Research Article

How professional learning impacts gifted educators' perceptions and practice

Katie D. Lewis[1]* and Angela M. Novak[2]

York College of Pennsylvania, USA and East Carolina University, USA

Article Info

Abstract

Effective equity-driven professional learning (PL) is one strategy to work against the disproportionality of marginalized populations in gifted and talented programs. This PL should be steeped in equity and culturally sustaining practices, ongoing, job-embedded, collaborative, sustained, and operationalized within the context of the educators' lived and work experiences. In a critical convergent mixed-methods research design, we, as university researchers, partnered with a gifted coordinator in a large Texas school district, providing equity-focused professional learning to gifted resources teachers (GRTs), and asking GRTs to pass this training on to other educators, on characteristics of students identifying as Latiné, bilingual, and gifted to determine the impact of the PL on GRTs' sense of cultural awareness and knowledge of gifted characteristics for this population of learners. We collected pre- and post-PL quantitative data on two instruments to measure GRTs' perceptions, as well as qualitative data on PL exit surveys, GRTs' logs of training other educators, an interview of the gifted coordinator, and researchers' notes. Quantitative findings included short-term positive changes on GRTs' cultural self-awareness, but without consistent long-term changes on the same measure. Additionally, GRTs showed growth in identifying characteristics of gifted Latiné bilingual students. Qualitative data resulted in four themes: understandings, outcomes, barriers, and needs. Mixed methods analysis contributed to the discussion of white exceptionalism and adult learning theory. Results provide continued empirical support for the Four Zone Equity-Driven Professional Learning Model (4ZEPL).

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Introduction

The impact of professional learning (PL) in enhancing educators' skill sets and mindsets is recognized throughout federal and state legislation. Every Student Succeeds Act (ESSA) and Title II funding, specifically designates federal funding to support K-12 teachers as they are developing their craft and content knowledge beyond their teacher preparation program. Districts spend about $18 billion annually on training for their teachers, while educators engage in about 68-89 hours a year in professional learning activities (Lazarewicz, 2020). Methods of teacher training have been refined over the years as researchers have studied the variables which result in the greatest gains for both the teacher and for student learning outcomes. Key factors to the success of PL include relevant, interactive, multiple sessions as well as facilitators who respect and understand the current classroom climate (Bill & Melinda Gates Foundation, 2014; Darling-Hammond et al., 2017).

In gifted education, PL is often the first introduction teachers have to pedagogy and the nature and needs of gifted learners as few pre-service programs include gifted education. Therefore, it is essential to provide rigorous equity-driven

[1] Corresponding author, Dr. Katie Lewis, York, Pennsylvania, USA. E-mail: klewis15@ycp.edu ORCID: 0000-0003-1398-5673
[2] Assoc.Prof. Dr. Angela M. Novak, Greenville, North Carolina, USA. E-mail: novaka17@ecu.edu ORCID: 0000-0002-8257-4731

gifted PL for educators to foster appropriate educational services for students to achieve student learning outcomes (Novak & Lewis, 2018). One of the challenges gifted education faces is developing programming and services that are reflective of the students' demographics. Disproportionate representation of racial and ethnic groups in gifted education plagues many programs across the country (Gentry et al., 2019). While there are many factors which contribute to this problem, PL for teachers of the gifted offers one practical solution with the potential for significant positive changes. Teachers are often the gatekeepers to gifted education programs, as they are tasked with either initial referral or recommendation of students. However, when educators are not well-versed in the characteristics of giftedness and the ways in which culture influences the manifestation of giftedness, often marginalized gifted students are overlooked (Ford & Grantham, 2003; Novak & Lewis, 2018).

Based in culturally responsive and sustaining professional learning (Darling-Hammond et al., 2017; Gay, 2010; Ladson-Billings, 2009, 2021), equity literacy (Gorski & Swalwell, 2015), and funds of knowledge (González et al., 2005) theoretical frameworks, this study is grounded in the Four Zone Equity-Driven Professional Learning Model (4ZEPL), a theoretical model that provides the structure for developing PL for educators of the gifted recognizing the correlation between changes in educators' perceptions of inequities and positive changes in marginalized gifted student populations (Lewis & Novak, 2019; Novak & Lewis, 2022; see Figure 1). Effective PL begins where the teachers are, based on their current skill set, content knowledge, beliefs, and practices. Culturally sustaining PL emphasizes the need for participants to first understand their own personal bias and beliefs before delving into a study of the cultures, beliefs, and practices of cultures beyond their own; this is the first zone. In the second zone, educators of the gifted are ready to begin understanding the cultures of their gifted students. Through this systematic ongoing PL process, educators grow in their awareness and understanding of creating an equitable curriculum, rich with mirrors, windows, and sliding glass doors (Bishop, 1990), and of building a supportive, inclusive environment for diverse gifted students where historically marginalized children feel represented and belongingness; this is zone three. Finally, zone four focuses on building strong authentic community-school partnerships.
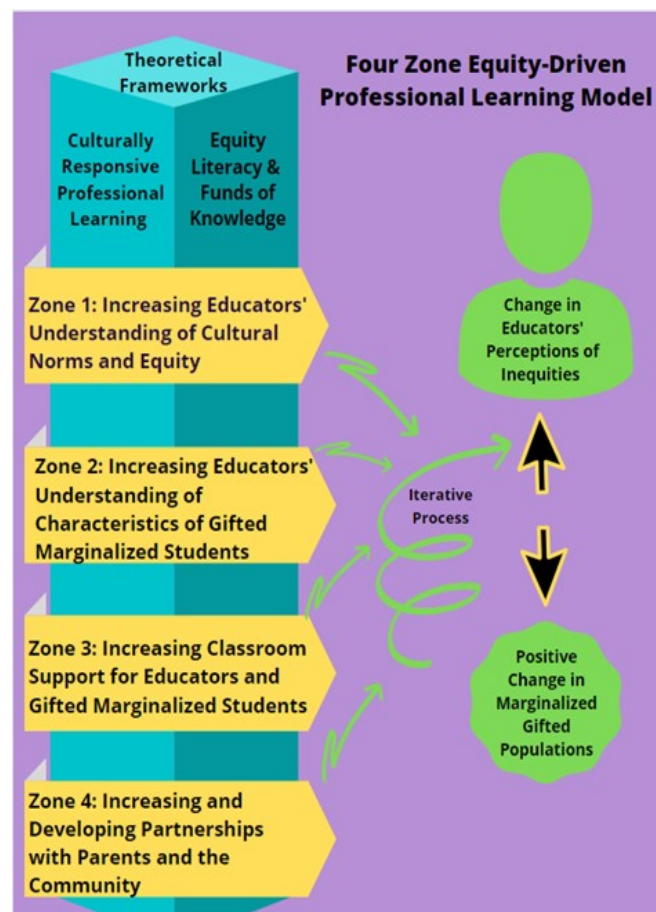
Note. Novak & Lewis, 2021; reprinted with permission from the authors

Figure 1. Four Zone Equity-Driven Professional Learning Model

This paper presents data culled from a larger study assessing the impact of the 4ZEPL, in which we provided equity-driven targeted professional learning experiences (PLE) through a university-district partnership. The study provided PLE in cultural awareness and gifted characteristics of students in the communities requested by the district (Latiné[3] and bilingual) and used pre/post measures to determine if there was a change in participants' self-perceptions of their cultural awareness, their knowledge of characteristics of students identifying as gifted, bilingual, and Latiné, and a change in the rate at which gifted learners were referred for identification. The data pulled for this paper focuses on the first two: change in teacher self-perceptions and change in teacher knowledge.

Literature Review

The following section highlights literature in adult learning and PL[4] theories which inform and shape understandings of PL in K-12 schools. In this literature review, we will highlight connections between these theories and the current standards guiding PL in the field of gifted education. Finally, we share the critical paradigm that guides this study, through the lenses of the cultural proficiency continuum framework and culturally sustaining pedagogy within the context of gifted education.

Adult Learning Theory

The most successful professional learning in changing teacher practice is grounded in the understanding of how adults learn (Kennedy, 2016). Adult learning theory, or andragogy, recognizes that adults learn differently from how children learn, or pedagogy, and as such their PL sessions need to reflect these differences among educators who vary in their years of experience and expertise (Powell & Bodur, 2019). Adult learners have several characteristics that distinguish their learning needs from pedagogy (Powell & Bodur, 2019; University of Akron, 2023). Adult learners have a drive to know or understand. They seek solutions to problems and appreciate opportunities to apply their understanding and engage in project-based learning (Powell & Bodur, 2019; University of Akron, 2023). Job-embeddedness is a key factor for adult learners and how they make meaning from their experiences. Their orientation to learning stems from a connection between the PL and their job (Powell & Bodur, 2019; University of Akron, 2023) with an outcome of improving skills and job performance (Western Governors University, 2022).

Sandlin (2005), combines critical, feminist, and Africentric ways of thought, indicates that both trainers and learners are participatory, first asking the goal of the process and of education writ large while more traditional adult learning theory holds that adult learners want to be involved in the planning of their learning experiences (University of Akron, 2023) as they are more aware of their own strengths and limitations and benefit from opportunities to be self-directed in their learning process (Powell & Bodur, 2019) but are more likely to seek out feedback and support from the facilitator (University of Akron, 2023). Adult learners tend to be intrinsically motivated (Western Governors University, 2022), when the learning is tied to their needs (Powell & Bodur, 2019).

In a justice orientation frame, adult education is part of the larger social and political context, with social change, pushing back on norms and inequities as the goal or outcome of the PLE. Sandlin states that, similar to a critical paradigm in research, concerns of power "shapes how knowledge and curriculum are constructed and whose knowledge is legitimated and whose is neglected…, and they all strive to make classrooms more inclusive and dialogic and to create educational situations that address the connections between individuals and society" (2005, p. 38). Adult learners' prior experiences and readiness to learn (Brookfield, 2014; Chuang, 2021; Powell & Bodur, 2019; University of Akron, 2023)

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[3] We primarily use Latiné in this paper to refer to the teachers that are participants and/or the gifted learners in their care. The Pew Center (Lopez et al., 2023) indicates that for the Census Bureau and similar polls, Hispanic was formally defined in order to collect data on Americans from Spanish origin or descent in 1976; the definition was formally passed by the Office of Management and Budget in 1977 as "<u>Hispanic</u>. A person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race" (para 6). Hispanic is generally distinguished as originating or descending from Spanish-speaking countries, Latiné as originating from Latin America (no matter the language, e.g., Brazil), while Chicano/Chicana as specific to recent Mexican descent. Hispanic (from Hispania) is not always a preferred term because of Spain's colonization. We know that Texas, and our sample of teachers and their students, is not exclusively populated by Latiné multilingual learners, however this was the focus of the training, as requested by the gifted coordinator. While we use Latiné as a general, gender-neutral term throughout this paper, when referring to the instrument we used, or when using participants' direct quotes, we honored their voices and used the language they used.

[4] We utilize the term professional learning over professional development purposefully because of the connotation of professional development as "sit and get" or "one and done"; professional learning has replaced professional development in much of the literature. However, we honor participants' voices and use their phrasing in quotations.

are important aspects of adult learning theory. Individuals who are bringing life experiences and background knowledge to the PL might resist training sessions that are perceived to be an attack on their competence or ego. Experiences and readiness connect to this socially just frame, though not all researchers focus on that connection (e.g., Powell & Bodur, 2019). Chuang (2021) focuses on a constructivist and social learning theory approach to adult learning theory. More closely aligned with Sandlin's (2005) critical approach, Brookfield (2014) emphasizes the importance of valuing the experiential knowledge of different racial identities and cultural traditions. The opportunity to practice new concepts and receive feedback from peers, a facilitator, or a mentor can lead to long term change in practices and beliefs (Chuang, 2021; Powell & Bodur, 2019; University of Akron, 2023).

Professional Learning

Educators have a system of practice within their classrooms, which is how they navigate the district initiatives, policies along with the needs of their students and ways they have learned to create and deliver effective instruction which meets the needs of the students within their classroom environment (Kennedy, 2016). PL therefore not only presents a new practice but also must convince teachers to leave behind their prior approach to practice (Kennedy, 2016). Similarly, measuring the effectiveness of PL on changing teacher practice is a challenge due to the numerous external factors that influenced the teachers' decision to adopt the new practice with fidelity. PL is not a new concept within education, but new understandings of how adults learn have shifted the way in which educators provide the training. Effective PL is purposeful and relevant, is content focused, incorporates active learning, is collaborative, models effective practice, provides coaching and expert support, includes opportunities for feedback and reflection, and is sustained (Darling-Hammond et al., 2017; ESSA, 2015; Zuo et al., 2023).

One method of PL is a train-the-trainer approach, or turnkey, in which PL is provided to a smaller group of individuals who are then responsible for taking this knowledge back to their context and sharing it through formal (e.g., faculty meetings) and informal (e.g., collaborative coaching) means. Several studies have found success with this method, for example, in using inter-school class visits and collaborative coaching in literacy practices (Zakierski & Siegel, 2019) and in sharing co-teaching strategies to support multilingual learners with other members of their school communities (Perez-Medina, 2020). A criticism of turnkeying is that it is required after *one and done* events, such as a conference in which the individuals are asked to regurgitate the content of which they have surface level knowledge, rather than deep understanding (DeWitt, 2023). Successful turnkey practices involve PL that meet research-based best practices (e.g., Darling-Hammond et al., 2017) and the standards of practice in the field. Within the field of gifted education, the expectations and guidelines for effective PL are found in the gifted professional learning standards.

Gifted Professional Learning Standards

The National Association for Gifted Children (NAGC) drew on the research in the field and developed standards and principles for gifted programming, applicable across K-12 grade bands. NAGC (2019) programming standard six focuses on PL and includes both evidence-based practices and student outcomes. Similarly, the World Council for Gifted and Talented Children (WCGTC, 2021) identified principles designed to provide policymakers and leaders with guidelines for developing professional learning plans for educators of gifted learners. Table 1 provides an alignment chart of the NAGC (2019) professional learning programming standard (standard six; the evidence-based practices), the WCGTC (2021) global principles for PL, and research-based best practices in adult learning theory and professional learning, as mentioned in the previous sections and additional best practices from researchers in the field of gifted education (Combs & Silverman, 2016; Novak & Lewis, 2018; Roberson & Collins, 2025; Troxclair et al., 2017; Weber & Mofield, 2023).

Table 1. Alignment between Professional & adult learning research and NAGC & WCGTC standards

Research-Based Best Practices in Adult and Professional Learning	NAGC (2019) Programming Standard Six, Professional Learning Evidence-Based Practices	WCGTC (2021) Global Principles for Professional Learning
• Data driven[1,4,7,9,18] • Reflective[1,3,12,14] • Individualized or differentiated[1,2,9,11,15] • Adult learners seek solutions[11]	**6.4.1**- Utilizing reflection and self-assessment, educators consider their instructional practices and develop personal professional learning plans to access PL opportunities that are appropriate for their needs.	**Tiered content**: While all educators need PL on gifted and talented learners, they possess different levels of prior knowledge and skills; as such, PL should vary in content and depth.
• Research-based[1,8,15] • Transferable[1,14,16]	**6.1.1**- PL is research-supported **6.2.1**- PL applies research to practice	**Evidence-based**: PL is developed based on best practices and current research, both in teacher preparation and in professional learning.
• Develop trust and community[1,9,12,13] • Focuses on whole-child[1,12] • Includes psychosocial & socio-emotional focus[12,16]	**6.1.5**- Educators access local, state, and national organizations and publications to extend their PL. **6.2.1**- PL applies research to practice in psychosocial skills and social-emotional development **6.3.2.** PL provides educators opportunities to create culturally sustaining learning environments.	**Holistic**: PL should focus on the individual as a whole; academic, social, and emotional needs across the lifespan. The whole individual includes a whole-child perspective, a whole-school approach, a whole-life view, and education as a whole-community endeavor. **Empowering**: The most effective PL fosters the growth of the educators to support gifted learners throughout their learning experiences. Teachers should have access to professional organizations and advocacy tools.
• Coherent[1,14] • Content-focused[5,15,16] • Discipline-based for expertise development[15,18]	**6.1.1**- Comprehensive research-supported PL is provided for all educators involved in gifted programming; content covers foundations, characteristics, identification, curriculum, learning environments, and programming. **6.3.1.** PL for educators includes culturally responsive curriculum and pedagogy. **6.4.2**- PL is coherent.	**Broad**: PL content is comprehensive and should include levels and forms of giftedness, cultural contexts, underachievement, exceptionalities, identification, differentiation, curriculum, program models, and assessment.
• Equitable[1,9,12,15] • Culturally sustaining[1,9,12] • Learning is racialized and based in the learners' experiences[2,11,13] • PL prioritizes marginalized groups[1,12,15]	**6.1.1**- content covers characteristics of diverse students with gifts and talents **6.1.2**- PL models how to develop culturally diverse learning environments and instruction **6.1.3**- PLE addresses social issues, e.g., equity and access. **6.3.1.** PL for educators includes culturally responsive curriculum and pedagogy. **6.3.2.** Through PL, educators work to recognize biases and create culturally sustaining practices.	**Equitable**: Giftedness is inclusive, and PL should focus on ensuring that programs and services are equitable and representative of both student and educator populations. Both recruitment and retention are important PL topics, and attention should be paid to historically marginalized and oppressed populations, e.g., race and ethnicity, gender and sexual identity, socio-economic status, place.

● Collaborative[1,3,4,5,6,7,10,12,13,14,16,18] ● Engage school, home, and community[1,9,13] ● Justice-oriented[1,13]	**6.3.3**- PL provides historical and current perspectives of professional practice, with a focus on the education and impact of gifted children in both school and society. **6.4.2**- PL incorporates collaboration.	**Comprehensive**: Outreach encompasses all educators who work with gifted and talented students, e.g., administrators, counselors, school psychologists, classroom teachers. **Integral**: PLE should include gifted education as it operates within the school community, rather than an isolated part, e.g., special education, vocational education, art and music.
● Active learning[1,3,5,16] ● Feedback[1,3,5,9,16] ● Growth through dissonance[1,2,9,13] ● Job-embedded[1,3,5,7,10,11,16] ● Ongoing[1,12,14,18] ● Sustained[1,4,5,7,18] ● Transferable[1,5,10,14,16]	**6.1.2**- PL is sustained. **6.2.1**- PL is ongoing. **6.4.1**- Educators continue to grow through developing PL plans and engage in continuing education. **6.4.2**- PL is sustained over time, embedded and transferable, offers regular follow-up, and shows an impact on both teacher practice and student learning.	**Ongoing**: Teachers need multiple opportunities to develop and enhance their content knowledge and skills through multiple PL sessions as well as follow-up support. Job-embedded PL with opportunities to practice with tailored feedback and collaboration results in changed practices.
● Engages all stakeholder voices in planning[1,11,12,13] ● Establish goals and/or guidelines[1,9,12,13] ● Need for administrator or policy support[8,12,15] ● Provides coaching & expert support[1,5,6,12,18]	**6.1.1**- PL is delivered by experts in the topic being provided **6.1.4**- Administrators include PL in their budget and provide appropriate resources (both human and material) for the PL (e.g., planning for facilitators, substitutes, mentors, books). **6.4.2**- PL is goal-aligned.	**Sustainable**: Accountability for the knowledge and skills from the PLE should be integrated in community and collectivity with all stakeholders. PL should be a part of educational policy, e.g., funding, standards or goals, evaluation.

Note. [1]Lewis & Novak, 2019; Novak & Lewis, 2022 (4ZEPL); [2]Brookfield, 2014; [3]Chuang, 2021; [4]Combs and Silverman, 2016; [5]Darling-Hammond et al., 2017; [6]DeWitt, 2023; [7]ESSA, 2015; [8]Kennedy, 2016; [9]Novak et al., 2020; [10]Perez-Medina, 2020; [11]Powell & Bodur, 2019; [12]Roberson & Collins, 2025; [13]Sandlin, 2005; [14]Troxclair et al., 2017; [15]Weber & Mofield, 2023; [16]Zakierski & Siegel, 2019; [18]Zuo et al., 2023.

Professional learning experiences designed by facilitators who follow the standards established by NAGC and WCGTC and keep research-based best practices in professional learning, gifted PL, and andragogy in mind have the potential to positively change teacher perceptions and practices.

Critical Paradigm

A critical paradigm recognizes that systems are biased and focuses on positive change through research and action (DeCarlo, 2018). In school systems, where historical biases have had lasting impacts on all aspects of education and student learning, understanding cultural proficiency is the first step towards creating a more equitable learning environment. Since the 1950s, social movement and policy evolution has directly impacted changes within educational systems, beginning with desegregation, equal access, multiculturalism, diversity, and cultural competence, and most recently the idea of cultural proficiency. Moving away from the ideas of cultural competence recognizes that there is a continuum of cultural proficiency along which individuals and systems move along (Lindsey et al., 2018). Cultural proficiency is a shift from the belief that cultural differences are a problem in schools learning how to value and interact with varying cultures. This paradigm shift from a deficit mindset to a strength-based approach empowers administrators, educators, and students to grow as learners (Ford & Grantham, 2003). Along with cultural proficiency, the idea of culturally sustaining teaching focuses on a strength-based approach to changing beliefs and practices.

Cultural Proficiency Continuum

Cultural proficiency faces many barriers within the school system and with individuals, which must be addressed as they contribute to a resistance to change (Lindsey et al., 2018). First, the presumption of privilege and entitlement are barriers preventing individuals from recognizing how marginalized populations are negatively affected by systemic bias. Second, systems of oppression are the policies and procedures in place which limit success. These two barriers work together as an individual who does not see a need to adapt is unlikely to be willing to participate in change. As a result, the view is that *others need to change, and I am not part of the problem*. The first step in developing cultural proficiency is recognizing these barriers both on a personal and a systemic level. From here individuals and districts can move along the cultural continuum. Being willing to change and accepting that change is necessary is a first step in developing equitable learning environments. Cultural proficiency recognizes that all educators, students and stakeholders are at different places along the continuum (Ford, 2019).

The cultural continuum recognizes that cultural proficiency changes over time and is impacted by multiple variables (Lindsey et al., 2018). To the far left of the continuum, the understanding of culture reflects barriers to cultural proficiency related to values and behaviors as well as policies and practices. Cultural destructiveness, one seeks to remove all cultures of others; cultural incapacity, one seeks to stereotype and minimizes other cultures spreading misinformation to highlight perceived inferiors of the other culture; cultural evasiveness, one does not acknowledge cultures of others or the need for differentiation. On the right side of the continuum, behaviors, values, policies, and practices reflect cultural proficiency. Beginning with cultural pre-competence; one increases their awareness of diversity moving towards positive directions, but there may be backwards as well as forward movement, cultural competence; one aligns values and behaviors that are inclusive of others promoting healthy relationships; cultural proficiency, the school and individual are collaboratively developing a socially just system and advocate for all cultural groups (Lindsey et al., 2018). It is important to note that because cultural proficiency is a continuum, the identified goal of proficiency is a moving target. Even, upon reaching proficiency, it is possible to slide back towards the left side of the continuum as one is constantly experiencing change. Therefore, educators must be open to continue growing and self-reflection (Ford, 2019).

When developing cultural proficiency within individuals or schools, there are several essential elements to be considered when developing and implementing policies. The five essential elements are:

➢ Assess culture: recognize and learn about the cultures within the school community
➢ Value diversity: support diversity and recognize the added value of difference
➢ Manage the dynamics of difference: explore ways diversity enhances the community as opposed to viewing it as a problem
➢ Adapt to diversity: learn about other cultures and how to support diverse learners
➢ Institutionalize cultural knowledge: be a part of systemic change (Lindsey et al., 2018).

Experiences influence one's movement on the cultural continuum, and educators, districts, and communities may be different places along the cultural continuum. Stakeholders may vary where on the continuum they fall depending on the topic. For example, a district may be culturally proficient regarding ethnically diverse policies but in cultural evasiveness regarding gender identity policies and/or in cultural destructiveness in their curriculum (Lindsey et al., 2018). Facilitators developing PL need to consider the cultural proficiency of their teachers as well as outside factors which are hindering or supporting equitable learning environments (Ford, 2019).

Culturally Sustaining Pedagogy

Culturally sustaining pedagogy is a research-based pedagogy that centers the strengths students from diverse backgrounds bring to the classroom. Developed out of the theory of culturally sustaining pedagogy (Ladson-Billings, 2009, 2021) and culturally responsive teaching (Gay, 2010), culturally sustaining pedagogy empowers the learner to grow intellectually, socially, emotionally, and politically. Educators capitalize on the cultural assets of the students, making connections with the curriculum and empowering the students to grow academically and socially.

In gifted education, culturally responsive pedagogy is "authentic, rigorous, and relevant; allows for student connections; and reflects various cultural experiences" (Roberson, 2021, p .71). Roberson states PL for educators should reflect "the same energy and effort put in learning and growing in your content area should also be reflected in your cultural responsiveness journey" (p. 73). Culturally sustaining pedagogy shifts the burden of responsibility from the student to the educator. It is the educator's responsibility to become culturally competent first and foremost, so that they can provide meaningful instruction to all learners. Cultural competence is not a fixed moment in time, rather it is a continuous process through which one works through and towards (Ladson-Billings, 2009; Gay, 2010; Roberson, 2021). When one is culturally competent, they can see the value of culture and the impact it has on everyday occurrences. From small moments, like the sharing of stories from families within the school community about their experiences with education, to a classroom library that includes high quality children's literature written by authors from a variety of cultural backgrounds and experiences.

Teachers of the gifted who are culturally competent engage in processes which lead to change and champion for equity in all areas. Culturally sustaining pedagogy builds on cultural competence, putting the onus on the educators to not only recognize inequities but to advocate and act, resulting in positive change. Roberson (2021) describes the "blessing and burdens" (p. 76) of culturally responsive pedagogy for educators, highlighting the importance of acting, advocating for gifted learners, and staying strong in the face of push-back from the administration.

Professional learning which targets cultural competence of the educators of the gifted is one tool in initiating systemic change within gifted education. Culturally unresponsive programs nourish a sense of victimization where the marginalized students are identified as the problem, either contributing to or growing a place that blames or sets a precedent of unfair treatment (Collins, 2020a, 2020b, 2021). PL provides an avenue for change, providing opportunities for educators to become culturally competent teachers and develop culturally sustaining programming. Diversity and differences need to be viewed as strengths and value-addedness with respect to the classroom, gifted program, and school. This strength-based approach will foster gifted education programs where equity is the center (Collins, 2021).

Changing Bias through Equity-Driven Gifted PLE

Equity for all gifted students, focused on developing their individual strengths and achieving the gifted education student learning outcomes must become the foundation for gifted programs. Developing educators' cultural competence and culturally sustaining pedagogy through targeted professional learning, which is implemented with fidelity leads to positive change. Following the critical paradigm approach (DeCarlo, 2018), we sought to understand the degree to which professional learning may positively change educational systems of bias and result in positive change.

The objectives of this study were to explore the impact of targeted, sustained PLE on GRTs' perceptions and practices, specifically around issues of culture and equity with Latiné and bilingual gifted students. The study looks at the impact of that PLE on GRTs' self-perceptions of cultural awareness and levels of knowledge regarding characteristics of students' identifying as gifted, Latiné, and bilingual. Finally, the study aims to provide evidence of the effectiveness of the Four Zone Equity-Driven Professional Learning research-based theoretical model (Lewis & Novak, 2019; Novak & Lewis, 2022).

Method

Research Design Overview

We hold a critical approach to inquiry in which, "research is an emancipatory act that demands change" (Baker, 2022, p. 21). The goal of the project, the university/district collaboration, is both research and social change, which fits in the critical paradigm. This study followed a convergent mixed methods research design, by first collecting and analyzing quantitative and qualitative data separately, then merging the results, comparing the two sources during the interpretation phase of data analysis, and looking for convergence—or divergence (Creswell & Creswell, 2023).

For the quantitative aspect of the study, we used a quasi-experimental research design, specifically, a single-group interrupted time-series design, which measures a pre- and post- treatment for one group (Creswell & Creswell, 2023). Quantitative data included pre-post measures from two instruments, a cultural awareness self-assessment, and a

modified version of a screening instrument used to identify students that are gifted, Latiné and bilingual. Qualitative data included exit survey data (open-ended questions collected after training sessions and at year-end), professional learning logs (PLL), and an interview with the gifted coordinator. Additionally, we included PLE agendas, PLE materials, and our researchers' notes as qualitative data sources.

As a factor of trustworthiness (Lincoln & Guba, 2013) supporting confirmability, we used data triangulation by analyzing these multiple data points. These convergent mixed methods fit our goals of understanding the impact of the PLE from both an emic (from within) and etic (outsider) perspective, using first the GRTs' perceptions through survey collection (emic) and then the perceptions of the gifted coordinator (etic) and GRTs' perceptions and turnkey practices (emic) gathered through qualitative methods. The research questions were:

> *RQ1:* What are the impacts of targeted, sustained PLE on GRTs' perceptions and practices, as measured by:
>> *RQ1a:* pre-, post-, and long-term-post-PLE survey results measuring GRTs' self-perceptions of their cultural awareness?
>> *RQ1b*: pre- and post-PLE survey results measuring GRTs' perceptions of characteristics of Latiné and bilingual gifted learners?
>> *RQ1c:* qualitative analysis of the gifted coordinator's perceptions and GRTs' reported practices of engaging in equity-related advocacy work?
> *RQ2:* In what ways does this university/district partnership study provide evidence of the effectiveness and validate the 4ZEPL research-based theoretical model using measures from RQ1?

Our primary hypothesis was that gifted resource teachers' self-perceptions of cultural awareness and knowledge of gifted, Latiné, and bilingual traits would positively increase following targeted, sustained PLE delivered through the selected professional learning model. Our second hypothesis was that positive results from the first hypothesis and themes obtained through analysis of the qualitative data (e.g., insights and understandings that the gifted coordinator and GRTs provide through the university-district partnership PLE) would validate the effectiveness of the 4ZEPL theoretical professional learning model.

Participant Context
Participant Recruitment and Sampling
Participants were involved in this study due to a university-district partnership and were recruited with the assistance of the Director of Advanced Learning Programs, Jane (pseudonym), hereafter referred to as gifted coordinator, the primary contact for the university/district partnership. The selection of the participants was purposeful due to their role as gifted resources teachers (GRTs; primary audience) or invitees of Jane's (administrators of schools with the target population discussed). All August PLE and pre-PLE survey participants (*n* = 30) took part in the PLE as part of the university/district collaborative experience, however their participation in the research study was optional. There were no incentives offered to participate in the research section, as it was an aspect of the university/district collaboration.

Communication was managed through Jane as the district contract, we did not solicit or maintain any email addresses of the participants. We explained to participants the purpose of the study was to explore the extent to which the professional learning plan impacted identification rates and retention of historically marginalized gifted students; increasing educators' cultural awareness and knowledge of students that are gifted, Latiné, and bilingual was one aspect. The study was approved through both of our universities' IRBs as well as the district IRB. The PLE took place at the participants' district in a central location through an online delivery model; we remained in our home states and the gifted coordinator facilitated in person.

Participants
Pemberley School District (pseudonym) serves approximately 38,000 students, with less than 10% of students identified as gifted and talented. Pemberley is classified as a mid-size city, located in the state of Texas. The gifted coordinator invited 30 Pemberley employees to the August PLE. All 30 attendees agreed to participate in the study, however, not all completed the follow-up survey requests. As several participants were not GRTs, this explains some of the attrition in

the study (researchers' notes). The survey started by asking participants an identifier question (their initials combined with the first three letters of their birth month, i.e., JFFEB), used to anonymously match data for paired sample statistical analyses.

In the demographic questions, three participants identified their ethnicity as Latina and 20 identified their ethnicity as White. One participant chose not to identify their race/ethnicity, while two participants chose the other option. Race/ethnicity was a select-all-that-apply question; one participant selected 'other' along with Latiné and White and the second participant chose 'other' along with Black/African American, Native American/Indigenous, and White. None of the participants identified as Asian American. We did not ask about sex or gender preference on the survey as our prior communication with the gifted coordinator revealed all GRTs identified as female.

Most participants indicated that they held the Texas gifted and talented supplemental certificate ($n= 25$), with six earning it through university coursework, 19 through examination, and 1 indicating 'other' without providing an explanation. Reciprocity with another state was listed as an option but not selected. The majority had received the required 30 hours of gifted and talented professional development ($n= 25$) and earned additional hours of training beyond the required 30 ($n= 25$). Participants were asked how many additional hours of gifted and talented PL they had received: 0-5 hours ($n= 2$), 6-12 hours ($n= 2$), 13-18 hours ($n= 1$), or 18+ hours ($n= 20$). Eight participants held a master's degree, though none in the gifted field, and seven participants were National Board-Certified Teachers. Table 2 shows additional demographic information collected from the final 26 participants that were involved with some aspect of the quantitative analysis.

Table 2. Demographic information of gifted resource teacher participants

Participants' Teaching Experience (in years)	0-5	6-10	11-15	16-20	20+
Years Teaching	0	5	5	4	12
Years Teaching Gifted and Talented	8	5	6	4	3
Years Teaching in Pemberley	4	4	3	6	9
Years Teaching Gifted and Talented in Pemberley	10	4	6	3	3
Approximately how many students do you refer for gifted services yearly?					
Range of Students	0-5	6-10	11-15	16-20	20+
# of Participants	14	3	1	2	6
Approximately what percentage of students you refer are found eligible?					
Percentage Range	0-24	26-50	51-75	75-100	
# of Participants	18	3	1	0	

Jane identified as White, held the Texas gifted and talented supplemental certificate, and earned her master's degree in the field of gifted and talented education. Jane and Katie Lewis (KL) networked at a state conference and discussed the potential for a university-district partnership. KL brought the opportunity to Angela Novak (AN) and introduced Jane to AN at a national convention for gifted education. We agreed to begin a university-district partnership where we (KL & AN) would provide professional learning experiences for the benefit of the district, in turn the district would provide evaluation data for our model.

Researcher Description

We provide the following researcher descriptions as part of our participants section, as we were the researcher team in the university-district partnership. Additionally, this provides one measure of trustworthiness, an essential component in qualitative research in that it addresses confirmability (the steps we take to show that the findings are not due to the bias of the researchers; Lincoln & Guba, 2013).

I (KL) am a constructivist educator, believing that learning occurs in the space of active engagement of connecting new ideas with one's own experiences. I believe that authentic exposure to the many facets of diversity is integral in the preparation of future educators. But even still, exposure alone is not sufficient, but it is through professional learning, exploring the dynamics of diversity and the impacts on society, that teachers will have the knowledge and skills to take on leadership roles and be change agents in their spheres of influence. I view this through the lens of my identity, and

acknowledge the privilege which comes with my whiteness, while recognizing that it can mean resistance as a co-conspirator (Love, 2019).

I (AN) identify as a cisgender twice-exceptional white woman, and I acknowledge the privilege that comes with the intersection of my whiteness and gender identity, while also recognizing that it can be a tool for resistance as a co-conspirator (Love, 2019). I belong to an identity-rich family (e.g., Black, Yurok, non-binary, bi-sexual, gay, neurodivergent, 2e, gifted). I am a proud ally and advocate for identity development and pride and embracing one's true self. I have formally studied four languages other than English (Spanish, French, American Sign Language, and Italian) and am most proficient in French, which I studied for 10 years, and I advocate for translanguaging in the community and educational spaces. My background is in gifted and talented education, and my goal is to model the properties of an anti-racist educator (Kendi, 2019) and an abolitionist teacher (Love, 2019) for my students. I have worked in the context of general and/or gifted education since 1999, and I have two advanced degrees in gifted education. Both my degrees and my experiences since have prepared me to conduct research in educational contexts, and I am an experienced mixed methods researcher. Within gifted education, my research focus is on professional learning and equity (including multilingual learners), using equity literacy (Gorski & Swalwell, 2015) and racial literacy (Sealy-Ruiz, 2013) as a transformational tool in both teaching and research. I hold several certificates in equity, including train-the-trainer credentials, and I am a member of a multilingual consortium of institutes of higher education. I acknowledge that I am perpetually on a path to understanding and am intentional about engaging in self-directed professional learning experiences and seeking out feedback to continually learn and grow.

We entered the space of professional learning unapologetically as anti-racists, as coaches for equity and inclusion. Within the context of this study, our identities and our role as professional learning facilitators contributed to our critical lens and informed our work as community engaged researchers.

Data Collection

Study Context (Professional Learning Experiences)

The scope of the study is provided in timeline form in Table 3. Planning began several months in advance to conduct a series of collaborative, content-focused, equity-driven PLEs for the GRTs in the district. To keep costs at a minimum, we chose to conduct the professional learning online, with the gifted coordinator facilitating the PLE in person while we were conducting the PLE in live, synchronous, Zoom sessions. The initial plan included sessions in August, October, November, and January, however district restructuring caused the focus of the GRTs to shift. Because of the ongoing communication between ourselves and the gifted coordinator, plans were amended to meet the needs of the GRTs, the district/program, and the gifted coordinator. However, this created a challenge for the study outcomes (see Table 3 and the Limitations section).

Table 3. Professional learning experiences and study timeline

Month/Date	Topics	Format	Data Collected
December	Initial planning begins for the August workshops	Email, phone, Zoom between ourselves as the research team and with the gifted coordinator	Researchers' notes
April-June	Planning for the format/topics solidifies; IRB submitted through district and universities	Email, phone, Zoom between ourselves as the research team and with the gifted coordinator	Researchers' notes
August 8	Cultural awareness (AM); Latiné characteristics of giftedness (PM)	Online whole group and small group rotations with in-person facilitation assistance by gifted coordinator	Pre-PLE HBGSI & CAS; Exit Survey; PLE agendas and materials
August, late	Post-survey for Cultural Awareness	Sent via email by gifted coordinator	Post-PLE CAS

October 5	Next steps: being a change agent, having teachers complete the HBGSI, completing the Professional Learning Log; Shared Resources	One-hour online meeting with in-person facilitation assistance by gifted coordinator; Provided our Zoom room, emails, and phone numbers for individual assistance	PLE agendas and materials; Researchers' notes
October 24	Reminder about the next steps meeting topics; Asked to pick 2-3 campus teachers or grade levels and turnkey training; Asked to be prepared to reflect on this experience for November 6 check-in	Email by gifted coordinator; Provided our Zoom room, emails, and phone numbers for individual assistance	PLE agendas and materials; Researchers' notes
November 6	Check-in/discussion on reflections	Check-in conducted by gifted coordinator at her request	Researchers' notes
November	Check in between with gifted coordinator; Discussed the challenges faced due to the restructuring and revised the future schedule for PLEs (Planned January training cancelled)	In-person at the NAGC Annual convention	Researchers' notes
November-April	Teachers asked to continue to provide turnkey PLE to teachers/groups in their schools and record on their professional learning logs.	GRTs in their sphere of influence; Provided our Zoom room, emails, and phone numbers for individual assistance; We remained in contact with gifted coordinator via email and Zoom	Teachers complete professional learning logs (PLL); Teachers- HBGSI; Researchers' notes
March-April	Discussion about adding an additional qualitative aspect to the study, an interview of the Gifted Coordinator; Posed this to the Gifted Coordinator and submitted IRB revision	Email, phone, Zoom between ourselves as the research team and with the gifted coordinator	Researchers' notes
May	Request that the gifted coordinator send out a request for the GRTs to complete the post-surveys	Sent via email by gifted coordinator	Long-term post CAS & post-PLE HBGSI; Year in Review Exit Ticket; PLL
June 6	Semi-structured interview with gifted coordinator	We met with the gifted coordinator via Zoom.	Recorded interview, transcribed via Scribie; Researchers' notes

Participants were asked to complete The Self-Assessment for Classroom Teachers (Colorado Department of Education [CDE], 2010) and a modified version of the Hispanic Bilingual Gifted Screening Instrument (HBGSI, Irby & Lara-Alecio, 1996) at the start of the online PLE grounded in the 4ZEPL. The initial study plan intended for these pre-PLE surveys to be administered two weeks prior to the August PLE for use in planning the sessions but having only one district contact (a common issue in gifted education, with gifted teachers' operating as silos) and our competing summer schedules, this plan was altered to the first day of the training.

The first day was divided into morning and afternoon activities, first delving into cultural awareness beginning with a focus on the self, and in the afternoon taking a deep dive into the characteristics of giftedness in Latiné cultures (the

ethnicity and culture that the gifted coordinator asked us to focus on for the training). As such, the cultural awareness survey was administered in the morning prior to the topic's coverage via an embedded link in the session; Jane then sent participants a link for the follow-up, asking GRTs to complete the post-PLE survey two weeks after the training. A long-term post-PLE follow-up was sent in the same manner the following May. The HBGSI was administered to participants via an embedded link prior to the start of the August afternoon session, and Jane sent a link to the post-PLE survey to participants in May. GRTs were asked to turnkey the PLE to educators at their schools, asking educators to take the HBGSI as well. Twenty classroom teachers did so in October and November.

On the day of initial training, participants were also asked to complete an open-ended exit survey. In May, participants were asked to complete another open-ended exit survey of the full PLE, A Year in Review exit survey. As GRTs turnkey the PLE to classroom teachers, they were asked to make note of informal or grassroots efforts (e.g., water cooler conversations) and/or formal PLE (e.g., faculty meetings) on an individualized spreadsheet in Google sheets, called a professional learning log (PLL, see Figure 2).

Professional Learning Log

"The most valuable resource that all teachers have is each other. Without collaboration our growth is limited to our own perspectives." Robert John Meehan

Your Name: CW

Date of PL	Teacher(s) Worked with and birth month	Activities Experienced or Lessons Taught or Topics Discussed	Delivery Method (describe)	Length of time	Notes Regarding the Session and Potential Follow Up
10/30	KD (AB) CC (BC) Also asked: CD teacher HH AB teacher MS & JS	Survey Link shared	Emailed 10/30/18	11/1/19 2 teachers completed the survey	Allowed teachers to complete the survey to gather their viewpoints.
11/6	CC (BC)	Discussed Hispanic culture and specific students in her class that may exhibit some of the characteristics within the culture.	conversation in the classroom	10 min	She is still getting to know her students and their parents and we will continue our conversation.
11/15	KD (AB)	Discussed specific students and possible referrals for future reference/screening	conversation in the classroom after RB	5-10 min	She gets frustrated because she feels like she refers students and they don't qualify. We discussed specific ways to show Ss thinking; ways to support a referral/giftedness in Hispanic culture.

Figure 2. Sample Professional Learning Log

We provided Google slide decks, notes, and recorded small group presentations that we utilized on the August PLE for GRTs' use during the turnkey PLE. We also made ourselves available for ongoing communication and support by providing our emails, cell phone numbers, and a Zoom personal room.

Quantitative/Instruments

We used two instruments, an online version of the Self-Assessment for Classroom Teachers, hereafter the Cultural Awareness Scale (CAS), as adapted by the CDE (2010, p. 28-29) from the work of Nancy Papke and Kristen Genevieve Davidson, and a modified version of the HBGSI (Irby & Lara-Alecio, 1996). To avoid potential instrument fatigue, and in consultation with the gifted coordinator, we asked the participants to take the CAS at three time points and the HBGSI twice, as the majority of the planned PLE focused on the gifted content, while only the initial training was designed specifically to focus on cultural awareness.

The CDE did not publish reliability and validity statistics when recommending the use of the CAS (CDE, 2010) however in this study, we calculated a Cronbach's Alpha for the 24-item survey with 30 participants using listwise deletion (excluding 2 participants for a final $n = 28$) of $\alpha = .72$. A paired sample t-test provided a bivariate Pearson correlation coefficient ($n = 25$, pre- to post-PLE) of $r = .591$, with a two-sided $p = .002$. This instrument is used as a self-awareness checklist and has different versions to use for different populations (e.g., teachers, administrators). The survey instrument consists of Likert-type scale questions, ranging from *1-Most of the Time, 2- Some of the Time, 3-Never*. The

lower total survey response score indicates a higher level of self-assessment of cultural awareness. Successful training would cause the means to decrease from pre to post.

The second survey instrument was the HBGSI, developed by Irby and Lara-Alecio (1996). It has 78 items divided into 11 clusters, representing characteristics often seen as representative of gifted Latiné bilingual students. The 11 clusters are: social academic language, cultural sensitivity, familial, motivation, collaboration, achievement, imagery, creative performance, support, problem solving and locus of control. The instrument is designed as a tool for referring Hispanic bilingual students for gifted services. To determine reliability, Irby and Lara-Alecio asked 61 elementary bilingual teachers to use the HBGSI, the results of data analysis were a Cronbach's Alpha with coefficents ranging from .62 to .91 (Fultz et al., 2013). We adjusted the directions for the purposes of this study, so that the participants were asked to score each item according to the degree to which they felt a gifted student *exhibits these characteristics* on a scale of *1-never, 2-seldom, 3-sometimes, 4- often, 5- always*. On the 37-item survey, we used SPSS to run reliability statistics on the 37-item survey with a resulting Cronbach's Alpha of .951 based on 24 valid cases with listwise deletion (responses were only used if a participant answered all variables; thus SPSS deleted 6 participants from the analysis).

Qualitative Data Sources

Data collection included PLE related data in the form of exit surveys after the August PLE and in May, and participant professional learning logs and triangulation data including PLE agendas and materials and researchers' notes. PLE related data was collected during the associated time of the study: exit surveys were collected after the August training and in May to garner participants' feedback. Additionally, as they delivered the training, GRTs were asked to record their interactions on a Professional Learning Log (PLL); participants were asked to submit this PLL template for analysis. PLE agendas and materials were provided to the participants for their use as support materials in this turnkey process; we included these as triangulation data. We kept an ongoing researchers' notes document, including records of communication with the gifted coordinator, throughout the study that was referenced for triangulation purposes.

In addition, we conducted an interview with one participant, the gifted coordinator for the district as a single case study research design (Creswell, 2007). Following a semi-structured interview format, we used prompts which elicited open-ended responses, and asked follow-up questions in response to the interviewee's initial answers (Blee & Taylor, 2002). Our questions sought to explore (a) efficacy of the delivered professional learning experiences over the course of the study, (b) perceived outcomes and barriers to the implementation of knowledge gained during the professional learning experiences, (c) topics focused on in the professional learning, (d) Jane's challenges as an administrator facilitating related to the professional learning and (e) Jane's observations of changes in gifted resource teachers' perceptions and/or recognitions of culturally diverse gifted students. We met via Zoom and recorded the interview. We used the paid service Scribie to transcribe the interview; it was returned to us for analysis after approximately a week. The 33-minute interview was 13 pages and 6642 words, indicating a rapid speech cadence on the part of the interviewee (Gray-Grant, 2017).

Data Analysis

Quantitative

All quantitative analyses were conducted utilizing SPSS software, version 28. Prior to analysis, responses were reviewed for completeness, and blank survey responses were not included in the analysis. We calculated descriptive statistics and ran inferential statistics on the three sets of survey data; specifically, we ran paired samples *t*-tests (correlated *t*-tests) to compare the differences between the means of the pre- and post-tests (Creswell & Creswell, 2023). We calculated both Cohen's *d* (*d*) and Hedges' correction (*g*) to calculate effect size (Ellis, 2010), as Hedges *g* provides a correction factor that is beneficial for smaller data sets. We also used an ANOVA to test for threats to internal validity (Trochim, 2023) and Cronbach's Alpha to run reliability statistics for each instrument (Fultz et al., 2013).

Participant attrition limited the *t*-test sample size due to the matching requirement, using a pair-wise analysis. There were 30 participants in the beginning sample, but the degrees of freedom for each *t*-test varied based on the pairs (i.e.,

24, 12, 13, see Tables 2, 3). According to triangulation data from our researchers' notes, several participants were not GRTs, but administrators who only participated in the first session, explaining some attrition.

To test the mortality threat to internal validity, we compared the means of the dropout group to the non-dropout group on the pretest of each measure using an ANOVA (cultural awareness data) and independent samples *t*-test (HBGSI data) to ascertain if this issue occurred across the entire sample (Trochim, 2023). The CAS data included four groups, participants that took the first survey only ($n = 4$), those that completed the first and second survey ($n = 12$), a single participant that completed the first and third survey ($n = 1$), and those that completed all three surveys ($n = 12$). After ensuring the homogeneity of variance was not significant ($p = .58$) using Levene's statistic, all criteria for an ANOVA were met, revealing that there was not a statistically significant difference in the pre-test average between the groups, ($F(3,26) = 0.20$, p = .895). The HBGSI data included two groups, the participants who took the first survey only (dropouts, $n = 16$, $M = 3.2$) and those that participated in the full study, taking both surveys ($n = 14$, 2.9). After ensuring normality of distribution with a skewness of less than one (.83) and mesokurtic data (kurtosis of less than 3, 2.58), remaining criteria for the *t*-test was met (Gawali, 2023), revealing that there was a statistically significant difference in the between the dropouts ($M = 3.2$, $SD = .32$) compared to those who participated in the full study ($M = 2.9$, $SD = 0.23$), $t(28) = 2.96$, $p = .01$, despite the .3 difference in their mean scores. Thus, a limitation of this study may be in participant mortality through self-selection: participants who showed the greatest pre-test scores regarding Latiné and bilingual characteristics of giftedness chose not to continue participating in the repeated survey experience. The highest mean scores of the four identified groups were those that chose not to participate in all three surveys as compared to the dropout rate.

Qualitative

We used NVivo 12 Plus software as a data analysis tool. AN conducted initial concept coding (Saldaña, 2016) by reviewing the data sources for initial codes, surveying the data through a holistic view including ideas and processes. As an element of trustworthiness and credibility (Lincoln & Guba, 2013), we worked to establish construct validity with the data. KL peer reviewed the data, focusing on the initial codes and inferences made by AN (Long & Johnson, 2000). As a result of this review, KL shared suggestions and notes for minor changes related to the wording. To extend the analytical process of concept coding into a more categorical or thematic process, then AN proceeded with a second round of analysis with axial coding incorporating the feedback from KL (Saldaña, 2016). AN collapsed similar codes and reviewed data for double coded items to determine the best fit. Saldaña describes the axis of axial coding as a category, suggesting that researchers think through contexts, conditions, interactions, and consequences of the data as they analyze and categorize data into axial codes. AN examined the codes for connections, using these to categorize the codes, creating new axial codes.

AN defined each axial code, with the initial concept codes subsumed as part of the definition, in part because the concept code included an indicator to the data source (e.g., exit survey, professional learning log). KL conducted the peer review process again following axial coding. To ensure consistency while coding, we developed a codebook utilized throughout data analysis (see Figure 3 for a codebook sample from axial coding). Codebooks provide a reliability measure when carefully crafted and meticulously followed during qualitative research (Roberts et al., 2019; DeCuir-Gunby et al., 2011), which may later be applied to assist researchers in replicating the study (Roberts et al., 2019). The codebook and this description of our coding process provides an additional element of trustworthiness through dependability (Lincoln & Guba, 2013).

Table 3. Abbreviated sample of the codebook from the axial coding round

Node	Description	Files	Count
Barrier to Change was Clarity in Expectations and or Directive	The response to the Year in Review survey question regarding a barrier to how the GRT was able to "Be the Change" and a correlated topic for future PL was around clear expectations and a concise directive for future initiatives. Collapsed Codes: YRB explanation of expectations; YRPL concise directive; YRC Turnkey not a good fit for our district; YRC not a change	1	4
Barrier to Change was GRTs felt CTs Knew GT and Cultural Diversity	Responses to Year in Review regarding how GRTs were Being the Change and Barriers to Change indicated that the Classroom Teachers (CTs) did not need the training and knew the topics. Further, the GRTs felt that they were talking down to or insulting the teachers by approaching teachers. Collapsed Codes: YRC CTs do not need training; YRB did not want to insult teachers by giving PL; YRC CT already understood gifted identification; YRC CT understand cultural diversity; YRB outcome of task not aligned with CT work	2	22
GRTs advocated directly for students and discussed or modeled support strategies	The response to the Year in Review survey question regarding how the GRT was able to "Be the Change" indicated that the GRTs advocated for students directly, modelled strategies for CTs and talked to CTs about how to support students. Collapsed Codes: YRC GRT communicated WHAT with CTs, YRC advocated for students, YRC GRT modelled student support strategies, YRC talked to teachers about how to support students; CC GRT discussed a specific student; PLL discussion of REACH student; PLL immigrant student discussion; CC discussed Latiné culture and/or giftedness; PLL discussed potential Latiné gifted students; PLL 2e bilingual awareness; PLL recognition of CLED GT students; YRC advocated for students; YRC GRT modelled student support strategies; YRC talked to teachers about how to support students	2	25
GRTs Indicated a Desire for Resources and Support	Throughout data collection, GRTs indicated that they would be interested in resources and support (e.g., translated materials to assist with parent communication, information on specific strategies). Items that are coded with other topics are not included here (e.g., time for collaboration with other GRTs is collapsed with Relationships and Collaboration). Collapsed Codes: AMF materials; AMF parent materials that are translated; AMF turnkey; FQ how to work with parents of gifted children who decline services; FQ turnkey in practice	1	17
Importance of Relationships and Collaboration	GRTs stressed the importance of relationships and collaboration both with other GRTs and with the classroom teachers in their work as GRTs. Collapsed codes: TA reminder to be aware of Classroom Teacher's learning journey, YRC use relationships established with CT; TA new awareness of GRT teammates responses to culture; AMF collaboration with other GRTs; TA GRT role removed from general education; YRT used experiences and relationships	2	11
Important not to generalize about culture	Takeaway response on exit survey discussed the importance of not generalizing about culture; like the idea of not generalizing about all Latiné students are not "Mexican" but without this specificity, the response was broad regarding generalizing about cultures. Collapsed codes: TA different cultures among Latiné; TA single story leaves something out, creates stereotypes; FQ concerns re: generalizing; TA need to learn more about OWN students	1	9

Node	Description	Files	Count
Increased Knowledge of Latiné and Bilingual Gifted Students	Participants expressed an increased knowledge & understanding of gifted characteristics and skills around working with multilingual learners. With these understandings, also came additional questions, a need for resources and support. Collapsed codes: YRT theme from training re: ELL learners; TA learned new characteristics of gifted Latiné learners, TA diverse needs of students; FQ meeting student needs without singling out; FQ getting more Latiné students referred for testing; FQ availability of resources; YRPL opportunities for ELL students to show abilities; YRPL strategies	2	23
Need for Additional Training on More Diverse Student Groups	Participants indicated the need for training on groups beyond Latiné. Collapsed Codes: FQ more diverse populations of students; AMF additional training; YRPL GT characteristics in different populations; YRPL specific cultural habits that benefits student learning	2	12

Note. Node is the NVivo term for code; File refers to the data sources represented (e.g., exit survey, PLL); Count is the times the code was used (the total of all collapsed codes); Codebook was created in NVivo 12 Plus and further edited in Microsoft Word, as there is a character limitation on the description field. Node Abbreviations: AMF: Exit Survey, Assistance Moving Forward; CC: Collapsed Code (previously in the process); FQ: Exit Survey, Further Questions; PLL: Professional Learning Log; TA: Exit Survey, Takeaway; YRC: Year in Review Survey, Be the Change; YRB: Year in Review Survey, Barriers; YRT: Year in Review Survey, Takeaways; YRPL: Year in Review Survey, Future PLE

To step back and view the axial codes holistically, we used a process called codeweaving (Saldaña, 2016). In qualitative research, codeweaving takes codes and phrases and integrates them in a narrative form to see how they weave together, or how the pieces of the puzzle fit together. See Figure 4 for an example of the concept mapping process used during this analysis process. AN utilized concept mapping as an analytic codeweaving tool (Saldaña, 2016), and solicited peer review checks throughout the process by KL (Long & Johnson, 2000).
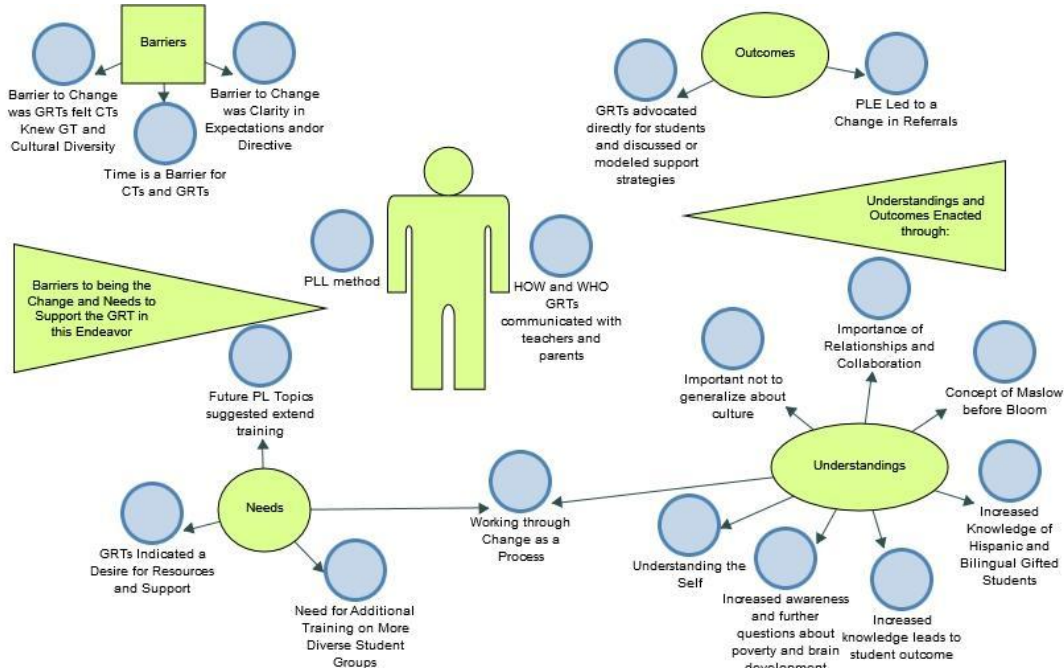

Figure 3. First Example of Codeweaving Concept Map created in NVivo 12 Plus

To provide researcher accountability and establish trustworthiness through dependability (Lincoln & Guba, 2013; Saldaña, 2016), Figure 5 shows a similar concept map, after the peer review process. We discussed why the representation for the grouping *barriers* was a different shape, and determined that the groupings of *needs, understandings*, and *barriers* were GRTs' perceptions were the most similar and should be the same shape. The *outcomes* grouping was more concrete, as many of these codes and collapsed codes came from the PLL and were examples of the work done by the GRTs. However, we discussed that the practices entered on the PLL were also based on GRTs' perceptions, and that some of

the codes collapsed into the axial code (Saldaña, 2016). *GRTs advocated directly for students and discussed or modeled support strategies* were from the year in review survey (see Figure 2). We debated naming the group "perceptions of" for *needs, understandings*, and *barriers* but ultimately decided that group *outcomes* were not fully in "perceptions" while also not fully "practices" devoid of "perceptions." Thus, we decided to vary the groupings by shape, leaving outcomes a distinct shape (rectangle) and leave the names the same.

The peer review process resulted in KL pointing out the relationship between the four groupings and suggesting the connecting arrows. We debated whether the *outcomes* grouping warranted a two-way arrow. We determined that two-way arrows should be used because (a) the PL logs were a mid-point data collection and data for the other three axial code groupings included data after the PL logs, thus the codes in the outcomes grouping did have relationships with the other groupings and (b) similar to the reasoning above, the *GRTs advocated* axial code included collapsed codes outside of PL logs, thus those codes had relationships with the other groupings. Finally, the peer review process resulted in changing the central shape, as AN was unsure of the perception of the figure if it appeared gender generic (inclusive or exclusive). We discussed the perception of the figure and ideas for the central figure within the constraints of the shapes available. In our findings, we will discuss the themes that emerged through multiple data sources (triangulation) by providing a thick, rich description, including the voices of the participants. This method, along with the participant and context description provided earlier in this article, establish trustworthiness through transferability (Lincoln & Guba, 2013), giving the reader the information needed to determine if the study is applicable to their settings.
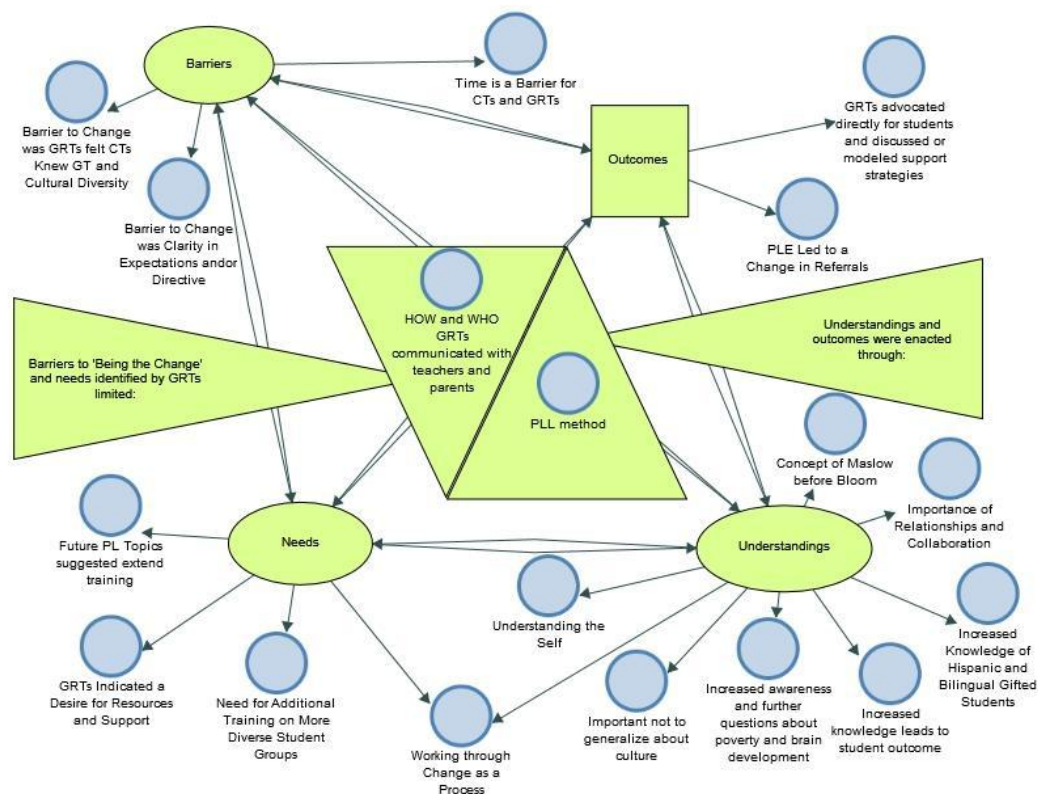
Figure 4. Example of Codeweaving Concept Map created in NVivo 12 Plus after Peer Review

Mixed Methods

An important step in the mixed methods analysis is to step back from the data and reflect on the ways in which individual aspects of the study work together, as the name indicates, looking for convergence (or divergence) in the findings. The codeweaving (Saldaña, 2016) step was essential for this, as was having the codebooks from the case study and exit survey/professional learning logs. A benefit to using the NVivo 12 Plus software is that the codebooks created by the software houses the data associated with each code, immediately returning to the data, the GRTs' and gifted coordinator's voices, in this analytic process. In this process, the themes that emerged from the analysis of exit surveys and PL logs caused us to take a second look at quantitative data we previously thought irrelevant: the scores from classroom teachers on the HBGSI ($n= 20$). We first used Levene's test for equal variance (F) as a preliminary test (Urdan,

2017), and then used an independent sample *t*-test, as we were comparing the means between two different groups of participants (GRTs and classroom teachers; Creswell & Creswell, 2023). The triangulation of data and the clear coding schema are two methods of confirmability, elements of trustworthiness, in this study (Lincoln & Guba, 2013).

Findings

Quantitative- Cultural Awareness Data

We ran paired sample *t*-tests on the CAS (CDE, 2010) to measure the change in individual participants' responses over time (see Table 4), analyzing matching samples pairwise. While 25 participants took part in the post-PLE survey and 14 participants took part in the long-term post PLE survey, they were not the same 14 individuals. For the cultural awareness data, a decrease in score corresponds with a higher degree of cultural awareness, therefore a negative difference and *t*-value (see Table 4) is a positive result based on the study's hypothesis: *gifted resource teachers' self-perceptions of cultural awareness and knowledge of gifted, Latiné and bilingual traits would positively increase following targeted, sustained PLE delivered through the selected professional learning model.* The results of the pre-PLE (*M*= 1.50) and post-PLE (*M*= 1.42) cultural awareness surveys were statistically significant and indicate that the PLE had a positive effect on educators' self-perceptions of their cultural awareness with a medium effect size per Cohen's (1988) convention, *t*(24) = -2.55, p = .018; *d* = -.51.

Table 5. Data analysis: cultural awareness paired sample t-Test

Pair	Cultural Awareness Pair	*M*	*SD*	Difference	*df*	*t*	*p*	Effect Size
1	Post-PLE Results	1.41	0.17	-.09	24	-2.55	.018*	*d* = -0.51
	Pre-PLE Results	1.50	0.20					*g* = -0.50
2	Long Term Post-PLE Results	1.56	0.31	.15	12	2.22	.046*	*d* = 0.62
	Post-PLE Results	1.42	0.16					*g* = 0.60
3	Long Term Post-PLE Results	1.53	0.31	.06	13	0.83	.424	*d* = 0.22
	Pre-PLE Results	1.47	0.15					*g* = 0.21

A comparison of the post-PLE (two weeks after the PLE, *M*= 1.42) and the long-term PLE (eight months later, *M*= 1.56) also showed significant results, but not in the direction expected. An increase in score (and *t*-value) indicates lower ratings for participants' cultural self-awareness, *t*(12) = 2.22, *p* = .046; g = 5.97, with a medium effect size (Cohen, 1988). We present an analysis of this in combination with qualitative data in the mixed methods discussion section.

Quantitative- HBGSI Data

Again, we utilized paired sample *t*-tests to examine pre- and post-PLE differences in the means of participants' responses to the Hispanic Bilingual Gifted Screening Instrument (HBGSI, Irby & Lara-Alecio, 1996). Urdan (2017) suggests the use of one-tailed significance in a paired sample *t*-test when researchers have a hypothesis that scores will increase because it is the expectation that the results will move in one direction. The following categories were found to be statistically significant: pre- to post-PLE scores on achievement (*M* = 2.82, 3.12; *t*(12) = -2.74, p = .009; *g* = .41) with a small effect size (Cohen, 1988), locus of control (*M*= 2.87, 3.19; *t*(12) = -2.03, *p* = .033; *g* = .60) with a medium effect size (Cohen, 1988), and total (*M* = 2.88, 3.13; *t*(13) = -2.00, *p*= .033; *g*= .49) with a small effect size (Cohen, 1988; see Table 4). Strong, but not statistically significant differences were noted for imagery, cultural sensitivity, and motivation for learning, with mean differences greater than -.35 and large effect sizes (see Table 5).

Table 6. Data analysis: HBGSI paired sample t-Test

Pair	HBGSI Section	M	SD	Difference	df	t	p	Effect Size
1	Social and Academic Language Pre-PLE to Post-PLE	3.19	0.48	-.08	12	-0.32	.378	d = 0.87
		0.32	0.55					g = 0.90
2	Cultural Sensitivity Pre-PLE to Post-PLE	3.07	0.62	-.37	13	-1.44	.087	d = 0.93
		3.43	0.65					g = 0.96
3	Motivation for Learning Pre-PLE to Post-PLE	3.25	0.48	-.14	13	-0.72	.243	d = 0.75
		3.39	0.59					g = 0.77
4	Collaboration Pre-PLE to Post-PLE	2.92	0.42	-.23	12	-1.18	.130	d = 0.62
		3.17	0.51					g = 0.64
5	Imagery Pre-PLE to Post-PLE	2.68	0.62	-.36	12	-1.46	.085	d = 0.89
		3.03	0.55					g = 0.91
6	Achievement Pre-PLE to Post-PLE	2.82	0.26	-.30	12	-2.74	.009*	d = 0.40
		3.12	0.28					g = 0.41
7	Support Pre-PLE to Post-PLE	2.85	0.43	-.12	12	-0.64	.267	d = 0.65
		2.96	0.63					g = 0.67
8	Problem Solving Pre-PLE to Post-PLE	2.92	0.64	-.38	12	-1.44	.087	g = 0.96
		3.31	0.48					g = 0.99
9	Locus of Control Pre-PLE to Post-PLE	2.86	0.33	-.37	12	-2.03	.033*	g = 0.58
		3.19	0.51					g = 0.60
10	HBGSI Total Pre-PLE to Post-PLE	2.88	0.23	-.25	13	-2.00	.033*	d = 0.47
		3.13	0.38					g = 0.49

Qualitative Findings

Two sets of qualitative data were used in this analysis (a) an interview, and (b) a grouping of the August exit survey, the collected professional learning logs (PLL), and the May year in review exit survey. We used university/district correspondence, researchers' notes, and professional learning agendas and outlines to triangulate the data and review, reinforce, inform, and/or confirm analyses but these items were not individually coded in NVivo. We used a multi-step analysis that initially resulted in nine themes, collapsed to four: social/cultural capital, barriers and resistance, specific outcomes, and cultural awareness impacts. See the Appendix for the initial and condensed themes from the analyses.

Social and Cultural Capital Needs

GRTs identified multiple areas of social and cultural capital that they would benefit from in their work as change agents for equity. GRTs indicated a need for additional training, particularly on more diverse student populations found in the district. The gifted coordinator, Jane specifically asked for a focus on Latiné and bilingual (Spanish-speaking) students (researchers' notes, planning documents), but as early as the August training's exit survey, GRTs' recognized this need with anonymous responses including, "I'd like the training to include more information on more populations" and "More training on other cultures in our district." Additionally, GRTs were concerned about the process of PL and change, asking for support such as "What's the best way to teach tolerance?" and seeking ways to establish "better

communication with parents by having easier methods of translating and sending information?" GRTs sought social capital through potential collaboration, requesting "more collaboration with others before presenting any of it."

Multiple Barriers Created Resistance

This theme is carefully worded as (to GRTs' assigned) work as change agents as part of the barriers included intrapersonal resistance to the work, noted by both the gifted coordinator and the GRTs. Jane indicated, "It had nothing to do with the knowledge. It had to do with their own feelings about being a professional developer." When talking about challenges, Jane said beyond time and access, it was the GRTs' "comfort level in taking on that responsibility. Some of them would avoid that at all costs." A few GRTs anonymously commented on the turnkeying ask, with sample year in review exit survey responses of desiring clarity, "clearer explanation of expectations prior to 'learning' or 'being the change'," seeking "a better organized, more concise directive," and feeling "but this just wasn't appropriate for our district." Time was listed as a barrier by both Jane and GRTs alike.

Several respondents commented specifically about the advanced knowledge the classroom teachers had in the domains, but without specifying exactly what advanced knowledge, cultural awareness, giftedness, Latiné and/or bilingual students and giftedness combined, etc. For example, responses included, "Our teachers already understand the need to recognize the diversity represented in their classrooms" and "I do not feel I was in the position to do any special trainings specifically about cultural differences that provided more information than what the teachers already know." Some of the teachers indicated that it was a disparagement to the classroom teachers to approach them with this content, "Finding that this would insult our teachers as it didn't speak to the needs of our district that is beyond this rudimentary training", another wrote "I didn't want teachers to be 'insulted' by feeling like I am talking down to them", and another respondent indicated "Our teachers understand the barrier. This training was insulting teachers' intelligence." This code, with 14 references and its axial parent code, *Barrier to Change was GRTs felt CTs Knew GT and Cultural Diversity*, with 22 references, led us to go back to the quantitative data and complete additional analyses, discussed in the next section, the mixed methods findings.

Specific Outcomes Related to Students and Teachers

One outcome indicated by the GRTs was referrals for the gifted program. In the PLL, a GRT indicated, "More GT referrals were received & discussed how we can better handle [the process] next year," a different PLL entry noted, "Discussed specific students and possible referrals for future reference/screening." Jane noted this outcome of the PLE, "We have a campus where we have a large African population. …Teachers are saying, "this kid needs to be identified"… We had seven go in to enhanced identification and five qualified. Because of advocacy."

As part of the turnkey process after the PLE, GRTs supported classroom teachers, as noted in the PLLs. As one GRT commented, "She gets frustrated because she feels like she refers students, and they don't qualify. We discussed specific ways to [help Hispanic gifted learners] show their thinking that could support a referral for the Hispanic culture." Another GRT commented in the year in review exit survey that modeling in the classroom is a positive strategy, "One way is to model for the teacher by sharing information about how I handle student issues, and elaborating on specific concerns that are related to the student's background."

GRTs identified specific outcomes related to students, particularly to student identification, on the PLLs. For example, one GRT noted on the PLL, "Topic of discussion was two Nigerian students who had scores that were noticeable. I wanted more info about their classroom characteristics, parent involvement, etc…". Conversations with classroom teachers moved beyond gifted and bilingual to twice exceptional (2e), as, per the PLL, one GRT "had [a] discussion regarding a bilingual student who has "noticeable" CogAT scores, is being looked at for AU [autism], and is an English language learner." In another example, the GRT was in the process of building a portfolio for two students and advocated for the students by turnkeying the PLE. As recorded on the PLL, "discussed two particular students [for whom] I was building portfolios. They had high CogAT scores but not the required two scores for Pemberly. Discussed how GT can be seen in CLED students and what she was seeing with these students." Jane noted an outcome was that the GRTs came to the identification committee ready to advocate for their students, starting with appropriate

background information on the students, situating the scores or grades in any needed context, "I need to frame what I'm hearing from them on "is this English as a first language, is this a kid from poverty"" Jane continued, "I need to know because if the [child is] struggling with vocabulary and academic language, but they're [a] CLED kid that's different than "I'm a very resourced kid, and I just don't have the ability""

PLE Sessions Impacted Cultural Awareness and Knowledge of Giftedness

Jane and the GRTs identified multiple areas in which the PLE sessions directly impacted their cultural awareness and understanding of Latiné and/or bilingual gifted students. While the *barriers* theme, primarily pulled from codes from the year in review survey, shares some of the GRTs' thoughts to the contrary, many GRTs expressed an increase in knowledge around cultural awareness. We pulled the codes for this theme from the August PLE exit survey, as well as from the year in review exit survey. GRTs made several references to learning about culture in the August exit ticket, including "Recognize your own culture. It always impacts seen/unseen," and "I need to learn more about and keep in mind cultural differences of my students." An important connection was the link between the training and the potential outcomes for students, as noted by the exit ticket response, "Need to help with retention by understanding culture [and/or] background," and another who indicated, "This was helpful to me to know how to bridge the gap with these students who are under-identified."

Another area of understanding directly impacted by the PLE was specific knowledge of Latiné and bilingual characteristics. In the exit survey, a GRT responded, "I appreciated the specific aspects of gifted Hispanic students and how that might look differently from another gifted student," while other comments were specific to bilingual students, "Bilingual students may need different kinds of opportunities to allow their gifts to manifest." Jane noted that "I found a heightened sensitivity to it," regarding the GRTs' recognition of the characteristics of a Latiné bilingual gifted student, saying that her staff "now have some characteristics that they can hang their hat on." A GRT noted in the year in review exit ticket that a takeaway from the PLE was "Understanding how immigrant, ELL, and low SES populations present differently" while another sample response cited "Different manifestations and behaviors connected to developing language learners."

Participants also felt that collaboration and building relationships were outcomes from the PLE, in both the initial exit ticket and the year in review exit ticket. As one GRT shared in the post-PLE exit ticket, "I want to remember to be respectful of those teachers still learning when we go to train and be sure to listen to their stories in the same way that we want them to listen to their students." In the year in review survey, a GRT discussed their successes, explaining that "when a relationship is established, conversations are natural and non-confrontational."

Convergent Mixed Methods Findings

In a convergent mixed methods design, quantitative and qualitative data are collected and analyzed as a first step. In the second step of analysis, the results are compared, with a goal of developing a greater understanding of the phenomenon under study (Creswell & Creswell, 2023), with an eye towards how the data might diverge or converge in this second round of analysis.

Classroom Teachers' Advanced Knowledge

In the previous section, the second qualitative theme encouraged us to return to quantitative data, seeking additional explanation. In this theme, *the gifted coordinator and GRTs identified multiple barriers to GRTs' assigned work as change agents that created intra- and inter-personal resistance to engaging in advocacy work with fidelity*. In the year in review survey, a respondent noted, "In many ways, they [classroom teachers] were much more well versed than I am in identifying their populations because they are so experienced on their campuses." Based on these qualitative findings, we returned to the HBGSI data collected by GRTs during the turnkey portion of the study and ran independent sample *t*-tests to show the difference of means between two different groups of participants, GRTs and classroom teachers (Creswell & Creswell, 2023). GRTs responded to the instrument twice, pre-PLE (August) and post-PLE (May), however the classroom teachers only provided one response (between October - November). Therefore, we ran both independent samples *t*-tests with the single set of classroom teachers' scores.

We used Levene's test for equal variance (*f*) as a preliminary test (Urdan, 2017); SPSS 28 reports *t*-test values based on equal variances assumed and not assumed and presents the data in two rows. Table 6 shows the *t*-test results using the GRTs' pre-PLE data while Table 7 includes the *t*-test results with the GRTs' post-PLE data. For *f* values less than .005, equal variances were not assumed, and we used the *t*-test value for the corresponding row, reported in Table 6 (Table 7 did not have any equal variances not assumed). Based on the qualitative data themes and the GRTs' perceptions that the classroom teachers were well trained in the information that they were asked to turnkey, we elected to use a two-tailed direction for significance (*p*, Urdan, 2017).

Table 7. Data analysis: HBGSI independent sample t-Test, GRTs (Pre-PLE) and classroom teachers

HBGSI Section	Teacher Type	*M*	*SD*	*f*	Lev. Sig.	*t*	*df*	*p*	Mean Diff.	Effect Size
Social & Academic Language	GRT	3.06	0.50	12.44	*<.001*	*-0.80*	*24.4*	*.432*	*-.21*	*d* = -0.26
	Classroom	3.27	1.10							*g* = -0.26
Cultural Sensitivity	GRT	3.10	0.59	11.33	*.002*	*-0.80*	*26.2*	*.433*	*-.20*	*d* = -0.26
	Classroom	3.30	1.03							*g* = -0.25
Motivation for Learning	GRT	3.27	0.47	1.99	.165	-3.63	48	<.001*	-.58	*d* = -1.1
	Classroom	3.85	0.67							*g* = -1.0
Collaboration	GRT	3.07	0.40	0.93	.340	-2.75	47	.008*	-.37	*d* = -0.80
	Classroom	3.43	0.54							*g* = -0.79
Imagery	GRT	2.97	0.57	1.20	.279	-3.35	47	.002*	-.57	*d* = -.098
	Classroom	3.53	0.60							*g* = -0.96
Achievement	GRT	3.06	0.37	1.89	.176	-2.37	46	.022*	-.31	*d* = -0.70
	Classroom	3.36	0.53							*g* = -0.69
Support	GRT	2.95	0.37	8.58	*.005*	*1.21*	*27.6*	*.236*	*.18*	*d* = 0.39
	Classroom	2.76	0.59							*g* = 0.39
Problem Solving	GRT	3.18	0.67	0.49	.488	0.10	45	.922	.02	*d* = 0.03
	Classroom	3.16	0.77							*g* = 0.03
Locus of Control	GRT	2.98	0.32	6.88	*.012*	*-0.95*	*27.8*	*.352*	*-.13*	*d* = -0.30
	Classroom	3.11	0.55							*g* = -0.30
HBGSI Total	GRT	3.04	0.37	0.64	.426	-2.81	48	.007*	-.28	*d* = -0.81
	Classroom	3.32	0.38							*g* = -0.80

Note. f = Levene's test for equal variance; Lev. Sig.= significance for Levene's test, if the value was less than .05, *equal variances were not assumed,* and that data is reported (in italics); *t* = *t*-value; *df* = degrees of freedom; *p* = two-tailed significance (significant values less than .05 are starred*); Effect Sizes: *d* is Cohen's d and *g* is Hedge's Correction.

Comparing the classroom teacher responses to the GRTs' pre-PLE responses, we noted statistically significant differences in favor of the classroom teachers in Motivation for Learning (GRT *M* = 3.25, classroom *M* = 3.85), with a large effect size (Cohen, 1988), *t*(48) = -3.63, *p* = .001, *d* = -1.1; Collaboration (GRT *M* = 3.07, classroom *M* = 3.43), with a large effect size (Cohen, 1988), *t*(47) = -2.75, *p* = .008, *d* = -0.80; Imagery (GRT *M* = 2.97, classroom *M* = 3.53), with a large effect size (Cohen, 1988), *t*(47) = -3.35, *p* = .002, *d* = -0.98; Achievement (GRT *M* = 3.06, classroom *M* = 3.36), with a medium effect size (Cohen, 1988), *t*(46) = -2.37, *p* = .022, *d* = -0.70; and on the HBGSI Total (GRT *M* = 3.04, classroom *M* = 3.32), with a large effect size (Cohen, 1988), *t*(48) = -2.81, *p* = .007, *d* = -0.81. Using the May, Post-PLE, data, the independent samples *t*-test showed statistically significant in two of the same subtests, again in favor of classroom teachers: Motivation for Learning (GRT *M* = 3.39, classroom *M* = 3.85), with a medium effect size (Cohen, 1988), *t*(32) = 2.05, *p* = .049, *d* = 0.71; and Imagery (GRT *M* = 3.02, classroom *M* = 3.53), with a large effect size (Cohen, 1988), *t*(32) = 2.56, *p* = .015, *d* = 0.89.

Table 8. Data analysis: HBGSI independent sample t-Test, GRTs (Pre-PLE) and classroom teachers

HBGSI Section	Teacher Type	*M*	*SD*	*f*	Lev. Sig.	*t*	*df*	*p*	Mean Diff.	Effect Size
Social and Academic Language	GRT	3.26	1.10	3.67	.06	0.02	32	.988	.01	*d* = 0.01
	Classroom	3.27	0.57							*g* = 0.01
Cultural Sensitivity	GRT	3.43	1.03	2.70	.11	-0.41	32	.683	-.13	*d* = -0.14
	Classroom	3.30	0.65							*g* = -0.14
Motivation for Learning	GRT	3.39	0.67	0.19	.66	2.05	32	.049*	.46	*d* = 0.71
	Classroom	3.85	0.59							*g* = 0.70
Collaboration	GRT	3.14	0.54	0.10	.75	1.59	32	.122	.29	*d* = 0.55
	Classroom	3.43	0.49							*g* = 0.55
Imagery	GRT	3.02	0.60	1.93	.17	2.56	32	.015*	.51	*d* = 0.89
	Classroom	3.53	0.53							*g* = 0.87
Achievement	GRT	3.11	0.54	4.04	.05	1.63	31	.113	.25	*d* = 0.57
	Classroom	3.36	0.27							*g* = 0.56
Support	GRT	3.00	0.59	1.95	.17	-0.96	31	.343	-.20	*d* = -0.34
	Classroom	2.76	0.60							*g* = -0.33
Problem Solving	GRT	3.30	0.76	0.67	.42	-0.55	31	.585	-.13	*d* = -0.20
	Classroom	3.16	0.47							*g* = -0.19
Locus of Control	GRT	3.18	0.55	0.29	.59	-0.36	32	.723	-.07	*d* = -0.13
	Classroom	3.11	0.49							*g* = -0.12
HBGSI Total	GRT	3.13	0.38	0.01	.92	1.41	32	.168	.19	*d* = 0.48
	Classroom	3.32	0.38							*g* = 0.49

Note. f= Levene's test for equal variance; Lev. Sig.= significance for Levene's test, all values were greater than .05, thus *equal variances were assumed,* and that data is reported; *t*= t-value; *df*= degrees of freedom; *p*= two-tailed significance (significant values less than .05 are starred*); Effect Sizes: *d* is Cohen's d and *g* is Hedge's Correction.

We looked at the axial code, *GRTs felt CTs knew GT and cultural diversity,* and classroom teachers' results on the HBGSI. Analysis through an independent sample *t*-test indicated that classroom teachers had higher means on all but two subscales (support and problem solving) of the HBGSI compared to GRT's pre-PLE scores, with statistically significant different means on four subscales and the total HBGSI score. Even after GRTs received the PLE, when all GRTs' scores rose, some statistically significantly (see earlier discussion in quantitative findings), the classroom teachers' HBGSI means were higher on 5 out of 9 subscales (two significantly) and the total. As one GRT pointed out in the year in review survey, "A lot of the information was what the teachers, especially bilingual ones, were familiar with from previous trainings" highlighting the both the potential identity of the classroom teachers in the HBGSI sample, as well as explaining the axial code and theme in more depth.

Long-Term Cultural Awareness: Status Quo, Resistance, or Disruption?

A second finding from the mixed methods analysis was in the comparison of the post-PLE (two weeks after the PLE, *M*=1.42) and the long-term PLE (May, *M*= 1.56) cultural awareness scores, which indicated significant results, but not in the direction of the hypothesis. Research question one stated: What are the impacts of targeted, sustained PLEs on GRTs' perceptions and practices, as measured by pre-, post-, and long-term-post-PLE survey results measuring GRTs' self-perceptions of their cultural awareness? When the cultural self-awareness scores on the instrument and corresponding *t*-value, increase respondents' self-perceptions of their cultural self-awareness decreased, $t(12) = 2.22$, $p = .046$; $g = 5.97$, with a medium effect size (Cohen, 1988). Qualitative data, answering research question 1c (...measured by qualitative analysis of the gifted coordinator's perceptions and GRTs' reported practices of engaging in equity-related advocacy work?) provides insight into these scores. From *the gifted coordinator and GRTs identified multiple barriers (to GRTs' assigned) work as change agents that created intra- and inter-personal resistance to engaging in advocacy work with fidelity* theme, both Jane's and the GRTs' perceptions have connections to this data.

Jane indicated a resistance on the part of the GRTs with the professional learning role, to the point of encouraging their retirement, "But I really think that some who retired may have been inspired to retire by the fact that they were

going to be expected to provide professional learning. As noted in the finding above, the axial code of which several *GRTs' perceptions of classroom teachers' levels of knowledge* was a barrier within this same theme. While these were phrased, and thus coded, with classroom teacher-first language, some GRTs included themselves in the perception by using *we*. On the year in review exit survey, one GRT responded, "In this district, we are well trained in diversity, and have experienced diversity at a higher frequency than the training assumed we had. Most of us are not rookies in handling diverse groups." Another GRT simply stated, "We are not a new district to diversity."

In addition to this qualitative data, we looked closely at the instrument. Prior to the August PLE, at the time of the pre-PLE administration of the survey, GRTs were not aware of the turnkey expectation of the study. It was introduced at the August PLE but not in detail. The October follow up was the roll-out of the turnkeying plan of action, which was after the post-PLE administration (triangulated using planning documents and PL materials). Three items on the Cultural Awareness Self-Assessment (CDE, 2010) specifically mention working with other faculty members and/or professional learning (worded as professional development), e.g., "I act as a student and family advocate. I openly confront my colleagues if I see practices that I feel are inequitable" (p. 2) while an additional 14 out of the 25 items were included in the August PLE (available to all GRTs for turnkeying), e.g., "I regularly examine academic and behavioral data for achievement gaps by race, native language, socio-economic status, and gender" and "I am aware of my own racial, ethnic, and cultural background, and understand how it affects my perceptions and values" (p. 1). It is possible that the disruption caused by district changes, Jane's perceptions of GRTs' feelings towards providing professional learning, and the inter- and intra-personal resistance that emerged as a theme from the qualitative data contributed to the lower scores on the long-term post-PLE cultural self-awareness, implicitly or explicitly.

Discussion

Our first research question asked about the impacts of targeted, sustained PLE on GRT's perceptions and practices, as measured by quantitative and qualitative measures. The results of this study support the hypothesis that gifted resource teachers' self-perceptions of cultural awareness and knowledge of gifted, Latiné, and bilingual traits would positively increase following targeted, sustained PLE delivered through the 4ZEPL. This hypothesis was confirmed through statistically significant changes in pre- and post-survey results measuring GRT's self-perceptions of their cultural awareness, as well as statistically significant changes in pre- and post-PLE survey results measuring GRT's perceptions of characteristics of Latiné and bilingual gifted learners. These results are consistent with a critical paradigm approach (DeCarlo, 2018), in which professional learning can result in change, as well as the impact of successful professional learning experiences (Darling-Hammond et al., 2017; Kennedy, 2016; Zuo, 2023). Applying the tenets of adult and professional learning, adults engage in learning when the learning has relevant and realistic goals (Chuang, 2021; Darling-Hammond et al., 2017; ESSA, 2015; Novak et al., 2020; Perez-Medina, 2020; Powell & Bodur, 2019; Zakierski & Siegel, 2019). This was established through the pre-PLE survey and exit survey data collection and feedback provided by Jane, from which the facilitators crafted the October follow-up PLE. By asking for and responding to participants requests for targeted PL, we responded to the adult learners' lived experiences, which influence their understandings of equity and giftedness (Brookfield, 2014; Powell & Bodur, 2019; Sandlin, 2005; University of Akron, 2023).

While there were some statistically significant differences related to changes in GRTs' perceptions following the PLE, qualitative data from the *Multiple Barriers Created Resistance* theme suggested that growth may have been limited due to unanticipated district wide changes, teacher resistance and lack of buy-in, similar to barriers in the research identified by Lindsey et al. (2018). For example, Jane reflected on the professional learning initial plan and the realities of how the plan was not able to be fully implemented, she recognized that the teachers' resistance to change and personal bias (Collins, 2021) kept the professional learning from being fully implemented. Yet, at the same time, Jane recognized that these same limitations were a benefit of participating in professional learning; because of the PLE, Jane uncovered areas of need that she previously was not aware existed. Jane was not deterred by these new challenges but was instead more motivated to follow through with changes within her district's gifted education program and develop more targeted

professional learning opportunities for the following academic year, which aligns with adult learning theory's focus on internal motivation and readiness (Chuang, 2021; Powell & Bodur, 2019; Western Governors University, 2022).

Additional qualitative themes enhance the statistical support for the first research question, in particular *PLE Sessions Impacted Cultural Awareness and Knowledge of Giftedness* and *Specific Outcomes Related to Students and Teachers*. The results are consistent with the research on changing teacher perceptions, approaches, and practices after professional learning experiences (Kennedy, 2016; Zuo, 2023). Increases in cultural awareness and gifted knowledge are representative of the literature (Lindsey et al., 2018), including the need for self-discovery and the recognition of how one's own culture impacts the classroom (Ford, 2019; Gay, 2010; Ladson-Billings, 2009, 2021; Lindsey et al., 2018), an awareness of how knowledge of culture can help with retention of students (Ford, 2019; Roberson, 2021), and a heightened awareness of Hispanic bilingual characteristics of giftedness (Irby & Lara-Alecio, 1996). Specific outcomes in the findings that are consistent with the research include an increase in gifted referrals (Ford, 2019), ways to examine policies and procedures that will lead to more equitable identification outcomes (Collins, 2020b, 2021; Roberson, 2021), and changes from deficit-based to asset-based language (Collins, 2021; Ford & Grantham, 2003). Several participants turnkeyed their PL training to their classroom teachers, which enabled them to see the relevancy and applicability of the PL to their own context (Perez-Medina, 2020; Zakierski & Siegel, 2019), as seen in the qualitative data theme, *Specific Outcomes Related to Students and Teachers*.

Our second research question asked about the ways this university/district partnership study might provide evidence of the effectiveness and validate the 4ZEPL research-based theoretical model as measured by quantitative and qualitative measures from the first research question. The results of this study support the hypothesis that statistically significant changes in pre- and post-survey results on GRTs' perceptions of their cultural awareness and characteristics of Latiné and bilingual gifted learners lends validation for the theoretical model of professional learning. This is a positive finding as it reinforces the potential impact carefully crafted professional learning may have on teacher perceptions.

Additionally, qualitative data provides additional context on the benefit of the 4ZEPL, a vehicle to drive change through systematic training, conversations, and follow-up sessions. This was noted in the themes *PLE Sessions Impacted Cultural Awareness and Knowledge of Giftedness* and *Specific Outcomes Related to Students and Teachers*, commensurate with research on best practices in professional learning (Combs and Silverman, 2016; Darling-Hammond et al., 2017; see also Table 1) and adult learning theory (Chuang, 2021; Powell & Bodur, 2019; Sandlin, 2005; Western Governors University, 2022). Additionally, the *Social and Cultural Capital Needs* highlights the importance of the first and second zones of the 4ZEPL: deep and authentic engagement around the racial, ethnic, linguistic, and cultural identities (Brookfield, 2014; Collins, 2021; Ford, 2019; Novak et al., 2020; Roberson & Collins, 2025; Sandlin, 2005) pertinent to local school and community spaces (Novak et al., 2020; Sandlin, 2005), and how characteristics of giftedness may manifest in the populations represented in the schools and communities served by the group receiving PLE (Collins, 2021; Ford, 2019; Novak et al., 2020; Roberson & Collins, 2025; Weber & Mofield, 2023).

The theme of *Multiple Barriers Created Resistance* notes a disconnect between self-perceptions and the reality of putting knowledge into action. Layla Saad (2020) notes a similar disconnect as white exceptionalism, a condition in which one believes (explicitly or implicitly) that "as a person holding white privilege [they] are exempt from the effects, benefits, and condition of white supremacy and therefore that the work of antiracism does not really apply" (p. 67). The crux of white exceptionalism is that individuals believe that they know the information, they have no room to grow and learn, and no need to continue their cultural, antiracist, or equity journey. Saad states:

> White exceptionalism is the idea that you are somehow special, exempt, above this, past this, beyond this thing called white supremacy. That white supremacy is what those other white people do, but not you. It goes hand in hand with white superiority and the belief that you have already done some antiracism work, you have already shown you're an ally, so you do not need to keep showing up and doing the work. (pp. 69-70)

Tying to this notion of white exceptionalism, of note in the GRTs' responses in this theme were the year in review survey responses that used "I" language to express their perceptions regarding the classroom teachers' level of knowledge and/or the use of "insult" or other negatively toned words, e.g., (emphasis added) "*I* do not feel *I* was in the position to do any

special trainings specifically about cultural differences that provided more information than what the teachers already know;" and "finding that this would *insult* our teachers as it didn't speak to the needs of our district that is beyond this *rudimentary* training." Whereas others utilized classroom teachers as a barrier or defense, "*I* didn't want teachers to be '*insulted*' by feeling like *I* am *talking down* to them;" and "our teachers understand the barrier. This training was *insulting* teachers' intelligence." Roberson's (2021) work in culturally responsive pedagogy highlights the importance, when advocating for gifted learners, of staying firm when experiencing push-back. In this study, pushback was the GRTs' perceptions of (their own and) classroom teachers' knowledge; no codes or data points indicate that the classroom teachers themselves said that they felt insulted or too knowledgeable.

When looking at the long-term post-PLE cultural awareness data, there were again significant results, however, these results were not in the hypothesized direction. The GRTs scores were higher, indicating a decrease in self-perception of cultural awareness. In addition, the qualitative data indicated that the gifted coordinator and GRTs identified multiple barriers (to GRTs assigned) work as change agents that created intra- and inter-personal resistance to engaging in advocacy work with fidelity, which may explain the lower cultural awareness self-perception score at the post-PLE administration. Cultural proficiency can be expressed as a continuum (Lindsey et al., 2018), and while ideally a continuum focuses on forward motion, the construct changes over time and is affected by multiple variables.

Limitations to the growth of cultural competence of the GRTs can also align with adult learning theory. One of the tenets of adult learning theory is that the process must acknowledge that ego is involved. Another is that if adult learners perceive that the activity or information is an attack on their competence, they will show resistance (Powell & Bodur, 2019; University of Akron, 2023; Western Governors University, 2022). Some GRTs expressed views that they knew the content, or that their classroom teachers were experts in the subject matter and thus were resistant to engaging in the advocacy work that was part of the study (University of Akron, 2023; Western Governors University, 2022). This perception and/or misconception and/or exceptionalism potentially limited the participation of some GRTs to meaningfully engage in the turnkeying work, professional learning logs, and the May administration of the post-PLE surveys.

Limitations

Throughout the study, we encountered several barriers to the successful completion of the study. When discussing the district plans with the gifted coordinator prior to starting the study, a planned restructuring was set for the following year, however by the first follow up (October), it was a central part of the participants' discussion: it had begun. This restructuring caused changes to the implementation schedule of our study. In addition, there was a fidelity limitation of the study, as the planned pre/post survey for the classroom teachers receiving turnkey training was not carried through. Several GRTs did ask their classroom teachers to complete the HBGSI prior to their grassroots training, however none of the classroom teachers completed a post-HBGSI survey.

The quantitative study design itself, a quasi-experimental single-group interrupted time-series design, leads to an additional limitation of regression to the mean as a threat to internal validity. Regression to the mean is a statistical occurrence when participants score very high or low and are less likely to score at those extremes at the second testing, thus regressing to the average score, or as explained by Trochim (2023) "*'you can only go up from here' phenomenon*" (para. 9). This threat is mitigated by many researchers by using a control group (Trochim, 2023). As this study was part of a university-district partnership, the experimental 'treatment' of ongoing professional learning was provided to all, necessitating the use of a single group design and our acceptance of this threat to internal validity as a necessary limitation of the study design.

Conclusion

While the need for equitable practices in gifted education is clear, the realities of implementing sustainable, meaningful change are a continual and pervasive challenge. This paper shares findings from a study of teacher perceptions of cultural self-awareness and knowledge of gifted characteristics of Latiné bilingual students through an equity-driven professional learning model, and the significant role gifted leadership plays in balancing the needs of gifted programs with district mandates. Culturally sustaining pedagogy empowers gifted learners to grow intellectually, socially, emotionally, and politically by capitalizing on cultural assets, making authentic connections with rigorous curriculum, and empowering students to grow academically and socially through relevant cultural experiences (Gay, 2010, Roberson, 2021, Ladson-Billings, 2009, 2021). Teacher's cultural self-awareness is integral to their development as socially just educators (Lindsey et al., 2018) and impacts their willingness and ability to successfully engage in culturally sustaining pedagogy. PLE for educators should reflect "the same energy and effort put in learning and growing in your content area should also be reflected in your cultural responsiveness journey" (Roberson, 2021, p. 73).

This study followed a critical paradigm approach (DeCarlo, 2018), in which we sought to understand the degree to which PLE could positively change ingrained systems of bias in the educational system, interpersonally. Through GRTs' increased cultural self-awareness, increased knowledge of gifted characteristics of students who identify as Latiné and bilingual, the dial has changed regarding ingrained systems of bias. Moreover, while the study had significant limitations due to district restructuring, several GRTs conducted the requested turnkeying, and a few professional learning logs were submitted for analysis. Thus, through the qualitative analysis, we can see evidence of their critical paradigm in action: evoking change.

The need for equitable practices in professional learning for gifted educators is well known, and the realities and struggles of implementing sustainable, meaningful change are equally evident. Future research can build on these findings. Studies should continue to explore pursuing systemic change through equity driven PLE. More research in gifted education is needed around teachers-as-leaders, educator agency, and how leaders can balance ever-evolving policies, while keeping equity and the students' needs at the forefront. The field understands quite well the problems of disproportionality and underrepresentation in the gifted field. More research, and replicated research, is needed for practical, sustainable solutions at the systemic level.

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