BDGI aligns with the third TRC element of "research and assessment." He explicitly collaborates across the institution to assess how transfer students are navigating the BDGI. Although the research he described was not specifically focused on TSOC-STEM, he supported internal efforts to better understand how receptive the institution is to transfer students. Importantly, these efforts centered the experiences of transfer students themselves in order to identify institutional changes that could improve their pathways. Rather than perpetuating deficit mindsets about the transfer students at the BDGI. Conducting internal evaluations of the transfer student experience in this way aligns closely with the third TRC element and reflects the critical stance of prioritizing student experiences in institutional assessment.

Mike's work also aligns with the first TRC element of "financial and academic support." During the interview, he reflected on how his role positioned him as a representative of the institution and gave him influence to advocate for institutional change. As a university-level transfer student director, he described efforts likely in collaboration with his team, to raise funds for scholarships dedicated to transfer students. Because Mike operates at the university level, his initiative represents an institutional commitment to financial support for transfer students at the BDGI.

Dreamward and Reese, as Nepantleras, also indirectly contributed to the first and third elements discussed above. However, Mike's interview included explicit examples of research and financial initiatives tied to his role as transfer student director. This distinction highlights how transfer students have begun to receive attention at the institutional level. At the same time, as demonstrated through Dreamward's and Reese's work, TSOC-STEM remain less explicitly centered within the college-level structures where many STEM majors are situated.

## Discussion and Implications

In this paper, we examined the practices of three institutional advocates who act as Nepantleras supporting TSOC-STEM as they navigate Nepantla on their path toward a bachelor's degree. We present these three advocates as exemplars, while also recognizing that their work is not unique. Across institutions, there are individuals—what we describe as "system-watchers"—who pay close attention to how institutional structures shift and evolve while simultaneously supporting the students who are swept up in the changes. These advocates understand the complexities of navigating a PWI BDGI as a TSOC-STEM and intentionally create space to support students as the move through these institutional landscapes.

Our analysis suggests that these system watchers can be understood along a spectrum, where the depth of *mestiza consciousness* corresponds to how advocates conceptualize the possibility of institutional change to better support TSOC-STEM. In this analysis, Mike appears toward the far end of the spectrum, as he consistently reflects on how the institution might shift or evolve to improve transfer students' experiences. Close to Mike is Dreamward, whose careful use of language reflects a strong awareness of how institutional structures can create barriers for students. On the other end of the spectrum is Reese, who is beginning to consider how institutional structures shape the experiences of TSOC-STEM, but whose reflections suggest that this awareness is still developing.

We argue that these advocates act as Nepantleras because they draw on their own personal experiences to support the TSOC-STEM. Dreamward brings insight from her experiences as a STEM student of Color at the same institution. Reese draws on the skills she developed supporting students who transferred into another STEM program at the institution. Mike relies on his own experiences as a TSOC at the same university. All three participants have longstanding relationships with the institution, either through their employment, their educational pathways, or both.

Dreamward and Mike have both navigated the institution as students and, over their years of professional experience, have developed deep *conocimiento* about how the institution operates, whether those operations support or hinder TSOC. Reese represents a more recent Nepantlera, particularly with respect to understanding the transfer student experience. During the interview, for example, Reese appeared less aware that transfer students often carry multiple responsibilities beyond their bachelor's degree when compared to their FTIAC peers.

As institutional advocates, sustaining oneself within the space of Nepantla presents a particular challenge because much of the work is intangible. These forms of labor are not always formally recognized but are central to supporting TSOC-STEM as they navigate the institution. The intangible dimensions of this work include:

- Staying up to date on what the institution is doing in making the efforts to support TSOC-STEM
- Learning from the TSOC-STEM experiences and believing their realities (Shifting Realities), rather than reproducing deficit narratives about transfer students
- Feeling empowered within one's role to imagine and help create different institutional possibilities for TSOC-STEM

As institutional advocates and Nepantleras, these three participants resist the PWI BDGI culture that often defines what it means to mentor or support a "successful" STEM student. Instead, institutional advocates listen carefully to TSOC-STEM and ask about their experiences

in order to better understand the kinds of support students need to pursue their desired careers through a STEM bachelor's degree. Through this process of listening and asking, advocates enact the work of navigating Nepantla, the capacity to wonder about new and old beliefs, reflected in the codes presented in Table 1.

For example, Dreamward questioned whether the BDGI could notify the TSOC-STEM earlier about their admission to the institution. She also described sharing students' frustrations about the slow process of evaluating and accepting transfer credits and wondered how these institutional processes might change. When institutional advocates share these reflections and exercise her/his/their Nepantla navigational practices, they not only validate the TSOC-STEM's challenges of becoming a scientist but also expand their own *mestiza consciousness*.

One outcome of sustaining oneself in Nepantla is the development of *thoughtful language*, illustrated by Dreamward's reflections on the power of words. When institutional advocates use *thoughtful language*, they address both interpersonal and structural dimensions of institutionalized racism. Dreamward explicitly recognized how language shapes whether TSOC-STEM feel supported within the institution, acknowledging that students themselves are also navigating Nepantla. In this sense, using *thoughtful language* to represent TSOC-STEM experiences within BDGI becomes an act of narrative change—a seed of transformation that reflects the work of a Nepantleras.

Using *thoughtful language* when speaking with or about TSOC-STEM is therefore not merely rhetorical; it is relational and grounded *en curar* (in care). It reflects an ethic of support that recognizes the dignity and complexity of students' experiences. It is an act of love (which is precondition of acting as a Curandera).

In using *thoughtful language*, an institutional advocates' *mestiza consciousness* expands beyond identifying institutional deficits, such as academic challenges or rigid timelines for graduation, toward actively creating spaces of community among TSOC-STEM. In doing so, they establish tangible sites where both institutional advocates and TSOC-STEM, can collectively navigate Nepantla together.

## Conclusion

Through this analysis, we argue that institutional advocates function as system watchers. Being a system watcher involves the diligent work of listening to both the administrative changes happening at the institution and to the experience of TSOC-STEM within those systems, while helping reconcile these two sources of knowledge. These Nepantleras do more than observe institutional dynamics—they act as *Curanderas*. They recognize what the institution provides, and what it lacks, for TSOC-STEM and then work within their own roles to address those gaps.

We argue that the emergence of *mestiza consciousness* and *thoughtful language* represents key elements of how institutional advocates enact their roles as Nepantleras. In advancing this argument, we draw on the framework of TRC (Jain et al., 2020) and examine its operation at the level of specific colleges through the institutionalization of resources for TSOC-STEM. The codes of *thoughtful language* and *mestiza consciousness* illustrate how institutional advocates address both the interpersonal and structural dimensions of institutionalized racism.

Dreamward, Reese, and Mike embody the characteristics of what Dowd and colleagues describe as transfer agents: individuals who "assist students with navigating the transfer pipeline while validating their education aspirations and easing their possible fears of not belonging," (Dowd et al., 2006 as cited in Jain et al., 2020, p. 98). Through their actions, the communities

they cultivate with TSOC-STEM contribute to students' success at the BDGI and help enact the post-transfer elements of Transfer Receptive Culture.

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# Shifting Realities in Physics Spaces: Supporting Students like Pablo, a Transfer Student of Color

## Introduction

The pathway to a bachelor's degree for transfer students of color in Science, Technology, Engineering and Math (STEM) is shaped by barriers that may be exacerbated—or in some cases, mitigated—by institutional structures, disciplinary norms, and individuals within bachelor's-degree-granting institutions (BDGI). Institutional racism remains pervasive in STEM education and operates across both interpersonal and structural domains (McGee & Bentley, 2017). For physics transfer students of Color in (physics TSOC), the pathway to a bachelor's degree is often circuitous and marked by numerous obstacles (Dachille & Quan, 2024). When physics students begin their postsecondary education at an associate-degree granting institution (ADGI) and later transfer to a BDGI, they must navigate additional barriers, including unspoken disciplinary norms embedded within the pathway to completing a bachelor's degree in physics.

Transitioning from an ADGI to a BDGI is not part of the dominant set of expectations typically assumed in physics degree pathways. For example, only about 12% of bachelor's degree earners begin their post-secondary education at an ADGI (Pold & Mulvey, 2025). Furthermore, PER has rarely centered ADGI students in studies examining how to support physics learning or persistence, leaving the experiences of ADGI transfer students largely underexamined (Kanim & Cid, 2010).

To better understand these experiences, we draw on the framework of *Nepantla*, which conceptualizes the process of navigating between socially expected pathways and lived realities (Aguilar-Valdez et al., 2013; Anzaldúa, 2015). Nepantla describes the experience of inhabiting an in-between space that is often marked by uncertainty and unease. At the same time, the framework provides a way to understand how individuals navigate this space—both those who sustain themselves within the in-between and those who pass through it more briefly. As a theoretical framework, Nepantla offers tools for understanding how individuals—referred to as Nepantleras—develop the capacity to remain within this space of tension and transformation while supporting others who are navigating it.

*Shifting Realities* occurs when Nepantleras create a hybrid reality that honors prioritizing connection of our authentic parts and simultaneously recognizing our differences. In this reality, Nepantleras have the capacity to heal (Aguilar-Valdez et al., 2013; Anzaldúa, 2015). In this paper, we examine how facilitated group discussions between physics TSOC and institutional advocates in a physics department can create a space of Nepantla – a space for TSOC-STEM to address systemic change in the BDGI (with the support of faculty and staff) as a path to confronting institutional racism and working toward a more Transfer Receptive Culture (Herrera & Jain, 2013; Jain et al., 2020; TRC). We argue that facilitators and advocates cultivate Nepantla space within group discussion environments, creating conditions that support physics students as they navigate their unease and uncertainty that often accompanies their educational pathways.

## Transfer Advocacy Groups: A Coalition for Change

Our project emerged from work on institutional change described by Departmental Action Teams (Ngai et al., 2020; Quan et al., 2019), which emphasize the principle of engaging students as partners in the process of institutional change. Building on this approach, we considered how an institution might move toward a more TRC (Herrera & Jain, 2013; Jain et al., 2020). We began by creating structured group discussions in which students collaborated to generate ideas for improving their institution based on their own experiences as physics TSOC. These discussions focused on identifying ways the university could better support physics TSOC. We called these discussion groups Transfer Advocacy Groups (TAGs). TAGs were designed as collaborative spaces within a BDGI where participants could collectively ideate and implement concrete improvements to support physics TSOC. Each TAG consisted of three groups of participants: physics TSOC (3-5 students), institutional advocates for physics TSOC (2-3 staff or faculty members), and facilitators (1-2 individuals). Institutional advocates were faculty or staff already engaged in supporting physics TSOC as they navigate the BDGI. Facilitators were members of the institution responsible for coordinating meetings, leading discussions, organizing polls, and maintaining meeting agendas and notes. The primary goal of TAGs was to create opportunities for physicists to come together in conversation in order to better understand the experiences of physics TSOC.

Throughout the TAG meetings, participants' roles shifted as the discussions evolved. In some meetings, TSOC shared their experiences while institutional advocates listened and reflected. At other moments, advocates described what it would look like to support TSOC through their bachelor's degree. The sharing of the experiences across these different power positions created space for both students and advocates to collectively consider the uncertainties surrounding what institutional changes might better support TSOC. Throughout these changing roles, facilitators worked to center students' voices in the meetings. This included meeting outside of the TAG sessions to reflect on strategies for maintaining student-centered discussions.

Although TAGs were grounded in the principles from the Departmental Action Teams (Quan et al., 2019), this study focuses specifically on how institutional change can begin through interpersonal interactions. We explore how these interactions are supported when participants establish shared expectations for how the group will engage with one another. Paying attention to these interpersonal interactions is important because, for students of color, such interactions within physics spaces can be fraught. Physics Education Research had documented the systematic discrimination faced by physicists who do not fit dominant expectations—typically white, male, masculine-presenting, and assertive (Hazari et al., 2010; Robertson et al., 2023). In group settings such as meetings, participants have the opportunity to discuss how they will interact with and support one another, as well as how they will pursue the goals of the meeting. This study contributes to that body of work by examining the interpersonal interactions that emerge within TAG meetings and how they shape efforts toward institutional change.

## Creating a Space of/for Nepantla considering Transfer Receptive Culture

To focus on interpersonal interactions in the process of creating institutional change, we intertwine an institutional change framework – Transfer Receptive Culture (Herrera & Jain, 2013; Jain et al., 2020) – with a framework that centers individual journeys - Nepantla (Aguilar-Valdez et al., 2013; Anzaldúa, 2015). Jain and Herrara (2020) present Transfer Receptive Culture as drawing from Critical Race Theory to imagine institutions that shift away from

centering the ideologies and practices of historically privileged groups in higher education. In contrast, Anzaldúa conceptualizes Nepantla as a state of consciousness in which individuals question existing beliefs, develop new understanding, and transforming their worldviews (2015). Nepantleras navigate Nepantla along the Path of Conocimiento (Aguilar-Valdez et al., 2013). *Conocimiento* represents a dynamic combination of knowledge and wisdom that continuously changes with experience and guides your actions and choices.

Both Transfer Receptive Culture (Jain et al., 2011) and Nepantla (Anzaldúa, 2015) center historically marginalized people in order to provide tools to mediate modern day institutionalized racism, in their respective contexts. In this work, we bring these frameworks together by examining the community support element of Transfer Receptive Culture alongside the ways Nepantleras support one another within TAG meetings at the level of interpersonal practice. The authors of this study, along with three collaborators, created the TAG meetings as a space for TSOC to develop ideas and participate in efforts to improve their institution.

This paper proceeds as follows. First, we review the literature on transfer students in physics and consider how group discussions can function as sites for institutional change, building on the work of Departmental Action Teams (Ngai et al., 2020; Quan et al., 2019). Next, we review scholarship on Nepantla in science education (Acevedo-Gil, 2017; Aguilar-Valdez et al., 2013) and discuss how Nepantla can lead to shifting realities. Next, we examine a single case of Nepantla emerging for a physics TSOC, focusing on how the facilitators and institutional advocates supported the student in navigating uncertainty and unease. Finally, we conclude with recommendations and implications for instructors and institutional advocates who seek to create spaces of Nepantla for transfer students of color in physics.

# Literature Review

## Transfer Students of Color in Physics

Physics TSOC begin their careers at an ADGI and, if they wish to continue their studies, they transfer to a BDGI. According to the AIP Statistics Report (Pold & Mulvey, 2025), about 13% of students who received a bachelor's degree attended a two-year college before enrolling at a four-year program. Dachille & Quan's (2024) work highlights the persistence of transfer students when pursuing a physics degree. Despite this, physics education research has paid relatively little attention to the experiences of physics transfer students specifically, even though broader literature exists on transfer students and on STEM transfer pathways.

The transfer student literature has mainly focused on vertical transfer (the transition from a ADGI to a BDGI) and ideas of transfer shock (Hills, 1965) where students experience a drop in their academic performance post-transfer. This research has focused on the systemic perspective of transfer students. More recent work focuses on understanding students lived experiences during the transfer process (Laanan et al., 2010; L. A. H. Wood & Sawtelle, 2022). Within STEM, transfer students often report feelings of isolation upon arriving at a BDGI (Wang, 2020) and frequently express a desire for stronger institutional structures to support their transition and persistence (Townsend & Wilson, 2006).

Universities can better support transfer students by recognizing the experiences and knowledge students bring with them prior to arriving at the institution. Transfer students often already understand how to navigate academic institutions; they just need support in becoming familiar with the structures and expectations of a new one. Many also arrive with a strong sense

of academic purpose and clear goals for what they hope to accomplish during their time at the BDGI. Supporting transfer students in integrating their personal and academic experiences can therefore be particularly important, as these dimensions of their lives are often closely intertwined. Additionally, institutions can provide meaningful support by creating opportunities for transfer students to connect with faculty.

There have been several successful attempts to support transfer students by intentionally creating a sense of community (Townley et al., 2013). This includes first-year seminar courses (Fematt et al., 2021), informal learning resources such as mentor programs (Flaga, 2006), and course-based research experiences (Majka et al., 2021). Sawtelle's recent work at MSU suggests that transfer-supporting efforts make the university feel smaller through building a system of cohorts for CC transfer students to join (L. A. Wood et al., n.d.), supporting spaces for CC students to build information networks (Cosby et al., 2025), and creating physical spaces for informal gathering and connection (Wood & Sawtelle, in review).In this study, we follow Dachille & Quan (2024) in noting that the commonly used terms "two-year college" and "four-year program" do not adequately reflect the realities of physics transfer students' experiences. Instead, we use the terms associate degree-granting institution (ADGI) when referring to community colleges and bachelor's degree-granting institution (BDGI) when referring to universities.

In summary, there is relatively little scholarship specifically examining the experiences of physics TSOC. Prior research has documented the complex ways that STEM students of color experience marginalization and structural racism. Literature also highlights beneficial supports for transfer students. Yet these particular supports do not foreground the intersectional identities of TSOC and may miss the mark on disrupting the racialized experiences of STEM students on university campuses. We argue that it is important to consider the unique intersections between the transfer student experience and racialized experiences of students in STEM.

## Group Discussions: Department Action Team

Effectively creating change within a department is accomplished through collaboration. Discussions can build buy-in and agreement about what changes are needed to transfer institutional spaces (Ngai et al., 2020; Quan et al., 2019). Moving a department toward a more Transfer Receptive Culture requires intentional awareness of the systemic barriers faced by physics TSOC and collective action to address them. Our work draws inspiration from the Department Action Team's (DAT) extensive tool kit on how to create change (Ngai et al., 2020). In our adaptation of the DAT work to the TAG we focus on several key elements: students as partners, the role of facilitators, collective action, and process skills.

The principle of *students as partners* emphasizes the importance of bringing students and faculty together in making educational decisions. Enacting this principle requires demonstrating that students' ideas as are genuinely valued rather than tokenized (Hamerski et al., 2021; Quan et al., 2019). Centering students as partners in TAG meetings is particularly important because the voices and ideas of physics TSOC are rarely foregrounded within STEM spaces. One way TAGs operationalize this principle is by ensuring that collective actions emerge from the suggestions and experiences shared by physics TSOC themselves. In this way, proposed changes within the physics department are grounded in students' firsthand experiences of systemic barriers and are developed through collective thinking aimed at supporting future physics TSOC.

*Facilitators play a key role* in supporting a DAT in enacting their principles, and this is also true for the TAG. Facilitators help to manage the logistics, keep tabs on group function, and

provide customized support towards the group's goals. (Quan et al., 2019). The facilitators support the TAG members by taking on these responsibilities which allows the TAG members to focus on discussing their ideas without being concerned about how to maintain the group dynamics. The facilitation team also helps maintain continuity and momentum from meeting to meeting, ensuring that discussions move toward shared goals. Importantly, TAG facilitators, like DAT facilitators, work to legitimize students' contributions, positioning students as experts on their own experiences.

*Collective action* emerges when "[g]roup members use a shared vision to guide work aimed at achieving change. The process of developing the group's vision includes a diversity of relevant stakeholders." (Quan et al., 2019, p. 7). The goal of TAG is to ideate and implement changes that support physics TSOC. In the TAG meetings, the vision and how to carry out the vision are agreed upon by all TAG members. One responsibility of the facilitation team is to ensure that discussions remain aligned with the group's collective vision. As such, decisions about how to pursue change are made collaboratively, with all TAG members contributing to the development and implementation of the group's vision to better support physics TSOC.

Finally, *Process Skills* are those skills the DAT introduces during the meetings to support effective communication among members. Naming and understanding the purpose of Process Skills helps participants understand how to engage productively in group discussions and decision making. Within TAG meetings, members learn about a process skill and are encouraged to practice it throughout the meetings. By incorporating these skills, the facilitation team also communicates the importance of group dynamics and that building a collaborative community requires intentional practices and shared responsibility among participants.

The four aspects of the DAT were used to sustain TAG meetings as spaces of collective action that center and value the experiences and perspectives of physics TSOC. Similarly, the DAT structures supported the TAG in moving from ideating to enacting the change within the institutions. The facilitators monitored group dynamics and paid attention to the pace of the meetings so as not to burden one group member with the responsibilities. The TAG discussions, much like those in the DAT, were normalized as the beginning of change and the possibilities to interpersonal interactions. At the same time, discussions often involved ideas that carried uncertainty and, at times, unease. Navigating these moments of unease required group members to collectively acknowledge tensions and then work together to take action on their ideas.

Our theoretical framework can be illustrated as a journey along the Path of *Conocimiento*, a process that sustains both an individual and community within the in-between space (Nepantla in Nahualt word for in-between) of dominant and non-dominant worldviews. Along this path, individuals recognize the importance of their own experiences and notice others that are navigating similar tensions. The community component emerges through the choice to support others who are also processing their experiences. The theoretical framework can be a guide for physicists to remain authentically themselves within the field while also creating space for others to do the same.

## Nepantla

Gloria Anzaldúa's work on Nepantla (Anzaldúa, 2015) describes it as a state of mind that a person experiences when occupying an in-between space. Within this state, individuals question existing beliefs, acquire new perspective, and shift their worldviews. Although this experience unfolds internally, Nepantla also reflects a broader recognition that shifts in worldview are shaped by encounters with dominant cultural expectations. These shifts are rarely

simple moments of deciding, "I believe this…now." Rather, they often involve a painful recognition of the infinite choices a person has available to them at any moment. These moments can also be shared with others who have similarly chosen to shift their perspectives and inhabit positions not fully aligned with dominant worldviews.

Individuals who navigate this in-between space are referred to as Nepantleras (Anzaldúa, 2015). Some people pass through this space briefly, while others remain within it, learning to sustain themselves across multiple realities. As a theoretical framework, Nepantla invites a collectivist orientation. Those who remain in this space have the responsibility to also sustain others in normalizing the pain, uncertainty, uneasiness, and possibilities all at once. When people can radically accept the in-betweenness, then we can collectively begin to create spaces where multiple realities are accepted. In this way, Nepantla offers a framework that can guide physicists toward being authentically themselves within the field while also supporting others to do the same.

In this work, we build from scholars who have considered the place of Nepantla in STEM education. Aguilar-Valdez and colleagues (2013) consider how science education could be modified in practice by using Anzaldua's theory and examine how Latin@ students must contend with navigating the dominant culture of science. Similarly, Nancy Acevedo (2017) argues that efforts to support more Latinx students in pursuing higher education should engage the reflexive process in choosing colleges. Students are reflexive of their experiences and process to making a decision, faculty and staff can engage with the students' reflective processes students use when making decisions about college. Within this approach, educational practitioners—including high school counselors and college outreach staff—can support students by honoring their reflections and experiences rather than reproducing educational systems that silence their voices or minimize their perspectives. Something about Maria Esponza?

Shifting Realities is a state of the path of *Conocimiento* that calls on Nepantleras to share the responsibility of supporting others navigating Nepantla. Nepantleras are familiar with the pain of having to exist in-between, the cost, and the strength that emerges from connecting with others. In this stage, individuals become aware of Nepantla and are able to recognize the dominant and non-dominant perspectives simultaneously. While this awareness can evoke the pain associated with past experiences, it also creates the possibility for empowerment through solidarity and collective care.

Within this state, communication becomes intentional and reflective. Anzaldúa describes this process as an effort to "avoid[ing] miscommunication, you frequently check your understanding of other's meaning, responding with, "Yes, I hear you. Let me repeat your words to make sure I'm reading you right"" (Anzaldúa, 2015, p. 151). Such practices reflect a commitment to listening carefully and honoring the perspectives of others navigating the same space. Shifting Realities also involves a responsibility to resist perpetuating the same harm that often characterize dominant cultures. In physics, for instance, this may mean challenging norms that prioritize arriving quickly at a single "correct" answer. Instead, it can involve creating spaces where multiple possibilities are discussed and where participants collectively work toward shared understanding. By fostering environments in which ideas can be explored collaboratively—rather than reduced to a single authoritative response— Nepantleras contribute to reshaping spaces so that they are more inclusive of diverse ways of thinking and knowing.

# Theoretical Framework

## Nepantla as a Theoretical Framework to learn about Transfer Students of Color

Nepantla is a theoretical framework that encourages researchers to understand STEM not only as a body of knowledge but also as a culture. Scientific fields, including physics, operate through cultural norms that shape dominant expectations about who scientists are and how they should behave (Aguilar-Valdez et al., 2013). Nepantla provides a way to examine how individuals navigate these cultural expectations, particularly when they don't fully along with them. Rooted in Spanish and Nahuatl culture, Nepantla refers to both a state liminality—the space between two worlds—and a state of mind experienced while navigating that in-between space. Nepantla represent the tension between dominant and non-dominant perspectives. Within this space, individuals question old beliefs, develop new perspectives, shift world views, and move between different ways of knowing. Aguilar-Valdez and colleagues describe the path of *Conocimiento* as the process through which individuals navigate Nepantla. This path represents a journey toward deep and transformative knowing, one that goes beyond mere content knowledge and into a deep transformational understanding of reality and one's place in it(Aguilar-Valdez et al., 2013).

The Path of Conocimiento can be described through seven states of mind. For the purposes of this paper and for clarity within the Physics Education Research community, we group these states into two broad categories: individual states and collective states. The individual states include: *arrebato*, nepantla, coatlicue state, *desconocimiento*, *compromiso*, and putting Coyolxuahqui together. The collective states include a clash of realities and shifting realities. The collective state of mind can be experienced by multiple people simultaneously.

Importantly, these states do not progress in a linear fashion. Individuals may move in and out of different states, experience multiple states simultaneously, or return to earlier states as the understanding evolves. Although the collective states (A Clash of Realities and Shifting Realities) can also be experienced individually they are more often enacted within community contexts. In the remainder of this section, we describe the states of mind of the Path of Conocimiento (each state will be underlined) by contextualizing them within the physics space and the experiences of physics TSOC, with the exception of Desconocimiento and Clash of Realities.

### *Nepantla's Path of Conocimiento*

El Arrebato represents a state of mind in which a person is exposed to the rigid interpretations of dominant culture. This state of mind is often painful because of the shock of experiencing those rigid interpretations, which established exclusionary norms and reinforce culturally subtractive monocultures. In artistic representations, this state is frequently represented as a physical rupture of the self into fragments. El Arrebato is also the state that thrusts a person into Nepantla.

Nepantla refers both to the liminal space between dominant and non-dominant perspectives and to the state of mind experienced while navigating this space. It is worth noting that dominant and non-dominant are not simplified into a single dominant culture versus a single non-dominant culture. Although it is a helpful way to begin thinking about Nepantla, Anzaldua intended to conceptualize culture as complex and dynamic, shaped by the many choices

individuals and communities make in constructing their realities. Within this state of mind, physics TSOC encounter the challenges of being students at a BDGI while navigating tensions between who they are, the choices they make, and the possibilities of multiple futures. These tensions create moments where different realities may be in conflict, but they also open possibilities for the creation of new cultural understandings within physics.

The Coatlicue State is a state of mind named after the goddess that possesses aspects of life and death. In this state of mind, a physics TSOC notices there is a choice to further understand their own experience at their institution or to turn away from that understanding. The light aspect of this state represents choosing to confront and understand one's own fragmentation. The alternative, the dark aspect, is choosing not to confront that fragmentation. The former is called Conocimiento, while the latter is called, Desconocimiento. Thus, individuals face a choice between Conocimiento and Desconocimiento, which can sustain them within Nepantla or move them away from it. For the purpose of this study, we focus on Conocimiento.

Compromiso, which translates from Spanish as commitment, represents a profound commitment to understanding the experiences that caused the arrebato and to actively reconstruct fragmentations. In this state, individuals make intentional choices about which pieces of the fragmentation are placed back together or left behind. This process involves actively navigating and drawing from both dominant and non-dominant elements to create new forms of hybridity. This reconstruction leads to the state of mind called Putting Coyolxuahqui Together. In this state, physics TSOC create a new personal and collective narrative that resists assimilation into dominant norms. The fragments of identity and experience are not simply restored to their previous arrangement; rather, they are reconfigured to form a new hybrid understanding of self and belonging.

Finally, Shifting Realities represents a collective state of mind in which individuals honor how others have chosen to put themselves back together. At this state, people appreciate their uniqueness and focus on connecting with others who have not gone through these states. Through this process, people recognize develop the capacity to transform spaces so that they no longer reinforce exclusionary boundaries around who practices physics and who does not. As Aguilar-Valdez and colleagues explain:

> In negotiating our own shifting identities with the perspectives of others in la naguala, we are constantly in many positions of insider/outsider. Anzaldúa posits this state through the concept of nos/otras, where ‘‘nosotras’’ is Spanish for ‘‘us,’’ but by placing a slash between ‘‘nos’’ (meaning us) and ‘‘otras’’ (meaning others), the concept of nos/otras conveys the mainstream narratives of dividing ‘‘us’’ from ‘‘them’’ within the larger reality that we are all ‘‘us.’’ By embracing this concept, as the path of conocimiento would have us do, a form of deep healing can occur regarding" out fragmentation. (Aguilar-Valdez et al., 2013, p. 830).

## Research Questions

1. How can we create spaces within physics were students, like Pablo, stay in Nepantla?
2. How did the facilitators and advocates enacting the DAT Process Skills, Shifting Realities State, and Norms support Pablo in navigating the Path of Conocimiento?

# Methods

## Transfer Advocacy Group

Transfer Advocacy Groups (TAGs) were implemented on two different campuses across multiple semesters between 2024 and 2025. TAGs function as collaborative spaces that bring together faculty and staff who are closely connected to aspects of the transfer process or the transfer process or the transfer student experience (institutional advocates) alongside current transfer students. Each TAG works toward the goal of developing and implementing concrete changes to support transfer students of color (TSOC) in STEM.

TAG meetings include students, staff/faculty, and facilitators. The students in this group are either TSOC in STEM or students who advocate for TSOC. Similarly, faculty and staff participants are either scholars of Color or advocates for students of Color who have experience supporting transfer students or who were themselves transfer students. The data analyzed in this paper come from one semester of TAG meetings that focused specifically on developing and implementing changes to support physics TSOC at a particular bachelor's degree–granting institution (BDGI) (See the table). This TAG included four TSOC students, two faculty or staff members, and three facilitators (see Table X). The group began the semester with two facilitators; during the fifth meeting, an additional facilitator joined the team as part of a transition plan to support the following semester's TAG.

| Pseudonym | Department Role | Role in Transfer Advocacy Group | Gender | Race | Ethnicity |
|---|---|---|---|---|---|
| Anna | Student | Student | Female | Something else: Hispanic | Mexican |
| Pablo | Student | Student | Male | Black or African American; East Asian (e.g., Chinese, Japanese, Korean, Mongolian) | Mexican |
| Riya | Student | Student | Female | White | Portuguese |
| Caleb | Student | Student | Male | Black or African American | Nigerian-American (Yoruba) |
| Rodrigo | Staff | Advocate | Male | | Peruvian |
| Taylor | Faculty | Advocate | Genderqueer women | White | Midwestern, German heritage |
| Layla | Researcher | Facilitator | Female | Middle Eastern or North African | Libyan-American |
| Abigail | Faculty | Facilitator | Female | White; East Asian (e.g., Chinese, Japanese, Korean, Mongolian) | White |

| | | | | | |
|---|---|---|---|---|---|
| Grace | Faculty | Facilitator | Woman | East Asian (e.g., Chinese, Japanese, Korean, Mongolian) | Chinese American |

Table 1. Demographics of a Transfer Advocacy Group members based on surveys they responded at the end of the study. In the survey, the questions about Gender and Ethnicity questions were presented as open-ended, fill in response fields. In contrast, the Race question was presented as multiple-selection list. Participants could select more than one option, and a final "Other" category allowed respondents to provide a written response if they wished to self-identify outside of the listed categories.

During the semester studied, the Physics TAG met every two weeks for a total of seven meetings. The majority of participants (students, advocates, and facilitators) attended all meetings. Layla attended her first meeting during the fifth session of the semester, as she was joining the group as a new facilitator and was being onboarded into the TAG facilitation process. Caleb, a physics TSOC participant, attended the first meeting and the final two meetings. Rodrigo, an advocate, and Riya, a physics TSOC, each missed one meeting on separate occasions. All meetings lasted approximately an hour and a half and were held in the morning.

## How were participants selected?

Grace and Abigail were identified as TAG facilitators at the beginning of the project based on their prior experience facilitating teams and their expertise in working with community college and transfer students.

A pilot version of the TAG was launched during a spring semester by Abigail and Grace. Using flyers and emails, students were recruited to participate as TAG members, undergraduate researchers, and/or participants in focus group interviews with transfer or pre-transfer students. Several students, including Caleb, participated in an interview. Facilitators then sent targeted emails to several students, three of whom agreed to participate in the TAG: Anna, Caleb, and Pablo. Three people were invited to join as advocates and two agreed to participate in the pilot TAG. The pilot TAG advocates were identified based on their current and prior work to support transfer students.

At the conclusion of the pilot TAG, all participants were invited to join the first full TAG that would run the continuing fall-spring academic year. Anna, Caleb, and Pablo agreed to join this TAG, while the two advocates from the pilot TAG had to end their participation. To recruit additional TAG members, Abigail and Grace consulted Anna, Caleb, and Pablo about potential participants who might be a good fit for the group. Based on their suggestions, Abigail and Grace invited the fourth student, Riya, as well as an advocate, Taylor, to join for the fall semester. Abigail and Grace also invited Rodrigo to participate as an advocate, based on their prior experiences working with him.

Layla was invited to assume Grace's role as co-facilitator of the TAG. Grace and Layla had previously worked together, and Grace identified Layla's work as synergistic with the TAG project.

## Data Collection

During the semester studied the first author (C.M.) was embedded in the TAG starting at meeting #3 through meeting #7. CM acted as a participant observation following the guidelines of Hatch (2023), her intrusiveness was kept at a minimum during the TAG meeting (unless asked by facilitators to participate), CM was not involved in the decision factor of TAG meeting but could see the progress of the projects and individuals work rendering her close to the action post-meetings. She was introduced virtually by the existing facilitators, during the first meeting of the semester, who brokered trust (Bhattacharya, 2009; Merriam & Tisdell, 2016) with participants on her behalf.

Data collected from the TAG meetings include. Hatch mentions the importance of the level of involvement as a researcher.

| | | Data Source | Description | Quantity |
|---|---|---|---|---|
| Generate by | TAG Members | Meeting Agenda and Notes | A google document created by facilitators to indicate the direction of discussion and time window to discuss or do an activity | Meeting Notes for seven meetings, which are a total of forty-three pages |
| | | TAG Meeting Slides | A set of Google slides that were supplementary, when necessary, to the TAG meeting's agenda | TAG Meeting Slides for seven meetings, which are a total of sixteen slides |
| | | Participants' Work | Google document or slides that the participants included their writing or work in progress of an activity | Google slides for seven meetings, which are a total of forty-five. Two google docs |
| | | Facilitators' Reflection | Recorded meeting immediately following each TAG meeting where facilitators reflected on how the group dynamics were developing and brainstormed what to do for the next meeting | Zoom recordings of the Reflections about the seven meetings, which are about three hours total |
| | First Author CM | Audio Recording | TAG meetings discussion were audio-recorded. The recordings began ten minutes before and concluded ten minutes after the duration of the meeting. | Audio recordings for five meetings, which are a total of seven hours and twenty-seven minutes |
| | | Field Notes | Real-time observational notes taken during the meetings, particularly jotting down what interactions between TAG members | Word document with fieldnotes for five meetings, which are a total of forty-four pages |
| | | Individual Interviews | One-on-one audio-recorded interviews between CM and TAG members that lasted between 20 and 60 minutes. | Audio recordings of all seven the interviews were four hours and seventeen minutes |

In order to capture the interpersonal interactions, we collected audio from all TAG meetings including a few minutes before and after the meetings to capture social interactions. During the meetings, field notes focused on moments that aligned with either Nepantla or Path of Conocimiento that would not be captured by the audio. For example, field notes included observations like a brief description of what was being discussed and on the second column any related states of the path of Conocimiento or any component of Nepantla. Immediately after each session, following standard participant-observer practices (CITE), CM wrote reflections of that meeting and made observations about what to follow up on. Using the fieldnotes and immediate reflections CM often collected interview data shortly after a TAG meeting focused on an idea or event that came up during the meeting. Altogether CM collected 9.1 hours of audio data, 5 hours of interview data, 19 pages of fieldnotes, and 26 pages of reflections during the semester embedded as a participant-observer.

This paper is part of a larger study. In this work, we focus specifically on recordings, reflections, and interviews from *a single* TAG meeting– TAG Meeting #6 – which took place near the end of the semester and toward the conclusion of the participant-observer's embedded period with the group. The analysis presented here centers on a set of interactions involving one physics TSOC participant, Pablo, during this meeting. While Pablo's experience serves as the focal point of the analysis, we also examine how other TAB members supported his journey on the Path of Conocimiento and contributed to sustaining the Nepantla space.

## Positionality

CM, the first author, identifies as a Nepantlera in physics. At the end of my undergrad, I became familiar with Nepantla through the book *Light in the Dark*. During graduate school, I began to center this theoretical framework in both my scholarly work and my personal life. Nepantla has helped me sustain myself as a Colombian American researcher working within U.S. academia. Through this framework, I remain aware of how educational systems can reproduce oppressive structures that pressure individuals to dismiss forms of knowledge rooted in community, care, and the experiences of historically marginalized people. This includes the cultural knowledge I bring from my Colombian American background as well as the insights I continue to develop through engagement with marginalized communities. I choose to live within the tension between physics as a community that holds scientific and social power and the people whom that the community has historically excluded, including BIPOC and LGBTQAIS+ communities. In this tension, I hope to disrupt the cultural norms of physics. My familiarity with the states along the Path of Conocimiento informed my observations and interpretations in this study.

## Data Analysis

During the process of collecting fieldnotes, a key interaction—referred to here as Pablo's moment—was identified. After revising the meeting fieldnotes, CM created protocols for Dr. Tayor, Abigail, and Pablo that focused on this interaction. Fieldnote collection and audio recording continued through the final meeting of the semester. A discourse analysis was then conducted to examine the flow of the conversation surrounding Pablo's moment and to determine the portion of the discussion to analyze in depth. The analysis narrowed down the focal interaction to approximately seven minutes. The beginning of the moment was chosen

because Pablo voiced that he wanted the attention of the group and expressed unease about the choice he was making. The end of the moment was identified when Pablo articulated uncertainty about how his choice might contribute to the TAG's decision about a project. After closely analyzing Pablo's moment through both discourse analysis and the Nepantla framework, CM incorporated additional data sources to understand how facilitators, advocates and meeting structures supported Pablo's navigation of the Path of Conocimiento. For example, fieldnotes were used to identify moments when TAG norms were enacted within the dialogue. Post-meeting interviews with Abigail, Dr. Taylor and Pablo, himself, provided further insight into how participants recalled and interpreted the interaction. These multiple sources of data were used to construct claims about the individuals, practices, and structures that supported Pablo during this moment. Not all components of the analysis are included in the main sections of the paper. Additional analytic details will be provided in an appendix for physics education researchers—and researchers more broadly—who are interested in examining how claims can be developed in alignment with the theoretical framework of Nepantla.

## Consent and Ethical Considerations, and Limitations

All the participants of this study consented to the ethical considerations of data collection. When the audio data was collected by CM in meeting #3, the meeting norms were revised. While revising the norms, the participants were included in the ethical choice about how to stop any data collection during ongoing TAG meetings. Since the meetings were created to prioritize the choices of the TAG members, they were also allowed to choose if some of the conversations or any data were not to be used by CM in her analysis. CM explained the intention and purpose for data collection to the best of her abilities (knowing that finding a moment to explain Nepantla was not pre-determined or an intervention) in the moment of the study without disclosing Nepantla as a theory.

A large limitation of this study is the need for a paradigm shift from the physics community at large. Physics community at large uses the positivist paradigm (a philosophical standing that the reality we experience can be explained by one truth), to engage with/in/about Nepantla requires the post-positivist paradigm. In post-positivist is a reality in which multiple truths can be true depending on who/what is experiencing them. Part of the physics education research community engages with post-positivist paradigms, but most of us are trained scientist that default to positivist paradigms when conducting research. So as you are reading the analysis of Pablo's keep mind that I am (re)describing a moment where different people had different experiences but collective navigated unease to come to an **understanding of an idea** but not a singular truth.

Another challenge of this research was to fragment what Nepantla as a theory is to participants to not trigger a state of El Arrebato but the mere explanation of what it is. Therefore, CM made choices about what to disclose about Nepantla with participants if asked. Intentionally, not sharing the explicit or pictorial representation of tearing oneself apart into pieces in the state of El Arrebato. With this choice the boundary of researcher and the researched were held, meaning the participants were not involve in the analysis part of the research.

# Findings

In our analysis, we argue that Pablo, a physics TSOC participant, enters Nepantla and is supported along the path of *conocimiento* by facilitators and advocates within the TAG. We examine the norms, culture, and interactional moves that supported Pablo as he navigated Nepantla during the meeting. In this section, we first provide an overview of what we refer to as "Pablo's Moment" describing how our analytic attention focused on this particular interaction—less than seven minutes—within the meeting. We then move to exploring how Pablo's Moment was supported by other members of the TAG and how their responses helped sustain the Nepantla's space.

## Pablo's Moment

The first Physics TAG meetings began during a spring semester. In this paper, we focus on the following fall semester, which continued the work of the Physics TAG. Pablo, a physics TSOC participant, took part in both semesters of TAG Meetings. The meetings took place in a classroom. One end of the room contained a scientific bench with a sink, while the rest of the space included movable desks, desk chairs, and chairs with attached writing arms. Before each meeting, facilitators arranged snacks for all participants along with tea or instant coffee. Near the end of the bench that held snacks, the facilitators rearranged the movable tables to form one long table for the meeting. On one side of the table there was a smartboard that projected the facilitators' agenda and notes. TAG members sat around the remaining sides of the table. As participants arrived, they chose their seats freely and sometimes used laptops during the meeting. Seating arrangements changed from meeting to meeting; however, at least one of the facilitators always sat closer to the smartboard to be able to plug in their computer to the smartboard, which were also always used by the facilitators.

During the first meeting of the fall semester, the facilitators supported the group in collectively establishing meeting norms (see Figure 1). As the semester progressed, TAG members discussed ideas for improving the experiences of TSOC-STEM at their university.

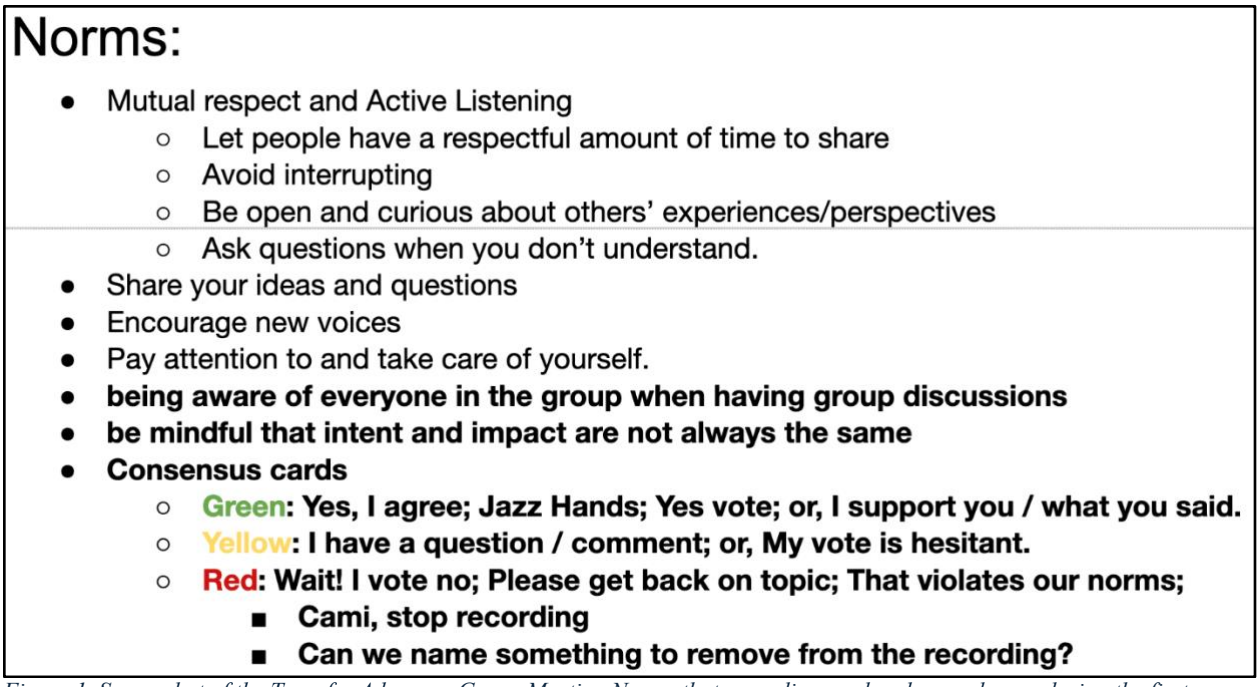


*Figure 1. Screenshot of the Transfer Advocacy Group Meeting Norms that were discussed and agreed upon during the first meeting of fall semester 2024.*

The ideas discussed during the physics TAG were about concrete improvements for physics TSOC evolved into two projects. The first project involved creating an Advising Document that would be accessible by both advisors and students to better support transfer physics TSOC in their physics bachelor's program. The second project involved creating a Community Space for physics TSOC to support building community and have a space to be present and modify the Advising Document for Physics Transfer students. During the fifth physics TAG Meeting, the members discussed which of the two projects to prioritize (Advising Document project or Community Space project). During this discussion, we observed Pablo entering Nepantla and noticed how other TAG members supported him navigating the path of *Conocimiento*. The two analyses in this paper focus on (1) this moment for Pablo navigating the path of *Conocimiento* and (2) how other members of the TAG supported him and others navigating the path of *Conocimiento* and remaining in Nepantla.

## Dialogue of Pablo's Moment

01:00:42 **Grace (Facilitator)**: Maybe Caleb might be interested in joining with Rodrigo, since Rodrigo did some thinking around that, but maybe having an…

**Rodrigo (Advocate):** Yeah

…a second person to bat ideas around could be good…

**Abigail (Facilitator):** Yeah

…um

01:00:53 **Abigail (Facilitator)**: Yeah, I um …and then…Oh. Pablo, please.

01:00:58 **Pablo (Student)**: Umm Imma be like transparent, think, I am just gonna say I don't think I am sold on the community space just yet.

**Grace (Facilitator):** umm, mhm

Umm like what I was having in mind is that we, like we like pretty up I guess the document so that we have a description of what the goal is for this document. And then like maybe like have specific sections of like …here, we can have bullets that are for this type of aspect of what we want to ask or you know like if we want to ask like, here are the questions you can ask your students about "what are their interests" so we can probe like what opportunities they can have. I think I mentioned in the document too that I feel like this is going to be a little bit difficult in the future with the new setup for advising, but I think for the next semester is the like kind of the most important just 'cause like it's going to be students that like… they're they're they're uuhh signing up for the classes and some of them like some of the advisors probably still don't know

**Grace (Facilitator):** mmm

whattt to do. So I think it could. Yeah

01:02:10 **Abigail**: Yeah. Pablo Sorry, Caleb, do you have a clarifying question?

*Abigail (facilitator) and Caleb (student) have a small discussion of what Caleb wants to voice to the group*

01:03:04 **Caleb (Student)** *Finishes sharing his supportive argument for Pablo's stance to focus on the Advising Document project, instead of the community space.*

01:03:05 **Abigail (Facilitator)**: mmkay. Yeah uuh Taylor?

01:03:07 **Taylor (Advocate)**: I just have a clarifying question. Is there a concern that we won't be able to do both? Uh as in like is it mostly worried about, …

**Grace (Facilitator):** mmm

…is the concern about bandwidth? Like…

01:03:16 **Pablo (Student)**: No, I think we can. I think what I am trying to ss… I think that divvying up the groups will probably be the best way of going about it, I think. Umm just so that we can make progress on the community space and the document at the same time. But, [finger tapping on the table] mmm, I don't know. I'll just leave it at that. I don't know.

01:03:38 **Taylor (Advocate)**: No, you can say what you're going to say.

**Grace (Facilitator):** Yeah

…I was just curious like 'cause it seems there's concern that… advising is super important and we don't want to let that get away. And I 'm wondering if it's a sense of like, if we don't focus on that first that will leave…It was just…

**Pablo (Student):** mmm

… a clarifying question, but not meant to be a challenge…

**Grace (Facilitator):** Mhhm, mhm

…or anything.

01:04:03 **Abigail (Facilitator)**: Do you…maybe we can circle back, Pablo. Do you need a second?

**Pablo (Student):** Yeah, yeah
… Okay. Umm Clarifying question Layla or a response?

01:04:09 **Layla**: Yes, clarifying question.
*Layla's simplified question is "What is the community space?"*

01:04:31 **Abigail (Facilitator)**: Yeah. Do folks have a response?
….Rodrigo?

01:04:34 **Rodrigo (Advocate)** : Well, I know what I've been..
**Abigail (Facilitator)**: Yeah
…thinking about. So I think for the community space, what I was thinking about is, it's just a a creating a… is not a like physical space. It's not the club room or something that. It's more like, we invite people for transfer students to come together…
**Layla (Facilitator):** mhm
…and have specific moments that we have meetings with, with them. And so they can, that prompts them to connect, connect with one another and communicate their experiences and share that. And I see it as two purposes. First purpose would be just to improve their experience because transfer students, it's their experience is you're coming to a new place where some people may already know each other, but you don't know many people at all. And so you have an opportunity to meet these people that enhances their sense of belonging. But then the other part is we gather information, information as in create notes, and we use or we ask them to, uh, you know kinda it would be understood in the group that our our experiences and some of the prompts could be used to make the advising document, a living document.
**Abigail (Facilitator):** mm
…because the experiences of somebody ten years down the road, could be different. Um so that's why I see it as a perpetuating constant updating of what the advisers are learning from the ground up. So creating the document is great but if the document is like done and over with next semester, three years down the road,
**Abigail (Facilitator):** mm
…it might be outdated.
**Layla (Facilitator)**: Yeah
**Grace (Facilitator)**: mhm
**Abigail (Facilitator)**: Yeah
It would have the community space to continuously support and feed up the new experiences, the new points of view…up the chain, umm then you know it's going to become an outdated thing quick.
**Abigail (Facilitator)**: Yeah
So that's why I feel like it doesn't have to be one or the other. In fact, they both kinda need each other.
**Grace (Facilitator)**: Mm
**Abigail (Facilitator)**: Mhm yeah

01:06:52 **Pablo (Student):** Yeah I really like that explanation. It makes a lot of sense to me now. Um, yeah…I think I was just concer–confused on how to set up the community space. I don't know. I'm sure I can add some insight, but I don't know, I'm not sure if I know enough about how to set it up. That's why I wanted the divvying up the work, I guess.
**Grace**: Mm
…um but

## The States of Pablo Navigating the Path of Conocimiento

| Lines | State of Path of Conocimiento | Definition | Context for Pablo |
|---|---|---|---|
| L12<br>"Umm Imma be like transparent, think, …" | Arrebato | For STEM transfer student of color "being exposed to a rigid interpretation of dominant, is painful – it is culture shock… establishes an exclusive and culturally subtractive monoculture." | Pablo phrase at the beginning indicates a hesitancy because he is verbalizing his recent navigation in an arrebato. The group had established that focusing on both the Community Space project and the Advising Document project, rather than focusing on one project and he himself was not agreeing with the TAG's choice. He is risking not being part of the collective of doing both projects |
| L13-14<br>"….I am just gonna say I don't think I am sold on the community space just yet." | Nepantla | Transfer students of color describe the challenge of being a student at a bachelor degree granting institution, the choices they are making and the possibilities of two realities being at odds. The new choices of multiple realities being at odds between who they are and who they could be has implications for creating a new culture. | Pablo acknowledges "not being sold on the idea' and 'not knowing what to do' that he is in Nepantla. Momentarily the two choices are at odds, the group focuses their efforts into the Community Space project and the Advising Document project or only the Advising Document project. |
| L 23-26<br>"I think I mentioned in the document too that I feel like this is going to be a little bit difficult in the future with the new setup for advising…" | Shifting Realities | Capacity to change a space to not reinforce the exclusion of who practices physics and who does not. | The phrase talking about the future he is partially in the state of Shifting Realities because he is already considering what will be future influences for the Advising Document to not work well with the new set up for advising at the university |
| L 52-54<br>"No, I think we can. I think what I am trying to ss… I | Shifting Realities | state through the concept of nos/otras, where ''nosotras'' is Spanish for | Pabo believes in the group's capacity to achieve both the Advising |

| | | | |
|---|---|---|---|
| think that divvying up the groups will probably be the best way of going about it,…" | | ‘‘us,’’ but by placing a slash between ‘‘nos’’ (meaning us) and ‘‘otras’’ (meaning others), the concept of nos/otras conveys the mainstream narratives of dividing ‘‘us’’ from ‘‘them’’ within the larger reality that we are all ‘‘us.’’ | Document Project and the Community Space Project. |
| L 54-57<br>“Umm just so that we can make progress on the community space and the document at the same time…” | Coatlicue State | Transfer students of color notice there is a choice to further understand their experience of as transfer students of color | Pablo is at the Coatlicue State, he is clearly aware that there are choices to understand what project is worthwhile for the group to focus on. He is coming to realities with it but is still unclear on what he can do |
| L126 -128<br>“ It makes a lot of sense to me now. Um, yeah…I think I was just confused on how to set up the community space.” | Compromiso | In this state of mind, a person makes the choices about which pieces of the fragmentation are placed back together or left behind. It is the active choice of changing that a person navigates within Nepantla. | Pablo recognizes the importance of the Community Space project and is now onboard with the idea of the Community Space project. He continues to be aware that he does not know how to contribute to the community space but he can add insight. It is still a new idea for him. |
| L128-131<br>“I don't know. I'm sure I can add some insight, but I don't know, I'm not sure if I know enough about how to set it up. That's why I wanted the divvying up the work, I guess...” | Putting Coyolxuahqui Together | In this a state of mind is when a transfer student of colors creates a new personal collective story of a new hybridity that resist assimilation. | Pablo knows he can “add some insight” but wonders how to set up the Community Space project and so agrees with the group on divvying up. |

## Contextualizing the Dialogue of Facilitators and the Advocate supporting Pablo navigate the Path of Conocimiento

Throughout the physics TAG meetings, Grace and Abigail alternated facilitation of the planned sections of the group discussion. Abigail’s facilitation style typically involved cueing the next person to talk based on the consensus cards (see the bottom of Norms figure) and echoing what the group members said in the discussion. In meeting five, Abigail created consensus with the majority of the TAG members to prioritizing both projects (Advising

Document project or Community Space project) and Grace, as a participating member and not a facilitator, suggested the group split into two so each project would have a group working on it.

The moment we identified as "Pablo's moment" took place during this fifth meeting during consensus building. Beginning in the transcript shown in Figure x, Pablo holds up a yellow card – that signaled "my vote is hesitant." At this moment, Abigail stopped in the middle of her sentence and said, "Oh Pablo, please" (L9-10) as a cue for him talk. In that moment, Pablo shared how he was "not sold on" (L13) the Community Space project and reinforced prioritizing the Advising Document project for the whole group.

Caleb, another physics TSOC in the group, agreed with Pablo and added the challenge of getting information about advising for a physics bachelor (L26-42, details not shown in transcript). Then Dr. Taylor, an advocate, asked a clarifying question to Pablo about the urgency of the Advising Document project (L42). As Pablo finished his reasoning he said, "I will just leave it as that," (L57). Dr. Taylor directly addressed Pablo's choice of holding back and voiced that her/their question is "a clarifying question but not meant to be a challenge" (L57). There was a moment of pause and silence, Pablo did not respond so Abigail suggested "maybe we can circle back Pablo, do you need a second?" (L72) To which, Pablo immediately softly whispered "yeah, yeah" (L73).

To transition out of Pablo's discussion, Abigail noticed that Layla, the facilitator being onboarded to TAG meetings for the first time, had a question. Abigail asked Layla if she had a question that was a clarifying question (L74) and Layla agreed. Then, she asked what the Community Space was (L76, details not shown in transcript). Rodrigo, an advocate, answered the question in explicit detail and explained how it was related to the Advising Document project. While Rodrigo re-explained the vision for the Community Space (L82 – 124), Pablo found it interesting (Pablo's interview). As soon as Rodrigo finished his explanation and before Abigail cued the next person to speak, Pablo voiced his agreement enthusiastically (L126) about the idea for the Community Space and shared that his hesitation was about not knowing how to set up the Community Space.

Throughout this moment we witnessed Pablo entering Nepantla and navigating the *path of conocimiento* as shown in Table X. However, Pablo did not navigate Nepantla on his own, rather he was supported by the TAG and the individual members too. In the later sections, we explore how the DAT Process Skills, Shifting Realities State, and Norms in TAG exercised by the facilitators and advocates supported Pablo in navigating his Path of Conocimiento.

## How did the facilitators and an advocate use the Norms, Shifting Realities State, and Process Skills in the TAG Meeting to support Pablo navigating his Path of Conocimiento?

The facilitators and advocate supported Pablo in navigating the Path of Conocimiento by establishing and/or embodying: (1) DAT Process Skills, (2) Shifting Realities state of the Path of Conocimiento, and (3) meeting Norms. In this section, we re-examine Pablo's moment of navigating the path of conocimiento and attend to what the facilitators and advocates did to support Pablo in remaining in the Nepantla state.

### Supporting Pablo in the states of Arrebato and Nepantla

| Dialogue | Facilitators | Advocate |
|---|---|---|

| | | |
|---|---|---|
| 01:00:42 **Grace (Facilitator)**: Maybe Caleb might be interested in joining with Rodrigo, since Rodrigo did some thinking around that, but maybe having an…<br>**Rodrigo (Advocate):** Yeah …a second person to bat ideas around could be good…<br>**Abigail (Facilitator):** Yeah …um<br><br>01:00:53 **Abigail (Facilitator)**: Yeah, I um …and then…Oh. Pablo, please.<br><br>01:00:58 **Pablo (TSOC)**:<br>Umm Imma be like transparent, think, I am just gonna say I don't think I am sold on the community space just yet.<br>**Grace (Facilitator)**: umm, mhm<br>Umm like what I was having in mind is that we, like we like pretty up I guess the [Advising] document so that we have a description of what the goal is for this document. And then like maybe like have specific sections of like …here, we can have bullets that are for this type of aspect of what we want to ask or you know like if we want to ask like, here are the questions you can ask your students about "what are their interests" so we can probe like what opportunities they can have. I think I mentioned in the [Advising] document too that I feel like this is going to be a little bit difficult in the future with the new setup for advising, but I think for the next semester is the like kind of the most important just 'cause like it's going to be students that like… they're, they're, they're uuhh signing up for the classes and some of them like some of the advisors probably still don't know<br>**Grace (Facilitator)**: mmm whattt to do. So I think it could. Yeah | • Grace, at the beginning of this fifth meeting, explained the DAT Process Skills of Putting ideas on the table and taking them off the table through the TAG meeting slides. On this slide, there is a bullet point about explaining reasoning for one's contribution: "I feel strongly about this because…" Another bullet point indicates that having the intention labeled before stating ideas helps to be understood.<br>• Abigail moderated this part of the discussion. She noticed Pablo's yellow consensus card so she stopped in the middle of her sentence and then indicated that Pablo could talk to the group.<br>• In a post-interview, Abigail mentions that she noticed how Pablo's choice of words indicated he was "going against" so she gives space for Pablo to answer.<br>• In a post-interview, Abigail admires Pablo sharing his thoughts. She appreciated that he spoke. At the same time, recognized how long it has taken her to feel comfortable to share her ideas. Specifically, how in a space like TAG she feels comfortable but "in a physics department meeting. No!" Then adds in the spaces she is willing to share is because she feels safe with and respected by the people in them. | • In a post-interview, Taylor mentions that Pablo's initial share was arguing for the importance of the Advising Document project over the Community Space project. Pablo did not share why he was not interested ("not sold on the community space") in the community space<br>• In a post-interview, Taylor also mentions her admiration for Pablo pushing back on the group's decision to move forward with both projects, the Advising Document project and the Community Space project, when he had a hesitation about the Community Space project. |

When advocates and facilitator enacted **two DAT Process Skills** (consensus cards and putting ideas on the table), they supported Pablo in navigating Path of Conocimiento by providing mechanisms and language that enabled participants to engage more openly with the discussion at hand.

### *The DAT Process Skills of using Consensus Cards during the meetings.*

Consensus cards allowed for each member of the group to visually display their consent to what was being discussed by the group. This processing skill practice was introduced to the group in the second meeting of the fall semester. All members participated in using consensus cards, except for the facilitator who was leading that particular portion of the meeting. During the discussion, the facilitator would first rephrase what was said by TAG members, then pose a consensus question aligned with that summary. Participants would respond by raising their consensus cards, allowing the facilitator to quickly assess the group's level of agreement. The repeated use of this process skill helped normalize it as a tool for facilitating discussion and supporting collaborative decision-making within the group.

Abigail supported Pablo in navigating Arrebato and Nepantla by acknowledging the consensus card. After Grace (non-leading facilitator) suggested the groupings for people to work on the TAG's projects, Pablo raised his yellow card. Abigail, as the leading facilitator, stopped her dialogue to give Pablo the cue to share his concerns. Abigail practiced/embodied/did what was agreed by what the yellow consensus card meaning held in the TAG group, Pablo's vote was hesitant or that he had a comment.

Abigail noticed Pablo's yellow card when she says: "Oh. Pablo, please" she respected the meaning of the yellow card by saying, *"please"* to cue him to talk. Pablo by indicating his hesitation with the yellow card risked not being part of the collective movement of the TAG, thus indicating his entrance into Arrebato. Abigail, as a facilitator, supported Pablo both as an individual and as a physics TSOC participant during his experience of Arrebato and his entry into Nepantla by creating space for him to voice his idea during the TAG meeting.

### *The DAT Process Skill of Putting Ideas on the Table and Taking Them off the Table.*

The DAT Process Skill has two parts as the name indicates. The first part - Putting Ideas on the Table - means to talk about how ideas are worthwhile considering as a group when brought up by an individual. The second part - Taking them off the Table - means being able to remove an idea from the metaphorical table if it is not engaged with or removed by the person who proposed it. This DAT process skill was introduced by Grace, the lead facilitator, at the beginning of the fifth meeting—the same meeting in which Pablo's moment occurred. Just prior to Pablo's moment, Grace (serving as a supporting facilitator during that portion of the meeting) modeled the use of this process skill by suggesting that Caleb collaborate with Rodrigo on the Community Space project.

Grace employed the DAT process skill of "Putting Ideas on the Table and Taking Them off the Table" to support Pablo as he navigated Arrebato and entered Nepantla. By introducing and modeling this skill, Grace helped create a space in which Pablo had the agency to share his idea with the TAG, even though his suggestion challenged the group's earlier agreement to focus on both projects. Pablo's opening phrase, "Umm Imma be transparent, think…" indicated his hesitation about focusing on both projects and his desire to focus on only the Advising Document project. This hesitancy underscored the painful idea that he did not agree with the group, his own Arrebato. As he talked more about his idea, we understood that he was "not being sold" on the Community Space project and that put him at odds with the rest of the TAG members who wanted to focus on both projects. This moment of navigating the tension between following the group's consensus and expressing that he was "not sold" on the decision, signals his entry into the state of Nepantla. Grace created an opening for Pablo to voice his own perspective, even though it diverged from the group's prior agreement. Pablo's idea therefore

reflects a Nepantla moment, as it emerges from the tension between his own thinking and the collective direction of the group.

## Supporting Pablo navigate his Shifting Realities and Coatlicue State

During the fifth TAG meeting, the facilitators and Taylor, serving as an advocate, entered a state of *Shifting Realities*. In doing so, they supported Pablo as he navigated the Path of Conocimiento, particularly the *Coatlicue State*.

| Dialogue | Facilitator | Advocate |
|---|---|---|
| 01:03:05 **Abigail**: mmkay. Yeah uuh Taylor?<br><br>01:03:07 **Taylor**: I just have a clarifying question. Is there a concern that we won't be able to do both? Uh as in like is it mostly worried about,…<br>**Grace**: mmm<br>…is the concern about bandwidth? Like…<br><br>01:03:16 **Pablo**: No, I think we can. I think what I am trying to ss… I think that divvying up the groups will probably be the best way of going about it, I think. Umm just so that we can make progress on the community space and the document at the same time. But, [finger tapping on the table] mmm, I don't know. I'll just live it at that. I don't know.<br><br>01:03:38 **Taylor**: No, you can say what you're going to say…<br>**Grace:** Yeah<br>…I was just curious like 'cause it seems there's concern that… advising is super important and we don't want to let that get away. And I'm wondering if it's a sense of like, if we don't focus on that first that will leave…It was just…<br>**Pablo**: mmm<br>…a clarifying question, but not meant to be a challenge…<br>**Grace**: Mhhm, mhm ok…or anything. | • Abigail moderated this part of the discussion. She noticed Taylor's consensus card and then indicated that Taylor could talk to the group. Abigail is practicing the formerly agreed upon Group Norms of.<br>• Grace practiced the formerly agreed upon Group Norm of active listening and communicating that to Pablo with her "yeah" and "mhm."<br>• Abigail steps in and suggest that we can circle back to Pablo, so he can have thinking time.<br>• In a post-interview, Abigail notices Taylor asking a clarifying question is to clarify not to challenge. Abigail recognizes how Taylor invites Pablo to share what is this thing.<br>• In a post-interview, Abigail says there is a wait time. She distinctly remembers looking at Pablo's face and seeing he did not know how to say it and she was aware that all eyes were on Pablo.<br>• In a post-interview, Abigail recognizes there is an emotion and answers to him having that emotion, she made the choice of waiting might not be productive because there were feelings coming up for him to be able to articulate what he wanted to say.<br>• In a post-interview, Abigail mentions the importance of both taking the attention away from Pablo and to be able to circle back. So Abigail says she was signaling to Pablo that he could have time and space to think.<br>• In the facilitators' reflection, Grace appreciated that Taylor asked the clarifying question<br>• In the facilitators' reflection, Grace also brings in a layer on the stage of | • She notices that she might have come across to squash him but she notices how brave it is to speak up when someone thinks something different<br>• It was retro active to indicate that the intent is not to shut him down Pablo and he felt that he was being shut Taylor found it important to focus on that challenge<br>• She was worried that Pablo was backpedaling from his choice<br>• Taylor had proposed the group to focus on both projects and she is also owning her impact or responsibility of making sure that it would be aligned with what was intended<br>• Taylor remember that his tone changed and body language<br>• Taylor noticed they could have placed Pablo in a defensive situation<br>• Taylor first thinks of moving the project forward and then they mention thinking of making sure Pablo feels good<br>• She also holds the tension of people sharing their ideas<br>• She really feels important to have responsibility of her ideas and impact<br>• Taylor provides context<br>  ○ There is a lot of extra people in the room<br>  ○ The group had already move on<br>  ○ He had the courage to share that he did not necessarily agree with the group that it would be helpful to address |

| | | |
|---|---|---|
| 01:04:03 **Abigail**: Do you…maybe we can circle back, Pablo. Do you need a second?<br>Pablo: Yeah, yeah<br>… Okay. Umm Clarifying question Layla or a response?<br><br>01:04:09 **Layla**: Yes, clarifying question. | this life where Pablo is transitioning because he is graduating soon so he might have been looking at what it would be worthwhile leaving something that was done well | his feeling of being othered and that she wanted to make sure he felt being part of the group |

### *Shifting Realities*

In the state of Shifting Realities, Nepantleras recognized that others have different realities from our own. In this state, we have the capacity to honor one another's reality and approach them with curiosity. In the TAG meeting, Nepantleras took their time to be curious about other people's idea, not punishing Pablo for having a different idea. They further engaged in dialogue that reflected Anzaldúa's notion that "diversity of perspectives expands and alters the dialogue, not in an add-on fashion but through a multiplicity that's transformational."(Anzaldúa, 2009, p. 4)

### Abigail's Shifting Realities supported Pablo in navigating his Shifting Realities and Coatlicue State

Abigail reflected on her awareness of Taylor's question, Pablo's visible emotions and processing, and her role in facilitating the conversation to support Pablo in the Coatlicue state. Abigail was in the state of Shifting Realities, aware of the conversation flow and centering Pablo's idea. Abigail used her voice and role to honor Pablos's Shifting Realities and Coatlicue State. Abigail cued Taylor to continue the discussion after Pablo shared his idea of prioritizing the Advising Document project. By Abigail cueing Taylor's question, she allowed Pablo to consider the state of Shifting Realities. Pablo initially responded to Taylor's question by imagining that the "best way" to move forward was by proceeding with both projects. If Abigail had not cued Taylor's question, Pablo perhaps would not have considered the possibility of moving forward with both projects. Later, when Pablo took time to answer Dr. Taylor's question, Abigail offered the possibility for the group to move their attention away from Pablo. During her post-interview, Abigail reflected on her own state of Shifting Realities. She noticed Taylor's support of Pablo in continuing to share his idea. She also mentioned how she noticed Pablo's emotional shift via his facial expression (interview data). Lastly, Abigail made the deliberate choice to pause and wait for Pablo's response to Taylor's clarification that she was not challenging him before suggesting that the group could continue the discussion while he took "a second."

### Grace's Shifting Realities supported Pablo in navigating his Shifting Realities and Coatlicue State

Grace demonstrated a state of Shifting Realities as she honored the perspectives of others while the TAG meeting unfolds and later reflected on the interaction in the facilitators' reflection. While occupying this state, Grace also supported herself as Pablo navigated both his own state of Shifting Realities and the Coatlicue State. One way she did this was through the brief, additive affirmations within the dialogue ("Mmmhmm"). For example, when Taylor raised a question about concerns regarding the TAG's ability to pursue both projects, Grace offered a one-word affirmation while Taylor was speaking with a "mmm."

As Pablo began to share, Grace refrained from interjecting with these affirmations, allowing him space to articulate his thoughts. She resumed these brief affirmations when Dr. Taylor encouraged Pablo to say what he was thinking and again when Dr. Taylor clarified that her question was intended sincerely as a point of clarification. Through these subtle gestures, Grace signaled agreement with Dr. Taylor's framing and implicitly communicating that Taylor's question was supportive rather than confrontational. In the facilitators' reflection, Grace noted that she hoped these affirmations would help re-engage Pablo in the conversation.

Grace's reflections also reveal an awareness that Pablo was approaching graduation and might have been thinking about leaving a meaningful contribution behind through the TAG before transitioning out of the university. In her state of Shifting Realities, Grace supports Pablo's navigation of the Coatlicue State by showing attentiveness to his concerns and by signaling that Taylor's question emerged from curiosity rather than an intent to challenge or harm him.

### Layla's Shifting Realities supported Pablo in navigating his Coatlicue State

Layla demonstrated a state of Shifting Realities when she supported Pablo while he navigated the Coatlicue State by asking a clarifying question related to his uncertainty. Layla, as a newly onboarding facilitator, was not as familiar with the projects as the other facilitators. Instead, she posed a simple and straightforward question ("Yes, clarifying question") which helped structure the conversation and supported Pablo as he worked through the Coatlicue State. By asking the question, Layla acknowledged and validated the discussions surrounding the Community Space project. In doing so, she created an opportunity for Pablo to more fully consider and engage the idea of the Community Space project within the group's dialogue.

### Dr. Taylor's Shifting Realities supported Pablo in navigating his Shifting Realities and Coatlicue State

Dr. Taylor demonstrated a state of Shifting Realities when she asked the clarifying question, "Is there a concern that we won't be able to do both?" Later, in her post-meeting interview, she reflected on the multiple considerations guiding her efforts to support Pablo as he navigated the Coatlicue State. During the TAG meeting, Dr. Taylor openly acknowledged that Pablo may be experiencing the group's focus on both projects differently than she is. At the same time, she created a space for Pablo to further articulate his reasoning.

Later in her/their interview, Dr. Taylor recognized her own role in shaping the discussion. She saw that she had previously suggested focusing on both projects as an advocated and faculty member in the department, she was aware that her position carried authority and could influence Pablos' decision making.

## Supporting Pablo navigate his Compromiso

| Dialogue | Facilitator | Advocate |
|---|---|---|
| 01:04:03 **Abigail**: Do you…maybe we can circle back, Pablo. Do you need a second?<br>Pablo: Yeah, yeah<br>… Okay. Umm Clarifying question Layla or a response?<br><br>01:04:09 **Layla**: Yes, clarifying question.<br>*Layla's simplified question is "What is the community space?"* | • In a post-interview, Abigail mentions how listening skill can also give opportunities to ask clarifying questions, to then be able to think and have a reaction/response. | • In CM's fieldnotes, Rodrigo feels comfortable sharing his idea |

| | | |
|---|---|---|
| 01:04:34 **Rodrigo (advocate)**: Well, I know what I've been..<br>**Abigail (facilitator)**: Yeah<br>…thinking about. So I think for the community space, what I was thinking about is, it's just a a creating a… is not a like physical space. It's not the club room or something that. It's more like, we invite people for transfer students to come together…<br>**Layla (facilitator):** mhm<br>…and have specific moments that we have meetings with, with them. And so they can, that prompts them to connect, connect with one another and communicate their experiences and share that. And I see it as two purposes. First purpose would be just to improve their experience because transfer students, it's their experience is you're coming to a new place where some people may already know each other, but you don't know many people at all. And so you have an opportunity to meet these people that enhances their sense of belonging. But then the other part is we gather information, information as in create notes, and we use or we ask them to, uh, you know kinda it would be understood in the group that our our experiences and some of the prompts could be used to make the advising document, a living document…<br>**Abigail (facilitator)**: mm<br>… because the experiences of somebody ten years down the road, could be different. Um so that's why I see it as a perpetuating constant updating of what the advisers are learning from the ground up. So creating the document is great but if the document is like done and over with next semester, three years down the road,<br>**Abigail (facilitator):** mm<br>…it might be outdated.<br>**Layla (facilitator)** : Yeah<br>**Grace (facilitator)**: mhm<br>**Abigail (facilitator)**: Yeah<br>…It would have the community space to continuously support and feed up the new experiences, the new points of view up the chain, umm then you know it's going to become an outdated thing quick.<br>**Abigail (facilitator)**: Yeah<br>…So that's why I feel like it doesn't have to be one or the other. In fact, they both kinda need each other.<br>**Grace (facilitator)**: Mm<br>**Abigail (facilitator)**: Mhm yeah<br><br>01:06:52 **Pablo**: Yeah I really like that explanation. It makes a lot of sense to me now. Um, yeah…I think I was just confused on how to set up the community space. I don't know. I'm sure I can add some insight, but I don't know, I'm not sure if I know enough about how to set it up. That's why I wanted the divvying up the work, I guess.<br>**Grace (facilitator)**: Mm<br>…um but | Abigail finished by saying that "physics classes in general or physics culture does not support students in listening, asking clarifying questions in a space, and be able to have a discussion.<br>• Notes from the fieldnotes, in this moment there is the enactment of the being open and curious about other's when Layla is asking details on how the community space would look like.<br>• Notes from the fieldnotes, Layla feels comfortable sharing her question | |

### *Group Norms*

All TAG members agreed on the meeting's Norms (see Figure 1). In this section, we focus on three of the six Norms. In this section, we discuss how these norms supported Pablo in navigating the state of Compromiso. The meeting's norms included:

- Mutual respect and active listening, especially people having a respectful amount of time to share, avoiding interruption and be open and curious about other's experiences/perspectives
- Share your ideas and questions
- Pay attention to and take care of yourself

#### The group Norm about Mutual Respect and Active Listening supported Pablo in navigating his state of Compromiso

One of the norms the group collectively established was "Mutual respect and active listening." This norm included specific practices such as allowing participants adequate time to share their thoughts, avoiding interruptions, and remaining open and curious about others' experiences and perspectives. Together, these practices helped create an environment is which TAG members could both offer and receive respect while also feeling heard. In the post-interview, Pablo acknowledged that respect was an important practice that he hoped those around him, in particular, his peers in the physics classrooms, would engage in. In this case, the group norms of mutual respect and active listening supported Pablo in transcending towards Compromiso about Rodrigo's vision for the Community Space project.

The facilitators enacted the active listening norm when Rodrigo spoke by interjecting "mmm," "mhm," and "yeah" as he progressed in his explanation. The support the facilitators provided when Rodrigo was explaining the symbiotic relationship of both projects supported in Pablo listening to then agree and finally voice that he just wasn't sure if he could "add some insight" or how to create the Community Space is an exemplar of a physics TSOC embodying Compromiso.

#### The group Norm about share your ideas and questions supported Pablo in navigating his state of Compromiso

The TAG members were supported by the Norm "Share your ideas and questions" to both feeling and receive respect while also feeling heard by the group. The Norm created the space for all TAG members to share their ideas or questions during discussion. In the dialogue in this fifth meeting, Rodrigo got the opportunity to both answer Layla's question explains how and the purpose of both interacting. Rodrigo made it very clear in his thinking the primary focus are physics TSOC's experiences are shaping the changes at the BDGI. Rodrigo indirectly supported Pablo in navigating Compromiso he clarified how both projects would support physics TSOC.

#### The group Norm about Pay attention to and take care of yourself supported Pablo in navigating his state of Compromiso

Another Norm the group agreed upon was to "Pay attention to and take care of yourself." This norm encouraged TAG to prioritize themselves whenever the discussion would warrant it. As Pablo was sharing his idea, Abigail facilitated this Norm by asking "we can circle back, Pablo. Do you need a second?" which supported Pablo to not be the center of attention. Abigail also cued both Layla and Rodrigo which gave Pablo time to navigate towards Compromiso and communicated enthusiastically that he "really like that explanation."

# Discussion

Creating spaces where Pablo *can* voice his ideas are possible with intentionally of the people enacting the DAT Process Skills, the facilitators and advocates entering their own Shifting Realities State, and enacting the group agreed-upon Norms. Pablo shared his idea, despite his hesitation, and his idea was honored consideration by the group. As Pablo navigated Nepantla in this physics space, he now has a narrative of what it feels like to be respected in the physics.

A Nepantla space in physics does not happen by chance, we need all the people, all physicist, to contribute to the space by being in Shifting Realties states of minds. It takes to intentional choices: being curious about other physicist ideas and active listening of other people. Be as curious as Dr. Taylor, Pablo, Caleb, and Layla and be willing to listen, like all the TAG members. Pablo's moments is an exemplar of how a group of physicist call carry or *lleven una idea con elles* – take an idea with them, instead of getting the "correct answer."

This study was an exemplar, and certainty not the only way, that Nepantla can exist in physics. All TAG members collectively chose and contributed to the : (1) DAT Process Skills, (2) Shifting Realities, and (3) meeting Norms. Since the group interactions were established and practiced by all TAG members, Pablo supported to both receive and take away the group's attention as he shared his idea with the rest of the TAG members.

## Research Question 1: How can we create space within physics were students, like Pablo, stay in Nepantla?

In this study, we created a way for Pablo to have a space to navigate Nepantla by setting norms and expectations in the TAG meeting. Even the physical space of the TAG meeting contributed to the possibility of navigating Nepantla. During each meeting, the facilitators would enter the room and one person would rearrange the tables and make sure that the snacks were placed within reach from anyone on the table. The other facilitator would arrange the smart screen to be closer to the table and made sure that the agenda was projected onto the smart board. While they were arranging the physical space, the remainder of the TAG members would enter the room. The physical arrangement created conditions for an intimate space among all the TAG members.

In the fifth TAG meeting, the TAG members experienced Nepantla without the group having to name it this is a Nepantla. However, as researchers, Nepantla helps us explain the importance of creating the spaces. In my wishful thinking, all TAG members after the grant—which was abruptly terminated on April 25th, 2026—have a lived of experience a physics space where ideas and experiences of historically marginalized people by the dominant physics culture were heard and valued. All the skills/ practices of DAT Process Skills, Shifting Realities State, and Norms were intertwined and alive/enacted/practice/considered when Pablo entered Nepantla by sharing his idea of the Advising Document Space project needed to be the groups priority.

## Research Question 2: How did the facilitators and advocates enacting the DAT Process Skills, Shifting Realities State, and Norms in supported Pablo to navigate the Path of Conocimiento?

In our analysis of Pablo's we demonstrated that while the group norms were represented by a static slide at the beginning of the meeting, those norms were an active participant during TAG sessions. The norms were there to be taken up for any TAG member to be enacted when they wanted. These were not strict rules that were imposed by the facilitators or advocates, they were collectively discussed. Moreover, the Norms were revised when CM began collecting data on the third meeting of TAG that semester. When the facilitators revised the meeting Norms, they empowered all TAG members to choose when data collection could be stopped – which was represented in part by Red Consensus cards. The Norms were clearly communicated, agreed upon, and used by all TAG members even when enacted/integrated/incorporados by each member differently. As we can see in this seven-minute dialogue, seven of the total nine participants in the meeting contributed to the dialogue.

The facilitators and advocates enacted the DAT Process Skills, Shifting Realities State, and Norms when supporting Pablo navigate the path of Conocimiento. The DAT Process Skills were enacted/done/practiced by facilitators when Pablo held the yellow card up to share his idea of not agreeing with the group. Similarly, the facilitator and advocates embodied different nuances on how to share ideas so Pablo had seen what it can look like to share an idea with the group. The facilitators and advocates were in the state of Shifting Realities, ideating on how the department would be able to change to support a physics TSOC. Lastly, the Norms were clear expectations and capacities, yet by the fifth meeting when Pablo chose to navigate the Path of Conocimiento collectively all TAG members were now aware of the nuances on how each member embody/enacted/part-take with the Norms. The interweaving of all these skill/practices/principles/tenets is what supported Pablo to navigate the Path of Conocimiento collectively with the physics TAG people.

## Trust as the groundwork for supporting the state of Nepantla

All the skill/structures/actions supported the environment that helped Pablo share his idea. The challenge is that those practice/structures/skill cannot be summoned to be present for when all the Pablo's moment happens. Rather is the trust that all TAG participants had on the group Norms, DAT Process Skills, and the Nepantleras in the state of Shifting Realities. It is the trust of the consensus cards could stop the group from progressing forward to listen to a different opinion. It is the trust that a person can voice when an idea put on the table without saying the exact words but rather "Imma be transparent, think, I am just gonna say." It is the trust that Abigail will cue the next person to talk, Grace will insert her mm and mhm when agreeing, and Layla will ask questions to clarify and based on curiosity.

It is the trust of Taylor in her wisdom of the Shifting Realities that she is willing to be curious about Pablo's idea. It is the trust that Taylor also accounts for the power differential between her/their and Pablo can influence how Pablo is not fully sharing his idea yet. It is also the trust that Pablo has in himself and the group Norms to take care of himself in the moment are used and respected for the agreed upon use in the TAG space. This trust comes from the alignment of the TAG members action to the agreed upon Norms, DAT processing skill and the willingness for all to ideate about how to change the institution.

# Conclusion

The physics TAG meetings is a space that is within the physics community. The group dynamics in TAG can be recreated in other physics spaces by presenting DAT Process Skill, being curious about the state of Shifting Realities, and collectively agreeing about Norms. The three are not prescriptive or needed as rules. The DAT Process Skills are curated tools to support people conversation about enacting change within a physics department. These worked in TAG because the intention of the creating the group was to ideate concrete changes a university can do to better support physics transfer student of Color. Nepantla is the space in between the dominant and non-dominant, in the physics TAG meeting the non-dominant is the culture of a bachelor's degree-granting institution physics program to support students who began in the associate degree-granting institution. In this space, they collectively imagine how an institution will support them in navigating the path of earning a bachelors. The Norms are usually created to set boundaries of what will a group do or discuss. In physics TAG space, in which discussions were needed to ideate and create concrete changes for an institution to part-take, the Norms were created to achieve this goal.

In the analysis of this seven-minute discussion, we begin to see the influence of taking even short amounts of time for our peers and students in physics to feel respected and heard. The opportunity of a seven-minute discussion that supports a student to be heard and respected is possible because of the intentionally enacting the DAT Process Skills, Shifting Realities State, and Norms. Circling back to Pablo's hesitation of sharing an idea can be further exacerbated in a culture in physics, where precision, simplicity and quick responses are systematically reinforced over uncertainty. This emphasis on efficiency may be robbing the physics community of opportunities for a person to feel respected by other physicists when they are uncertain or take time to think about their ideas.

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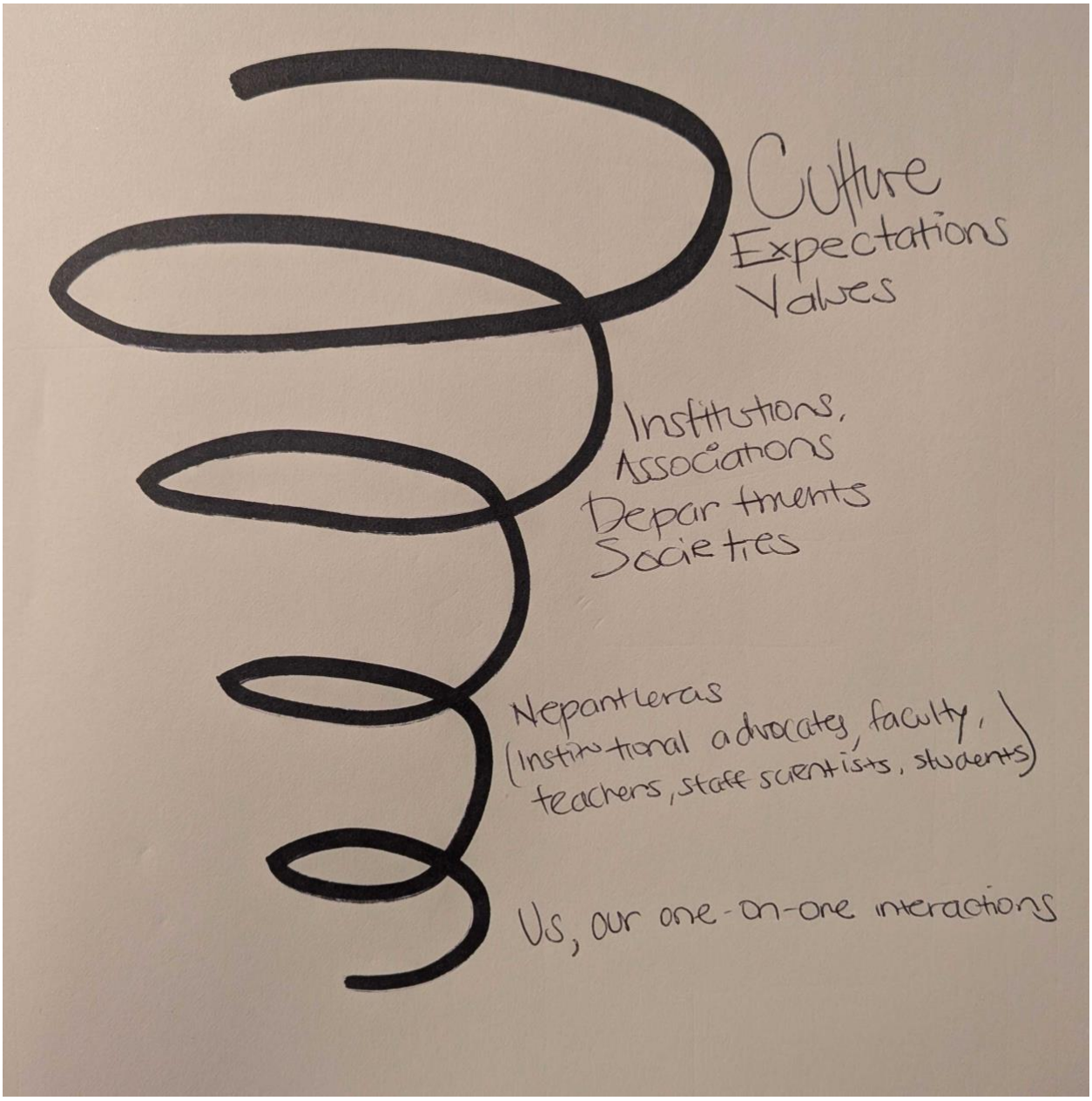
In this dissertation, the main body chapters provides an opportunity to discuss the spiral-down effects of how culture, expectations, and values shape our everyday interactions. Nepantla, in Gloria Anzaldua's work, is often written in a sprial storytelling or process, allowing ideas to be revisited at different instances with different nuances. Below, I present the spiral that illustrates how, with in physics, culture, expectations, and values are factors of our everyday interactions among physicists, conciously or unconsciously.




The image shows the spiral in three-dimensions to illustrate the distillation of culture, values, and expectations can pass through to the one-on-one interactions that people have. The first spiral constitutes the physics culture, expectations, and values. It then progresses and becomes formalized by societies, insitutions, associations, and departments related to physics. As

it progresses downward, we can begin to think of people as Nepantelras. All people bring their own experiences from within and out side of physics, yet physics is the commnonality among them. Lastly, in the final progression of the spiral are the one-on-one interactions among physicists and aspiring physicists. The spiral also gives perspective on the interconnection between one-on-one interactions and the "intagible" culture, values, and expectations in physics.

The point of illustrating this organization is to expand on what comes to play when we, as physicist, interact in everyday situations. We are not entirely consumed by physics, yet we are not completely detached from physics as a culture. Therefore, this illustration of how we, as physicists, are connected can help us discuss aspects such as power and system watchers. Similarly, it can provide physicists with a model to talk about how different roles, whether students, professors, staff or advocates, are both embeded within and capable of influencing *any level* of the spiral.

In the next section of this discussion, I will discuss how power can distill down to the different parts of the spiral. The first aspect will focus on how power can distill all the way down to us in the one-on-one interactions that happen, even within group dynamics like Pablo. Then I will also discuss how the culture, expectations and values can distill down and be considered at the stage where institutions have influence and where there is power to enact real change in those aspects. This discussion draws from the work of the New Blended U.S..

## Distillation from the Culture, Expectations and Values to Insitutions, Association, Departments and Societies

In my work of developing the Partnership Profile Template as a tool to reflect and honor the labor of people sustaining partnerships among community colleges and universities, the tool functions similarly to the spiral image presented in the previous section. It illustrates a kind of distillation that recognizes the cultural expectations and values that exist within dominant research practices of associations departments, and societies. These dominant research practices can be colonizing practices, meaning that the knowledge is extracted of from historically marginalized groups by researchers. Researchers then repackage (analyze) and redistribute (research products like publications and presentation) to the academic world, authored primarily by researchers themselves.

As researchers at research-intensive universities, we have the resposability to disrupt the cycle of extracting knowledge from other historically marginalized societies, for example associate degree granting instituions (ADGIs). The Partnership Profile Template was developed to slow down that process and consider an alternative way of repackaging knowledge about sustaining a cross-institutional partnership. The product of the tool, the Partnership Profile, creates a space in which researchers and the researched, in this case partnership members, are more involved in the overall research practice.

A partnership between ADGI and a bachelor's degree granting institution (BDGI) carries embedded historical and social hierarchies that impact its members. Each member holds knowledge about sustaining the partnership because of their role in it. Yet some members' voices are more readily heard because they hold titles such as Principal Investigator on a grant, or because they are centered within the socio-historical relationships of the institutions they represent. Who becomes centered can depend on the institution they represent and/or their "title" at their institutions. For example, an idea from a faculty member at a BDGI may be centered or valued more than an idea from a staff member at the ADGI. In other words, as researchers, we

have the responsibility not to perpetuate the colonizing research practices and consider the socio-historical relationships between ADGI and BDGI as another form of systemic oppression.

Cross-institutional partnerships inherit power form the infrastructure of educational systems in the United States. Simulatneously, these structures can fail to recognize the individuals within partnerships who may hold equal or even greater power through their contributions to knowledge. When developing the Partnership Profile Template, we constantly reflected on all the work we knew our colleagues were doing. Whether it was a BDGI staff member who supported transfer students in adapting to the university or an ADGI staff who continously update themselves on the STEM requirements of the local universities for the program at the ADGI. The goal of the cross-institutional partnership is to support students succesfully transfer from an ADGI to BDGI. The Partnership Profile Template as an humble attempt to intentionally reflecting on partnerships and primarily highlights the labor the people that sustain them.

Intentional choices to not reinforce a one-way collaboration or the oppression from which an BDGI benefits must be made. Therefore, de/colonizing methodologies support the tension between the agendas towards liberation and colonizing research practices. These approaches create space for ongoing negotiation around how research can gradually move toward liberatory practices for both the researched and researchers. This also creates space within research pracitces to recognize the individuals who sustain these partnerships.

Although the Partnership Profile Template was not developed directly for a partnership supporting physics majors to transfer between ADGI and BDGI, it was developed for partnerships that supported STEM students transferring from ADGI and BDGI. A connecting factor between this work is that about 13% of physics bachelors began their academic career at an ADGI. Even when a student successfully transfers to a BDGI, there is still work that needs to be done to support STEM transfer students. My work on Nepantleras allows us to discuss what this work looks like for those at BDGIs who support transfer students of color in successfully completing their STEM bachelor's degrees.

## Distillation from the Insitutions, Association, Departments and Societies to Napantleras (Institutional advocates, faculty, teachers, staff scientist, and students): The System Watchers

We are the end of the first most outer spiral now much closer to the institutions, associations, departments and societies. At this point my work on chapter 3 about Nepantleras illustrates this piece of the STEM student spiral. Dreamward, Reese, and Mike are what I call system watchers. Meaning they were learning about what the educational institution, the BDGI where they work, was doing to support STEM transfer students of color. As Nepantleras, they were learning about the institution through three modalities. The first modality was learning directly through the experiences of STEM transfer students of color about what the institution was doing to support them. The second modality was through the changes they were able to do within their own effort. Fear of influence at the institution. So the Nepantleras were well aware that they were embedded and part of the institution who could make changes directly. With the third modality was the collaboration with others, at the institution, who are supporting STEM transfer students of color. Together these modalities demonstrate how using the theory of Nepantla we spiral in from cutlure, expectations, and values to associations, departmnets and societies through the actions of Nepantleras.

Dreamward, Reese, and Mike, as system watchers, observe how the institution is not fully supporting STEM transfer students of color. Instead, in their own spaces, they recognize their own power of influence to make changes in order to support the STEM transfer students of color. Dreamward, for example, recognizes the challenge of the institution not processing the transfer scripts as students soon enough. Mike, on the other hand, recognizes the importance of providing financial support for transfer students and raises funds to create a scholarship for them. In this process, they are both acknowledging what the institution is missing in supporting STEM transfer students of color and working to change the institution from within their roles. The changes these Nepantleras enact are intentional efforts to support STEM transfer students of color.

Our understanding of Nepantleras drew from the understanding of navigating a predominantly white institution as people of color. They have deep knowledge about institutional infrastructures that both support and inhibit TSOC-STEM success. Both Dreamward and Mike used their own personal experiences at the same institution to reflect on what would have supported them in order to support STEM transfer students of color. Reese, on the other hand, brought historical institutional knowledge based on her previous role at the institution as a supporter for students who wanted to internally transfer into programs with specific qualification requirements. As Nepantleras, they understand the challenges of navigating a predominantly white institution.

They're not only learning to better navigate a predominantly white institution, but they are also actively in a state of Shifting Realities by imagining and acting on the best infrastructure to support STEM transfer students of color. Reese recognized the importance of connecting with the local community colleges so that STEM transfer students of color can encounter a familiar face before commiting to the BDGI. Dreamward supports STEM transfer students of color by engaging them in conversations about their careers beyond the conferral of their bachelor's degree. As a Nepantlera, she “walks” along STEM transfer students of color as they imagine different possibilities for their futures. Mike takes a more pragmatic approach by creating changes that support transfer students through fundraising and by creating spaces where their voices can be heard and collectively communicated to the institution about the needs of STEM transfer students of color.

The Transfer Advocacy Group facilitators—Abigail, Grace, and Layla—were also system watchers operating in the Shifting Realities state of mind. The facilitators intentionally created a space where physics transfer students of color voices were centered and prioritized within the group. Studnets were asked to share their experiences at the BDGI to make intentional change at the department level; in this sense, they were the knoweledge holders. The facilitators did not reproduce the insitutional and departmental practices that privilege titles or seniority as markers of authroity. Instead, they continually checked in with the students through the use of consensus cards to ensure that students remained the decision makers for the projects the group would pursue.

All six of the Nepantleras in their roles at the BDGI prioritized the experiences of transfer students over simply completeing their job responsibilities. Nepantleras recognize the shortcomings of the institution, and within the sphere of influence, they create alternative expereince for transfer students. The intantional choice of recognizing systemic marginalization and choosing to create an alternative experience is a practice that all of us, as physicists, can engage in within our roles. While our roles in physics may differ, each of us still has the opportunity to shape and transform the physics community in which we participate.

## Distillation from the Culture, Expectations and Values to the Us, our one-on-one everyday interactions

Now we shift into the final piece of the spiral – the "us" and the one-one one interactions. As we do so we recognize that power comes into play in our interactions every day. Usually power within the physics community is given by title. Whether the title is student, postdoc, or faculty, these titles communicate what is known about the field and how a person can exert power over another person in the field Instead I am calling for the community to think of power as an opportunity for anyone to make change the physics community. Thus allowing for the community to adapt to the changes that are happening within society or within the people who practice physics themselves.

At the Shifting Reality state of the path of conocimiento, power is shared among all Nepantleros. During the shifting reality stage, we recognize that there are multiple realities where different physicists can experience different aspects of physics. We see this in particular through Pablo's example when he was able to see that his important idea needed to be considered by the group, but also wanting to change what the group was thinking about. As a transfer student of color, he was willing to ask for the other physicists in the room to consider his idea before progressing on silently with an idea that he did not necessarily agree with. This is an instance where physicists were willing to share power among everyone present, rather than allowing someone with more authority—such as the facilitators or an advocate—to decide what the group would do based on their position or what they believed the program needed.

Pablo's moment to share his idea did not exist in isolation form the physics culture or the power embedded in that culture. Dr. Taylor in her/their reflection talked about the myriad of social and expectations that she/they were considering when interacting with Pablo. She/They took the responsibility of having been the first person to contribute the idea of progressing forward with both of those projects for TAG. She/They also consider the power dynamic that she/they hold(s) within the Physics Department as a faculty and during the group discussion. She/They also were aware that in the moment of the dicussion, Pablo was back pedaling his own idea, and voiced that she/they were interested in understanding his idea, rather than challenging it. Although TAG had created a space that centers the voices and experiences of transfer students of color, like Pablo, Dr. Taylor still was aware that the outside TAG influences, like being faculty, were still present in the discussion with Pablo.

Even as as readers right now, most physicists would consider Pablo's moment a courageous one. A *student* was willing to voice how he did not agree with the rest of the group of physicists about how the group should move forward with the projects. Pablo chose to stop the TAG discussion to voice his idea about what the group should focus on. This is not an expectation within a physics space –a group discussion would only be paused to communicate an idea that is certain or the "right answer," not for a collective discussion on what to do next by a student. The rules of what a student can or cannot do in their group have been defined by the culture, values, and expectations.

Yet, the facilitators of the TAG as Nepantleras, operating in the stage of Shifting Realities, intentionally made sure that power was distributed within the group. They created the TAG space through all three elements: Norms, Shifting Realities, and DAT process skills. The norms helped move from unspoken norms to explicit expected norms of how people could engage in the conversation and change the ideas that were being discussed in the group. Shifting realities supported how Nepantleras were willing to acknowledge how each transfer student's

experiences were as a source of knowledge *needed* to consider how the institution could better support transfer students of color. The DAT Process Skills were tools that supported TAG members in navigating the process of changing the institution through collective agreement. As Nepantleras, the facilitators made the cultural expectations and values explicit within the TAG space, which existed within the larger physics space that all members were part of.

Having done the work of explicitly naming the new norms in the TAG space allowed Pablo to share his idea and also break a norm to communicate his enthusiasm about the group's idea. Pablo used the consensus card to bring up the idea of changing what the group was going to focus on the projects. He was navigating the Path of Conocimiento to understand what he wanted to see be part of the changes that TAG was making. After Rodrigo having explained in detail how he saw both projects to be harmonious, Pablo enthusiastically shared that he agreed with Rodrigo's idea. Pablo did not wait for Abigail, as the facilitator, to give him the cue to speak. Pablo breaking the norm also communicated his enthusiastic consent to making sure that both ideas would be carried forward by TAG.

Now here is my joyful-Shifting-Realities day dreaming. Pablo, as physicist who has experienced a space like TAG, knows how it feels to be in a space where all your experiences as a physicsit are valued. In fact, he knows what it feels like to be in a space were the experiences that once made him feel marginalized in physics are valued, appreiciated, and even invited by a group to enact change. He may not experience the transformation of the BDGI to become more transfer receptive during his time there. Yet in future spaces that he enters, he will know how to value the experinces of people in a physics space. He could perhaps lead a space were he replicates the collaborative environment of TAG—where ideas that are not always popular can still be shared and considered by all memebers participating in the space.

## A Few Final Thoughts

Nepantla can help us, as physicists, walk between the systems we participate in and the interpersonal interactions we experience, helping us understand how to hold that together individually and collectively. In Chapter 4, I showed how the TAG facilitators used the DAT Process Skill, Shifting Realities and Norms to sustain the community during the meetings and to come back into the meeting space. The facilitators in this space were experienced facilitators of other collaborative spaces among students. They were able to bring those skills into the TAG meetings in ways that intentionally supported the flow of conversations and centered students' ideas in the discussion.

I am not forgetting that we, as physicists, are trained as positivist thinkers. In my physics training, this perspective initially shaped how I read and interpreted Aguilar-Valdez et al. (2013) for the first time. The piece offered a clear introduction into Ciencia en Nepantla, and created a perspective on what sceince in Nepantla could be. It was also where I began to more deeply consider what Nepantla in physics might look like. Yet the challenge came from how my physics training had concretely taught me to define an observed phenomenon, detail the assumptions used to resolve it, set well-defined boundaries, and determine whether the phenomenon could be explained through measurable or observable variables. The physics training in me wanted to review Aguilar-Valdez et al. (2013) by dissecting the content—identifying bounded phenomena, extracting defined assumptions, and locating measurable variables in the manuscript.

This rigorous physics training sits in tension with the Nepantla framework. Nepantla involves the ebb and flow, stages and practices, and ways of knowing that are not easily

dissected or placed into rigid categories. That expectation of categorization aligns more closely with the colonialist training embedded in physics. Gloria Anzaldúa's theory, in contrast, is infused with wisdom from her own worldviews and experiences as an American whose identity does not align with the dominant social group in the United States.

Being in Nepantla is not a place of comfort. Instead, it is the capacity to share discomfort with others and the willingness to carry that discomfort together with you, my fellow physicists.

## If you are faculty

Nepantla is a guidance that is not easy to embrace yet it can transform a space that it is a place that many would want to be in. Being and createing the space will take intentional labor. Dr. Taylor in their interview reflected on the amount of labor it takes to be present with students in the space of Nepanlta. Dr. Taylor, as an advocate, held a lot of power on decision making and wielded it to be shared. In her/their post-interview, she/they was/were actively considering simultaneously multiple responsibilities in the conversation. Frist responsibility is she/they felt responsibility of having brought to the group the idea of splitting up to put effort into both the Advising Document and Community Space projects. In the dialogue she/they embodied/enact/do the responsibility by beginning with her/their intention of the questions is a clarifying one about Pablo's concern. Once Pablo responded to her/their question, Dr. Taylor recognizes that asking a question in a physics space can shut down a student sharing their ideas so she/they immediately voice her/their question was out of curiosity and not to shut down Pablo's idea. In Dr. Taylor willing to be curious about what Pablo was thinking and recognizing how in physics space this can be a gesture to shut down an idea, she instead voiced her intention and circled back to wanting to know what he is concerned about to share the power with Pablo about what the group puts effort into.

Creating spaces that people are willing to show up genuinely within physics will not only create better collaboration but I believe it can advance the physics field more than we can currently possibly imagine. The challenge to is that this is labor that is not currently valued, expexcted or cuturally wide with in physics. If we were to change the culture of physics it will take a collective unpaid labor that has not yet been written into job descriptions. I would like us all physicist to question the physics enterprise and the knowledge of physics, I believe this can make a difference, my initial inclination is that we being with (re)imagining what is the de/colonized and non-dominant physics knowledge is.

## My re-imagining of my undergraduate experience

If I were to reimagine my undergraduate physics degree, it would be for every lecture to be turned into a modeling instruction course with a some modifications. The Modeling Instruction course already changes the paradigm as instructor centered to student centered. Among the modifications I would make are: giving more grading weight to learning how to collaborate and assigning reading based on Department Action Team process skills. I would ask physicts to reflect on how they addressed conflict resolution as classmates, or what they silently recognized about their peers. Similarly, I would include homework exercises that require critical thinking about the phycists who collaborated to create the knowledege presented in the course and ask students to compare this with who is recognized today for the theory or concept.

I would have wished that professors in my undergraduate experience had asked about my career aspiration sand plans with a bachelor's degree. I also wish they had asked what would help me succesfully be my authentic self alongside my career choices.

## If you are a student

My enjoyment of physics comes from the skill of explaining a phenomenon by describing the boundaries, assumptions, and limitations both mathematically and to be able to connect it with what is observable. I want to share the joy of physics without the harm of gatekeeping it. I do not find it pleasant when someone feels better for understanding something that I do not. Instead, I want for all of us to enjoy sharing what we know, rather than focusing on the sacrifice or "hard work" needed to become a physicist. I hope that, as students, you find the time with your peers and with those teaching you to enjoy what you are doing. If the joy of learning is so great that you can not wait to share it with your friends, regardless of what and who they are, then something meaningful is happening. Physics as a community has power. My hope for you is to understand that power and to always share it with those around you. This is how we make physics more collaborative and welcoming for anyone who has curiosity. I can not say it better than Bad Bunny "Mi nombre is Benito Antonio Marínez Ocasio, y si hoy estoy aquí en el Super Bowl 60 es porque nunca, nunca dejé de creer en mí. Tú también deberías creer en ti. Vales más de lo que pienses. Confia en mí."

# Refrences

Aguilar-Valdez, J. R., LópezLeiva, C. A., Roberts-Harris, D., Torres-Velásquez, D., Lobo, G., & Westby, C. (2013). Ciencia en Nepantla: The journey of Nepantler@s in science learning and teaching. *Cultural Studies of Science Education*, *8*(4), 821–858. https://doi.org/10.1007/S11422-013-9512-9/METRICS