https://doi.org/10.34024/prometeica.2023.27.15286

COMMUNITY COLLEGE MATHEMATICS INSTRUCTORS OF COLOR1 ON THE PURSUIT OF SUPPORTING DEVELOPMENTAL STUDENTS' SELF-EFFICACY

INSTRUTORES DE MATEMÁTICA DE FACULDADES COMUNITÁRIAS NA BUSCA DE APOIAR A AUTOEFICÁCIA DOS ALUNOS

PROFESORES DE MATEMÁTICA DE COLEGIOS COMUNITARIOS QUE BUSCAN APOYAR LA AUTOEFICACIA DE LOS ESTUDIANTES

Taylor Darwin
(Department of Curriculum and Instruction, Texas Tech University, USA)
tdarwin@ttu.edu

Weverton Ataide Pinheiro
(Department of Curriculum and Instruction, Texas Tech University, USA)
wataidep@ttu.edu

Recibido: 03/07/2023
Aprobado: 03/07/2023

ABSTRACT

As of 2017, colleges in the state of Texas in the United States of America are transitioning to a corequisite model where students take developmental and traditional mathematics classes concurrently. Using a self-efficacy framework, this qualitative study aimed to explore the perceptions of four mathematics instructors of color at two community colleges in Texas that have adopted the corequisite model mentioned above. Semi-structured interviews were used to inquire how instructors perceived to best support students through this new model. Using thematic analysis, five overarching themes emerged: feelings of encouragement, vulnerability, and empathy, challenges in supporting students' development of self-efficacy, relatedness to students. The instructors voiced many challenges in helping students. However, most of the instructors also displayed some level of attending to their student's social and emotional needs to overcome these challenges. In many ways, instructors expressed that they have to be vulnerable with their students to overcome challenges and open themselves up so students are more willing to learn. Instructors discussed instances in which they have been oppressed, which have shaped their educator identity, influenced their current practice, and impacted their relatedness with students. Furthermore, instructors expressed constantly trying to form connections with their students. These instructors discussed how their similar social identities, such as language, race, national origin, and mathematical experiences, are an important middle ground that connects them to their students. Through relatedness and vulnerability, instructors discussed getting students to open up and become more receptive to learning, achieving the necessary outcomes to succeed. The five themes discussed in this paper foreground (a) instructors' ability to provide student encouragement, typically through vulnerability, (b) challenges that

[1] In this paper, we employ the term "of color" as a broad category to encompass individuals who are non-white and, consequently, do not belong to the dominant racial group within the United States of America. We do not intend to use this term offensively. We recognize that this term may be subject to scrutiny. Additionally, we aim to engage in discussions and identify more precise and fitting terms to address the population referred to in this paper accurately.

negatively influence students' self-efficacy and (c) relatedness and empathy to help students succeed, resulting in a higher perceived self-efficacy in their students' part.

Keywords: self-efficacy. mathematics education. instructors of color. community college. corequisite course. developmental education.

RESUMO

Desde 2017, as faculdades do estado do Texas, nos Estados Unidos da América, estão em transição para um modelo de co-requisito em que os alunos fazem aulas de matemática tradicional e de desenvolvimento simultaneamente. Usando um quadro teórico de autoeficácia, este estudo qualitativo teve como objetivo explorar as percepções de quatro instrutores de cor de matemática em duas faculdades no Texas que adotaram o modelo de co-requisito mencionado acima. Entrevistas semiestruturadas foram usadas para indagar como os instrutores discutiam as formas de como melhor apoiar os alunos por meio desse novo modelo de co-requisito. Usando análise temática, os cinco temas abrangentes seguintes emergiram: sentimentos de encorajamento, vulnerabilidade e empatia, desafios no apoio ao desenvolvimento da autoeficácia dos alunos e relacionamento com os alunos. Os instrutores expressaram muitos desafios encontrados ao ajudar os alunos. No entanto, a maioria dos instrutores também demonstraram certos níveis de atendimento às necessidades sociais e emocionais de seus alunos para ajudá-los a superar esses desafios. Em muitas maneiras, os instrutores expressaram que precisaram ser vulneráveis com seus alunos para que assim seus alunos pudessem supercar desafios tais como ter mais vontade de aprender. Os instrutores discutiram instâncias em que foram oprimidos, que moldaram suas identidades como educadores, influenciaram nas suas práticas atuais e impactaram as formas com as quais esses instructors simpatizam com as experiências dos seus os alunos. Além disso, os instrutores expressaram constantemente a tentativa de estabelecer conexões com seus alunos. Esses instrutores discutiram como suas identidades sociais semelhantes aos dos seus alunos, como idioma, raça, nacionalidade e experiências matemáticas, são um meio termo importante que os conecta a seus alunos. Por meio de relacionamento e vulnerabilidade, os instrutores discutiram como fazer os alunos se abrirem e se tornarem mais receptivos ao aprendizado, alcançando os resultados necessários para os seus sucessos. Os cinco temas discutidos neste artigo enfatizam (a) a capacidade dos instrutores de encorajar os alunos, geralmente por meio da vulnerabilidade, (b) desafios que influenciam negativamente a autoeficácia dos alunos e (c) relacionamento e empatia para ajudar os alunos a ter sucesso, resultando em uma maior autoeficácia matemática por parte dos alunos.

Palavras-chave: autoeficácia. educação matemática. instrutores de cor. Faculdade Comunitária. curso de co-requisito. educação desenvolvimentista.

RESUMEN

A partir de 2017, los colegios universitarios del estado de Texas en Estados Unidos de América han hecho la transición a un modelo de corequisito en el cual los estudiantes toman clases de matemáticas tradicionales y de desarrollo de forma simultánea. Utilizando una teoría de auto eficacia, este estudio cualitativo tuvo como objetivo explorar las percepciones de cuatro profesores de color de matemáticas de dos universidades de Texas que adoptaron el modelo de corequisitos mencionado anteriormente. Utilizamos entrevistas semi estructuradas para preguntar cómo los profesores discutieron las formas de apoyar mejor a los estudiantes a través de este nuevo modelo de corequisitos. Utilizando el análisis temático, surgieron los siguientes cinco temas generales: sentimientos de aliento, vulnerabilidad y empatía, desafíos para apoyar el desarrollo de la auto eficacia de los estudiantes y relaciones con los estudiantes. Los profesores expresaron muchos desafíos encontrados al ayudar a los estudiantes. Sin embargo, la mayoría de los profesores también demostraron ciertos niveles

de satisfacción de las necesidades sociales y emocionales de sus alumnos para ayudarlos a superar estos desafíos. De muchas maneras, los profesores expresaron que necesitaban ser vulnerables con sus alumnos para que estos pudieran superar desafíos cómo estar más dispuestos a aprender. Los profesores discutieron instancias en las que fueron oprimidos, lo cual dio forma a sus identidades como educadores, influyó en sus prácticas actuales e impactó la forma en que se identifican con las experiencias de sus estudiantes. Además, los profesores expresaron constantemente sus intentos de establecer conexiones con sus alumnos. Estos profesores discutieron cómo sus identidades sociales, similares a las de sus estudiantes en términos de idioma, raza, nacionalidad y antecedentes matemáticos, son un punto de conexión importante. A través de la relación y la vulnerabilidad, los profesores discutieron cómo lograr que los estudiantes se abran y sean más receptivos al aprendizaje, alcanzando así los resultados necesarios para su éxito. Los cinco temas discutidos en este artículo enfatizan: (a) la capacidad de los profesores para alentar a los estudiantes, a menudo a través de la vulnerabilidad; (b) los desafíos que influyen negativamente en la auto eficacia de los estudiantes; y (c) la relación y la empatía para ayudar a los estudiantes a tener éxito, lo que resulta en una mayor auto eficacia matemática por parte de los estudiantes.

Palabras clave: autoeficacia. educación matemática. profesores de color. colegio comunitario. curso correquisito. educación para el desarrollo.

Introduction

In 2017, Texas House Bill 2223 transitioned developmental students (students who were not deemed ready for college based on standardized university entrance assessments) to the corequisite model. Under this new model, developmental students are required to take both their developmental and traditional mathematics courses concurrently during the same semester (Texas High Education Coordinating Board, 2018). Prior to the implementation of the corequisite model, if a student was not deemed college-ready, they were mandated to take at least one developmental course (which supports students in areas where they lack foundational knowledge according to the university entrance exams) before they could enroll in their required mathematics classes.

The field of mathematics has a history of underserving historically marginalized students due to gender and sexuality (see Ataide Pinheiro, 2021; 2022; Goldberg et al. 2023; Lubienski & Ataide Pinheiro 2020; Neto & Ataide Pinheiro, 2021), race and socioeconomic status (SES), especially African Americans, Latin@s, and those in poverty (Battey & Franke, 2013; Willey & Ataide Pinheiro, 2019); unfortunately, developmental courses have yielded similar results. Developmental courses disproportionately and negatively impact students of color (Dunigan et al., 2018; Mashall & Leahy, 2019). Around 60% of all students enrolled in college will take a developmental course (Grubb et al., 2021); of those, 66% are Black and Latinx (Brathwaite et al., 2020), and around 70% are first-generation college students (Nix et al., 2020). Specifically, community colleges enroll a more significant percentage of Black and Hispanic students compared to White Students, along with a majority of low-income and first-generation college students (FGCS; Peaslee, 2017). Research has shown these students come into community colleges at high rates and low self-efficacy (Peaslee, 2017). Further, students who have low-self efficacy are more likely to have low levels of achievement (Ayllon et al., 2019), which may impact their college attrition (Peaslee, 2017). Currently, there are no large initiatives to help these specific populations, only initiatives aimed at assisting developmental students in general (Braithwaite et al., 2020). Therefore, community colleges have a large enrollment of students of color in corequisite courses and their focus needs to be shifted to how to support these students.

Given the dearth of research on students attending 2-year colleges (also known as community college) and the role these institutions play as “educational pipelines and points of access to continued higher education for underrepresented groups” (Chang, 2005, p. 772), this study aims to explore critical areas in community colleges and the instructors who interact with students. Since faculty members substantially impact students, especially the populations mentioned above (Peaslee, 2017), the present

study focuses on how instructors of color perceive their support of these students. In particular, this paper aims to answer the following research question: How do community college teachers of color in Texas believe they are supporting developmental mathematics students' self-efficacy?

Theoretical perspectives and brief literature review

This study uses the framework of self-efficacy to aid in explaining human behaviour (Bandura, 1977). Self-efficacy is a person's perception of their ability to "exercise control over their own level of functioning and over events that affect their lives" (Bandura, 1993, p.118). Self-efficacy can predict a person's motivation, learning, self-regulation, and achievement (Bandura, 1997). Further, Bandura (1997) emphasized that these predictions are based on what an individual believes they can do versus what they may be able to accomplish.

Self-efficacy is the outcome of a system with certain performances that are widely used within educational contexts (Bandura, 1993; Gordon, 2022). These performances are based on four sources: performance accomplishments, vicarious experiences, verbal persuasion, and physiological states. The four performances adopted by Bandura (1977) contribute towards self-efficacy and can help predict how much effort an individual will put forth in situations. The four sources of self-efficacy may impact how teachers influence students to achieve self-efficacy (Gordon, 2022), and can moderate how they interpret their classroom experiences (Bandura, 1997).

Regarding the self-efficacy literature in mathematics, research has shown that students are often surprised to learn that they have been deemed not college ready and have been assigned to corequisite courses (Hu et al., 2015). Specifically, enrolling in developmental mathematics courses damages women and minority students' self-efficacy (Green, 1990). Higbee and Thomas (1999) found that several external factors, such as the institution or instructor, could impact developmental students' success. However, the same study found that students' attitudes about mathematics also impact their overall success in the course. Further, they claimed that self-efficacy needs to be established in developmental courses for students to see their relationship with cognitive performance. How developmental students view their mathematics skills can significantly impact their confidence, understanding, and performance in the course (Brathwaite et al., 2020). Students of color often suffer from lower levels of self-efficacy (Wood et al., 2015), perhaps due to their inequitable experiences in mathematics from a young age (Brathwaite et al., 2020). From the instructor's perspective, several practices can be done to enhance a student's self-efficacy (Ayllón et al. 2019).

Methods and methodology

This study seeks to explore the perceptions of instructors of color teaching corequisite mathematics courses at community colleges in Texas through interviews. In total, four instructors volunteered to participate; see Table 1 below for the participants' demographics.

Pseudonym	Gender	Race	Sexual Orientation	Age Range	Teaching Experience
Consuelo	Cis Woman	Mexican American	Straight	50-59	18+
Dani	Androgynous	Latin	Queer	40-49	6
Corrina	Cis Woman	African American	Straight	50-59	17
Daniel	Cis Man	Salvadorian	Straight	40-49	15

Table 1: Participants' demographic information

The four individual interviews took place virtually and lasted 40 minutes to one hour. The first author conducted the interviews; however, the second author was also present and asked probing questions at

the end of each interview as needed. A semi-structured interview format was selected, so deviation from scripted questions could fulfill all interview's specific needs. After each interview, the authors immediately debriefed and reflected on emerging themes from the interview.

Data Analysis

Microsoft Teams was used as the recording device for the interviews. The data from the video recording were transcribed using an automated transcribing service, coded, and analysed with support drawn from the authors' debriefs and the usage of the software MAXQDA. This study used thematic analysis as an analytical tool. Thematic analysis allows qualitative data to be grouped and themed to understand the data (Terry et al., 2017). Individually, both authors used inductive coding to make sense of each interview, met to discuss their coding, and created themes out of a set of similar codes. The themes found are discussed below.

Findings

Encouragement was the first theme found through the voices of the instructors. Encouragement represents the overarching theme of the instructor's personal journey to becoming a mathematics instructor, and how their experiences have shaped the openness (vulnerability) they displayed towards their students. As Daniel expressed, "good teachers in high school...pushed me and I wanted to go to college", and "good influences and also having enthusiasm for myself [...] striking out my path in mathematics and figuring out that was the subject that I really loved". Similarly, to Daniel, Dani, believes he was drawn to the education field because of teachers: "she [referring to the teacher] was the first person who had ever encouraged me in math," and "my experience as a developmental student - that's what made me into a successful instructor because I was not gifted at math." Consuelo admitted "I never saw in myself the potential they saw" and "it was the instructors here [referring to the community college she works at], that got me to thinking about getting into the field of education." *Vulnerability* as a theme arises when instructors, such as Corrina, expresses the ways social identities impacted her to become a teacher: Corrina explained, "when I was in the 5th grade- that's the first time I had a black teacher and at that moment I realized I could be a teacher." The instructors used these personal experiences as a means to open up to and motivate their students. For example, Dani discussed the following strategy to work with his students, he said:

> You can still learn it [math], it's not too late, I started super older. If I can do it, so can you… it may take a couple times, but you're always welcome back if you fail, that's not a comment on you. All it means is you need more time with the material. I tell them these things over and over… you can be good at math.

Instructors also displayed nuanced discussions of the ways they support corequisite students. Consuelo believes, as she expressed, that "instructors put their heart and soul and effort into everything they have to try and help these students be successful." Through interactive activities, group work, and telling stories about math, she feels the students can support each other and get "different scenarios to know that not every problem is the same."

Daniel wants the corequisite students to get out of the mindset that students are going to embarrass themselves if they ask a question by encouraging them to speak up in the classroom. In fact, Daniel mentioned that sometimes he does not even talk about math with the students. For Dani, making sure his classroom is a safe space is a priority. Corrina discussed how she incorporates practices that involve building and measuring things that go over the basics and support students to start to develop a conceptual understanding of mathematics through basic knowledge.

Instructors mentioned ways they felt they were helping students succeed academically and non-academically. From Corrina's perspective, support can be as simple as "talk[ing] to them [students] about how college works" to make them feel like they belong in those learning spaces. She goes on to say students need to "feel like they're part of the community...[and] assets to the community." Dani takes a

more personalized approach, as he expressed, “I don’t try to make my job easier. I try to genuinely address each class as a new entity. And sometimes I’m just constantly building new courses”. Whereas Daniel views himself more as a mathematical psychologist, having to figure out what works best for students and motivate students.

Instructors demonstrated several preconceived emotions they have regarding their students. For example, Dani mentioned:

> a good majority of my students are coming in with math anxiety. And reading through their observations about good and negative experiences, I kind of feel like anxiety isn’t something that you developed because of your inability to do math. Math anxiety is given to you because of people’s reactions to your inability to do math.

He mentioned to believe math anxiety is caused by instructors themselves, as he said, “about 80% of my students talk about being mocked by an instructor at their high school level or below.” Corrina believes that “a lot of them [students] had confidence issues […] especially because they were told […] they were […] bad in math”. Yet, she says, “it wasn’t that they were not good at empirical thinking or some of them had gaps in their knowledge. Some of them had confidence issues and emotional issues so we worked through them my first-year teaching.” Corrina believes the corequisite model is a short-term non-equitable math solution since it does not allow students to fully develop as much as other students, and therefore, it contributes to students’ lack of self-efficacy in mathematics.

Challenges in supporting students’ development of self-efficacy were influenced by technology, students’ generational upbringing, the COVID-19 pandemic, students belonging to underserved groups, etc. Specifically, Consuelo said her biggest challenge was not having much time with coreq students; this was echoed by Corrina who believes the corequisite model is just getting students through faster, but not actually learning mathematics. Additionally, Consuelo mentioned the difficulties of getting students to attend class, which was echoed by Daniel mentioning that “very few students showed up, and when they do show up it is hard to get them to participate and ask questions”. Daniel believes the problem is that the current students’ generation wants it instantly. Due to COVID, Daniel thinks we will be needing to support students even more than before because students coming out of high school “aren’t ready.” Yet, Daniel also thinks COVID had more of an impact on their mindset and change their mentality about learning from home. However, Corrina believes that post-COVID online students has even lower math ability in comparison with students that attend her class in-person. Additionally, she believes post-COVID students are wanting to do less and thinking education should be easier. Dani believes there is a noticeable difference in the skill sets of people coming out of high school, yet non-traditional students seem to be pretty much the same. Lastly, Consuelo mentioned, “it’s been very, very stressful trying to meet the needs of all the students at the same time in all of these different modalities. It is just overwhelming, really.”

Systemic challenges were also mentioned throughout the interviews as instructors commented on power dynamics, stigmas, and various barriers faced by students and them as instructors. Consuelo believes some students have a stigma about college, and these stigmas create barriers. Dani discussed systemic challenges, he said, “I watch out for power dynamics [...] a lot of times male Caucasian students are more willing to speak up.... than perhaps a female person of color”. Corrina mentions the corequisite model itself may be a lot for students since there is way too many things to learn in one semester with one hour of help. Dani echoed this sentiment by saying, “this is a lot of math in one semester for anyone”. When considering the root of the problem, Corrina believes it’s a societal problem, recalling a time her white colleagues was scared of a student, she said, “he was a big guy, black guy, and they were afraid of him.... if your teachers are afraid of you, that’s not a good experience to have in class”.

Relatedness as a theme was formed through an engagement with *empathy* or having similar cultural, social, racial, language, gender, mathematical, or some form of relatedness with the student. For example, Daniel mentioned, “there is a cultural barrier, I think sometimes, as soon as they could see that, ohh, this person understands my background a little bit [...] I instantly feel the tension go away,” or to

have a mutual background with students makes them feel safer and open up; he believes it is important students see someone they could relate with. Corrina mentioned she has had a student come to her office and ask her questions because she looks like the students, and they felt comfortable. Dani relates to his students because of his experience as a developmental student. As he said, "I was not gifted at math... I didn't know that I wanted to study math, I didn't know I found it interesting." Consuelo relates to her students through her experiences as a single mother, telling her students she also had to struggle through college to be successful. Daniel attempts to relate anything back to math for his students, he expressed, "math kind of opened the world up to other sciences, philosophy, all kinds of stuff... I try to push that to my students, too" and "math can open the doors to almost anything you wanna learn about".

Empathy is an ever-present sense from these instructors as they discussed their relations with their students. They wanted their students to feel comfortable, to know it is OK to make mistakes, and that they were once also in their shoes to some capacity. This empathy may happen through creating community and/or safe spaces for the students and getting students to know they once occupied the same spaces as them.

Discussion

Through encouragement, vulnerability, challenges, relatedness and empathy, instructors of color presented a clear picture of what they do at community colleges in Texas to support their students. The challenges instructors face created different fixations. Dani mentioned the power dynamics he is cognizant of and the math anxiety his students face; as a result, he is careful to create a safe space. Often, teachers of color will create environments that attend to students' Social-Emotional Learning (SEL) needs (White et al., 2022). Dani may find this to be part of his core teaching components based on his educational journey as a queer individual in a very conservative area he once hated. Daniel desperately wants the students to ask questions and feel comfortable enough to ask for help; from his experience, meeting instructors with ego or little vulnerability may have instilled in him the stigma he wishes to get away from.

Consuelo voiced her difficulties in getting students to just show up for classes. At the same time, she used her experiences as a single mother working multiple jobs when she was in college to acknowledge and tell students that it is going to be difficult and if they want to succeed they need to go through the challenges. Corrina focused on the confidence and emotional issues she saw in her students and tried to work through those before establishing a solid mathematical foundation. Corrina also tried to be a mentor in a way to her students, so they can see someone like them in the STEMs. Black educators can often help shape positive black racial identities in students (White et al., 2022), which is even more prevalent in the field of mathematics (Battey & Franke, 2013). In many ways, these oppressive structures discussed by the instructors influence them in shaping their identity as an educator, therefore, shaping their practices and interactions with their students.

Similarly, through their relatedness, instructors tried to form connections with students. These instructors related their social identities, language, race, national origin, mathematical experiences, etc. to find common ground with their students. Specifically, in colleges, students of color have difficulties identifying with white instructors (Chang, 2005), which makes these themes especially interesting and important to be discussed. Importantly, relatedness didn't necessarily always mean sameness. There is an essence of empathy at play and instructors want to establish relationships with their students before learning can take place. Daniel admitted that sometimes they would not even talk about math, yet he felt forming these relationships was foundational to getting students through to the math. Further, Daniel would attempt to connect math to students' lives. Empowering students to see math through their everyday lives is an aspect of Culturally Relevant Pedagogy (CRP) (Magee, 2022), which teachers of color are more likely to use (White et al., 2022) and have an enormous impact in the development of their students' self-efficacy (Ayllón et al. 2019).

Vulnerability had a presence in many parts of all the interviews. Instructors discussed ways they have been potentially oppressed, or marginalized in some fashion, which then may have shaped their educator identity, used that as a point of their practice, or an eventual point of relatedness with students. Dani was vulnerable about the fact that he is a queer man, was a non-traditional developmental math student, came back to school when he was in his 30s, and struggled in math. He realized this resonates with students and can be used as a point of connection; he did not want to come across as an authority figure.

All the instructors acknowledged that the students have had negative previous experiences with math, indicating they might be less willing to ask for help. Without the instructor's vulnerability, the connection, and therefore eventual learning, may not be there for the students (Ayllón et al. 2019). Notably, the physiological state's source of self-efficacy is associated with anxiety (Bandura, 1993), and these instructors clearly have made a point to alleviate and/or work through any issues a student was having.

Self-efficacy is essentially the bridge that connects motivation and learning or developing the motivation to learn. Teachers have meaningful roles in helping students evaluate their capabilities, particularly when learning new tasks and the way in which the instructors approach the students (van Dinther et al., 2011). The students' self-efficacy may have been influenced by their instructors in many ways. Enactive mastery may have been achieved through Dani, Consuelo, and Daniel letting students know it is OK to make mistakes, to try again, and that they will continue to help them until they are able to figure out the problem. Social persuasion may have been achieved through encouraging messages the instructors provided to students, such as "it's OK not to know," "you can learn this," "ask me over and over again." Emotional arousal may have been achieved if the instructor instilled any positive math emotions in the students; this is more difficult to assume the students received, but relating mathematics to what interests students, as mentioned by Daniel, could instill this source of self-efficacy. Lastly, vicarious experiences are typically the way instructors influence student self-efficacy most (van Dinther et al., 2011), in this case that may be achieved through teaching math lessons. Through their teachings, we can hope the student received vicarious experiences. Yet, does the vicarious experience mean as much without the aforementioned social and emotional pieces? These instructors of color demonstrated SEL, as mentioned in the literature review (White et al., 2022), to further influence students' self-efficacy.

Implications and Conclusion

This study has provided the opportunity to discuss what instructors of color believe can be done to best support corequisite students. Undoubtedly, these instructors' experiences through life have shaped them as an educator. However, the teaching industry consists of a predominantly white workforce (Gutiérrez, 2002), and it would be advisable for white educators to incorporate CRP (Magee, 2022), SEL (White et al., 2022), vulnerability, and relatedness in their classroom to best support these populations of students and attempt to provide equity to an already inequitable situation.

References

Ataide Pinheiro, W. (2021). Dismantling the 'all-boys club' a narrative of contradictions women experience in PhD mathematics programs: A Freirean approach. *International Electronic Journal of Mathematics Education, 16*(3), em0652. https://doi.org/10.29333/iejme/11090

Ataide Pinheiro, W. (2022). *At the intersections: Queer high school students' experiences with the teaching of mathematics for social justice* (Publication No. 29320623) [Doctoral dissertation, Indiana University]. ProQuest Dissertations & Theses Global.

Ayllón, S., Alsina, Á., & Colomer, J. (2019). Teachers' involvement and students' self-efficacy: Keys to achievement in higher education. *PLOS ONE*, *14*(5). https://doi.org/10.1371/journal.pone.0216865

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, *28*(2), 117–148. https://doi.org/10.1207/s15326985ep2802_3

Bandura, A. (1997). Self-efficacy: the exercise of control. *Choice Reviews Online*, *35*(03), 35–1826. https://doi.org/10.5860/choice.35-1826

Battey, D., & Franke, M. (2013). Integrating Professional Development on mathematics and equity. *Education and Urban Society*, *47*(4), 433–462. https://doi.org/10.1177/0013124513497788

Brathwaite, J., Fay, M., & Moussa, A. (2020). Improving developmental and college- level mathematics: prominent reforms and the need to address equity. *Improving Developmental and college- level mathematics: Prominent reforms and the need to address equity*, 1–22. https://ccrc.tc.columbia.edu/publications/improving-developmental-college-level-mathematics.html

Chang, J. C. (2005). Faculty Student Interaction at the community college: A focus on students of color. *Research in Higher Education*, *46*(7), 769–802. https://doi.org/10.1007/s11162-004-6225-7

Dunigan, C., Flores, K., Haynes, M., Rangel, C., Velchoff, A., & Warren, J. (2018). Design principles for corequisite mathematics: an exploration of corequisite models for Texas colleges and universities in response to state legislative change (House Bill 2223). *Texas Success Center*. https://tacc.org/tsc/resources?topic%5B0%5D=39

Goldberg, E. R., Darwin, T. K., Esquibel, J. S., Noble, S., Mullins, M., & Ataide Pinheiro, W. (2023). Contemporary debates on equity in STEM education: Takeaways from a doctoral seminar in Equity in STEM Education. *Journal of Research in Science, Mathematics and Technology Education, 6*(SI), 69-89. https://doi.org/10.31756/jrsmte.214SI

Gordon, D., Blundell, C., Mills, R., & Bourke, T. (2022). Teacher self-efficacy and reform: a systematic literature review. *The Australian Educational Researcher*, 1-21.

Green, L. T. (1990). Test anxiety, mathematics anxiety, and teacher comments: relationships to achievement in mathematics classes. *The Journal of Negro Education*, *59*(3), 320. https://doi.org/10.2307/2295567

Grubb, W., Boner, E., Frankel, K., Parker, L., Patterson, D., Gabriner, R., Hope, L., Schiorring, E., Smith, B., Taylor, R., Walton, I., & Wilton, S. (in press). Understanding the "crisis" in basic skills: framing the issues in community college. *Understanding the "Crisis" in Basic Skills: Framing the Issues in Community College*.

Gutiérrez, R. (2002). Enabling the Practice of Mathematics Teachers in Context: Towards a New Equity Research Agenda. Mathematical Thinking and Learning. 4(2&3), 145-187.

Higbee, J., & Thomas, P. V. (1999). Affective and cognitive factors related to mathematics achievement. *Journal of Developmental Education*, *23*(1), 8–24.

Hu, S., Bertrand Jones, T., Brower, R., Park, T., Tandberg, D., Nix, A., & Martindale, S. (2015). Learning from the ground up (full report): Developmental education reform at Florida college system institutions. *Learning From the Ground Up: Developmental Education Reform At Florida College System Institutions*. Retrieved from

Lubienski, S. T., & Ataide Pinheiro, W. (2020). Gender and mathematics: What can other disciplines tell us? What is our role? *Journal of Urban Mathematics Education, 13*(1), 1–14. https://jume-ojs-tamu.tdl.org/JUME/issue/view/28

Magee, P. A., Willey, C., Ceran, E., Price, J., & Cervantes, J. B. (2020). The affordances and challenges of enacting culturally relevant stem pedagogy. *Handbook of Research on STEM Education*, 300–310. https://doi.org/10.4324/9780429021381-28

Neto, V., & Ataide Pinheiro, W. (2021). Análise comparativa entre Brasil e os Estados Unidos: O problema de gênero em livros didáticos de matemática [Comparative analysis between Brazil and the United States: The problem of gender in mathematics textbooks]. *Revista de Investigação e Divulgação em Educação Matemática*, *5*(1), 1–20. https://doi.org/10.34019/2594-4673.2021.v5.33216

Nix, A. N., Jones, T. B., Brower, R. L., & Hu, S. (2020). Equality, efficiency, and developmental education reform: the impact of SB 1720 on the mission of the Florida college system. *Community College Review*, *48*(1), 55–76. https://doi.org/10.1177/0091552119876327

Peaslee, D. (2017). The relationship between faculty confirmation and Community College student self-efficacy. *Community College Journal of Research and Practice*, *42*(10), 635–649. https://doi.org/10.1080/10668926.2017.1333931

Texas Corequisite Project. (2020). Texas Corequisite Project. https://instruction.austincc.edu/txcoreqs/

Texas Higher Education Coordinating Board. (2018, March). *60X30 TX Texas Higher Education Coordinating Board*.

Terry, G., Hayfield, N., Clarke, V., & Braun, V. (2017). Thematic Analysis. In *The sage handbook of qualitative research in psychology* (pp. 17–37). essay, Sage.

van Dinther, M., Dochy, F., & Segers, M. (2011). Factors affecting students' self-efficacy in higher education. *Educational Research Review*, *6*(2), 95–108.

White, T., Bristol, T., & Britton, T. (2022). Teachers of Color & Self-efficacy in social and emotional learning (SEL): Strengthening equity-based approaches to Sel. *Urban Education*, 004208592211148. https://doi.org/10.1177/00420859221114875

Willey, C., & Ataide Pinheiro, W. (2019). Supporting prospective urban teachers to access children's multiple mathematical knowledge bases: Community mathematics explorations. In: Bartell, T., Drake, C., McDuffie, A., Aguirre, J., Turner, E., Foote, M. (Eds.), *Transforming mathematics teacher education* (p. 57–76). Cham: Springer.

Wood, J. L., Newman, C. B., & HARRIS III, F. R. A. N. K. (2015). Self-Efficacy as a Determinant of Academic Integration: An Examination of First-Year Black Males in the Community College. *Western Journal of Black Studies*, 39(1).