Action

in Arkansas Teacher Education

The Journal of the Arkansas Association of Teacher Educators

Co-Editors and Peer Reviewers

Articles and Authors

Culturally Responsive Teaching: Teacher Perceptions and Competence

Shoudong Feng, University of Central Arkansas
Odunola Oyeniyi, University of Central Arkansas
Louis Henderson II, Central Elementary (Gulfport, Mississippi)

Abstract
This study examines teachers' perceptions of culturally responsive teaching in the current environment, exploring their understanding of its core principles, the challenges they perceive in its implementation, and how equipped they feel to incorporate culturally responsive teaching strategies into their classrooms. By surveying educators from diverse backgrounds and school contexts, the research aims to shed light on the teachers' views and experiences in regard to culturally responsive teaching, the relationship between teacher knowledge, beliefs, and classroom practices related to cultural responsiveness, potential implications for teacher training and school policy to ensure wider adoption of culturally responsive teaching to enhance equitable learning experiences for all students.

Keywords: classroom practices, culturally responsive teaching, diversity, inclusive education, professional development, teacher perceptions

Background and Rationale
Educational institutions are responsible for ensuring equitable learning opportunities for all students. Yet, as decades of national education assessment data show, schools in the US have failed to help low-income, Black, Latin-X, English learners, as well as special needs students, achieve similar learning results in literacy, math, and science as compared to their more wealthy, White and Asian, native speaking and typically developing peers (Nations Report Card). One reason identified by researchers is that schools do not adequately respond to these students' cultural backgrounds and experiences (Hammond, 2021). Classroom teaching practices often overlook the diverse cultural backgrounds of students (Evans et al., 2020; Matteis, 2022). In addition, the curriculum designed and implemented in US schools has put a major emphasis on the dominant race and their culture; consequently, this, at times, has ultimately dismissed minorities and their cultures, which may have made it more challenging for students from minority groups to relate to the materials (Banks & Banks, 2010; Bissonnette, 2016).

Culturally Responsive Teaching has the potential to address and eliminate educational disparities impacting all students regardless of race, gender, and socioeconomic status to improve their academic performance and create equitable educational opportunities. Hammond (2021) asserted that learning loss or deficiencies occur due to educational practitioners' inability to create teaching centered around cultural awareness. Culturally Responsive Teaching provides the framework for teachers to ensure that students achieve academic success while developing and maintaining their cultural identities (Ladson-Billings, 2009). In this framework, teachers will create a culturally affirming and inclusive environment, utilize students' backgrounds and lived experiences to engage them and incorporate critical thinking and other high-order thinking skills in instruction. Gay (2018) explained that *all* students will improve academic achievement when classroom instruction is filtered through students' own cultural experiences. Hammond (2015) also emphasized the impact of culture on relations in the classroom and the way the brain processes information, e.g., different cultural schemas regarding various concepts. She advised

that by going deeper into student cultures' core values and beliefs, teachers may understand how understanding or misunderstanding may occur or where difficulties may be in reading and learning new materials. Furthermore, she argued that culturally responsive teaching will empower and value students so that their brains will experience less threat and stress, thus improving their ability to process and understand information. She encouraged teachers to connect Culturally Responsive Teaching to the science of learning and develop student capacity so they become independent learners (Hammond, 2021).

Darling-Hammond (2011) proclaimed that educators are responsible for addressing the challenge of cultural diversity in classrooms. Culturally Responsive Teaching ensures students from diverse backgrounds have meaningful opportunities to experience quality instruction that consistently incorporates their cultural funds to support learning. Thus, teachers must have a solid understanding of Culturally Responsive Teaching and know how to properly implement strategies in their classrooms. The current research intends to understand how teachers in our study perceive Culturally Responsive Teaching and how they respond to the diverse cultures in their classrooms.

Literature Review

Shettino, Radvany, and Wells (2019) reported that 35 states promote culturally responsive teaching in their ESSA plans. However, for teachers to implement Culturally Responsive Teaching pedagogy, they must have certain dispositions and beliefs and high levels of teaching skills in the pedagogy (Comstock et al., 2023). So far, research on teacher perceptions and classroom practices has mainly focused on pre-service teachers and in-service teachers who are also enrolled in graduate programs, teachers in different content areas, teachers' readiness, and many others. Ladson-Billings (2011) proclaims that teacher education programs present problems for current and future educators by not emphasizing courses or coursework that support student and teacher cultural awareness and diversity, tarnishing teachers' perception of becoming culturally relevant teachers. Furthermore, teacher educators need to help teacher candidates establish and adopt a culturally responsive teaching perspective to guide their instruction rather than just teaching them how to do culturally responsive teaching activities (Ebersole et al., 2016).

One area of research on Culturally Responsive Teaching is how teachers perceive and implement the pedagogy in content areas such as math, science, music, literacy, or other subjects. Ziffini (2022) examined research on culturally responsive teaching in music education and reported that music teachers are often ill-equipped to teach in a culturally responsive way. She emphasized the importance of mentoring novice teachers in this pedagogy. She suggested some strategies for experienced teachers to use to mentor novice teachers, e.g., engaging mentees in shared reflections using "conversation starters," being transparent and honest with their weaknesses, considering the developmental needs of novice teachers when adopting mentoring strategies, and reframing expectations for novice teachers and celebrating small progress made by mentees. McKoy et al. (2017) revealed that culturally responsive teaching has not been widely implemented in music classes, and more effort is needed to address gaps in implementation. In their study, this group of music teacher educators offered a professional development workshop to a cohort of 18 teachers who were assigned to mentor teacher candidates. They surveyed the participants' perception and understanding of culturally responsive teaching before and after the training. They found that those teachers rated familiarity with and importance of the pedagogy higher than what they did before the training, yet no differences in

the frequency of using the pedagogy in their classrooms pre-and post-training. The researchers did not find significant differences in the teachers' comfort level of using the pedagogy in their teaching, either.

Morrison et al. (2022) followed three math teachers into their classrooms after they completed a graduate-level course on Culturally Responsive Teaching and examined their classroom practices. They found examples of increased sociopolitical awareness and affirming views of students but not all aspects of the pedagogy. They suggested the need for classroom research to identify the best practices in culturally responsive teaching and revise teacher education courses based on the findings. In her case study, Mburu (2022) assessed one teacher candidate's understanding of culturally responsive teaching and how she implemented it in a third-grade mathematics classroom in her student teaching. Data revealed that the teacher candidate did not understand culturally responsive teaching well and did not implement it well in her teaching. Except for academic excellence, social justice, knowledge construction, and prejudice reduction were missing from her lessons. There was little effort in incorporating diverse materials, minority students' cultural backgrounds, and experiences into teaching.

Similarly, other subject areas like biology face challenges in implementing culturally responsive teaching as well. Barron et al. (2021) studied a group of TAs in a biology class offered to teacher candidates. These TAs had minimal training in pedagogy in general, let alone in culturally responsive teaching. The researchers trained and helped the TAs enact Culturally Responsive Teaching in their teaching. They identified four themes in their practice, i.e., funds of knowledge connections, differentiating instruction, intentional scaffolding, and reducing student anxiety. The authors argue that these findings are essential for science education programs to consider in order to provide equitable science learning opportunities for all students. Tanase (2022) examined the teaching practices of 22 science teachers in urban schools and found the following responsive teaching themes: Incorporating students' interests, making connections with real life, and allowing students to make choices. The author suggests that there needs to be a new curricular approach that presents opportunities for students to bring their cultures and prior funds of knowledge into the classroom to connect with STEM content.

Siwatu et al. (2016) found that preservice teachers in their study believed in the value and benefits of culturally responsive pedagogy for students but had doubts about their ability to implement it. However, Seyda and Hanife (2021) pointed out that teachers hold a fair level of readiness in several skills for responding to culturally diverse classrooms. Similarly, Matteis (2022) found that the K-5th grade teachers in her study were charged with implementing Culturally Responsive Teaching and had some knowledge about the pedagogy. However, practices related to classroom relationships, instructional practices, discourse, critical consciousness, and family collaboration were inconsistent. It demonstrated a need for more teacher training in pedagogy. This need is also illustrated by Evans et al. (2020), who discovered that some pedagogical practices perpetuated historical inaccuracies and harmful cultural stereotypes. A study by Ebersole et al. (2016) on teachers' understandings and perceptions of culturally responsive teaching found that the participants usually include doing culturally responsive teaching activities (reading cultural books, food, music) as a separate unit, or depending on the resources in the school, or availability of time. Many teachers seem to have trouble differentiating "teaching in a culturally responsive activity" from "teaching from a culturally responsive perspective, " resulting in very superficial inclusion of student cultures in teaching while not adopting a culturally responsive teaching perspective.

This literature reveals mixed findings-teachers value culturally responsive teaching but face inconsistencies and misunderstandings in its implementation (Evans et al., 2020; Mburu, 2022). Specific challenges include isolated instruction, superficial practices, and perpetuating stereotypes.

Research Design

Building on prior research regarding teachers' perceptions, understanding, and implementation of culturally responsive teaching, our research intended to provide more insight into teachers' beliefs about whether culturally responsive teaching will improve the academic performance of students from marginalized groups, their comfort level in discussing the pedagogy with colleagues and implementing the pedagogy themselves, and their beliefs about their readiness to implement the pedagogy effectively. Our research questions include the following:

1. How do K-12 teachers perceive culturally responsive teaching as an effective pedagogical approach for improving the academic achievement of culturally and linguistically diverse students?
2. Are in-service teachers comfortable discussing and implementing Culturally Responsive Teaching?
3. How prepared do teachers feel to effectively implement culturally responsive teaching in their classrooms?

Questionnaire

Survey research is considered ideal for educational research when the purpose is to gather information about participants to "learn about their characteristics, opinions, attitudes, or previous experiences" (Leedy & Ormrod, 2018, p. 183). As a result, the authors designed a questionnaire with 18 questions on various issues related to Culturally Responsive Teaching, addressing topics such as understanding the pedagogy, perceptions of its effectiveness for diverse learners, and readiness for classroom implementation. Specifically, one question was on understanding, three were on perceptions, and fourteen were on classroom practices. An open-ended question was also included at the end to solicit additional comments about Culturally Responsive Teaching from the participants. The survey began with a few demographic questions to contextualize participants' responses.

To ensure the survey's content validity, it was reviewed by two colleagues with extensive experience teaching this topic in teacher education. Their feedback informed the revision of the survey questions. To evaluate reliability, the survey was administered to two graduate assistants from one of the authors' departments, and their suggestions were incorporated in subsequent revisions.

Participants

The survey was distributed online to a convenience sample of approximately 240 graduate students enrolled in three programs—Literacy, Special Education, and School Counselling—most of whom are practicing teachers. Of the 34 respondents who returned a valid survey, 30 teachers identified themselves as classroom teachers, three (3) as school counselors, and one (1) as non-teaching graduate assistant. Twenty-nine (29) respondents identified themselves as female, four (4) as male, and one (1) as binary. In terms of their racial backgrounds, there were 29 White, three (3) Black, one (1) Native American, and one (1) mixed

race. As for the grade levels they teach, 17 identified as elementary grades, seven (7) middle school, and eight (8) high school. There is one teacher who worked in a K-12 school setting.

Findings

The survey was structured to assess various aspects of Culturally Responsive Teaching including knowledge about the pedagogy, comfort level with discussing it, and beliefs about its effectiveness. The findings are organized and discussed based on the thematic focus of each question group.

Knowledge About Culturally Responsive Teaching

Regarding the knowledge about Culturally Responsive Teaching, only 2.9% of the respondents reported having extensive knowledge about the pedagogy, 50% said they have a lot of knowledge, 20.6% said they are not sure, and finally, 26.5% said they have little knowledge. These results indicate that slightly more than half of the respondents possess some level of knowledge about the pedagogy, while the remainder are less familiar with it. This suggests a significant knowledge gap, potentially highlighting the need for targeted professional development.

Figure 1

Distribution of Responses on Knowledge About Culturally Responsive Teaching

34 responses

Very little
Little
Not sure
A lot
Very extensive
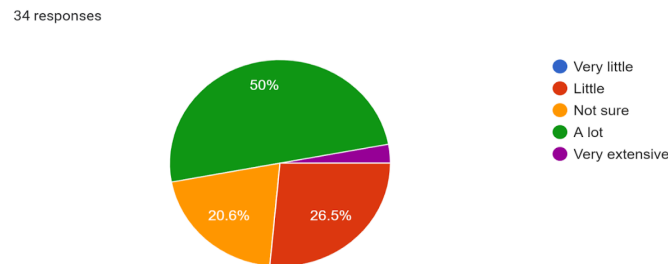
Comfort Level Talking About Culturally Responsive Teaching

In assessing teachers' comfort level with discussing Culturally Responsive Teaching, 11.8% answered they always feel comfortable talking about it, 17.6% often feel comfortable talking about it, 55.9% said they sometimes feel comfortable talking about it, and 14.7% rarely feel comfortable. The results indicate that a significant majority (70.6%) of respondents are not consistently comfortable discussing this pedagogy.

Figure 2

Distribution of Responses on Comfort Level Talking About Culturally Responsive Teaching

I feel comfortable talking about Culturally Responsive Teaching with my colleagues.
34 responses

Never
Rarely
Sometimes
Often
Always
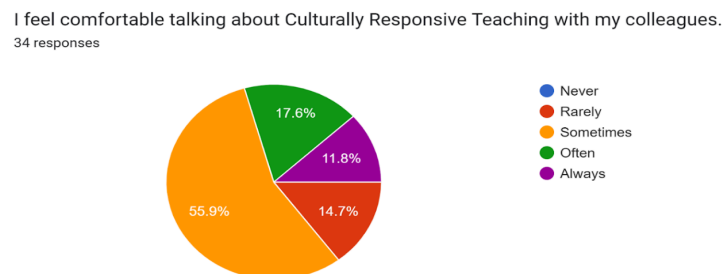
Culturally Responsive Teaching as a Good Teaching Practice
Responses to whether Culturally Responsive Teaching constitutes a good teaching practice revealed that 67.6% agreed, 23.5% said it is often a good practice, and 8.8% answered that it sometimes is. Overall, respondents expressed strong support for the pedagogy.
Figure 3
Distribution of Responses on Culturally Responsive as a Good Teaching Practice

I believe that Culturally Responsive Teaching is a good teaching practice.
34 responses
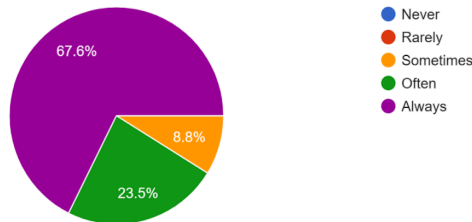
Helping Students From Marginalized Groups
The answers to the question of whether Culturally Responsive Teaching will help students from marginalized groups social-emotionally and academically show that 64.7% of participants answered that the pedagogy will always help students from marginalized groups social-emotionally and academically, 20.6% responded often, and 14.7% said sometimes. Notably, all respondents affirmed that this pedagogy supports the social-emotional and academic development of students from marginalized groups.
Figure 4
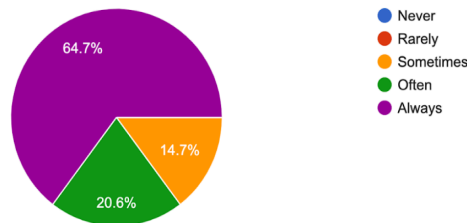*Distribution of Responses on Helping Students from Marginalized Groups*

I believe that Culturally Responsive Teaching will help students from marginalized groups social-emotionally and academically.
34 responses

Planning Instructional Strategies

When planning instructional strategies, 47.1% of respondents often consider their students' cultural backgrounds, 32.4% always do, and 20.6% sometimes do. All respondents acknowledged incorporating student cultures into their instructional planning processes.

Figure 5

Distribution of Responses on Planning Instructional Strategies
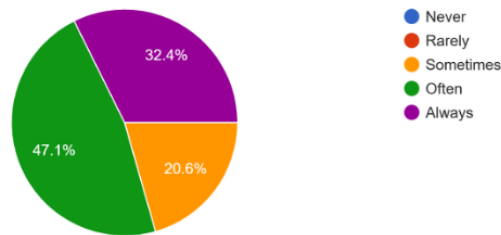
Implementing Lesson Plans

Participants were asked about the extent to which they consider student cultures in their lesson implementation. Of the respondents, 32.45% reported that they always do, 47.1% said they often do, and 20.6% indicated they sometimes do. Notably, all respondents indicated that they consider student cultures when implementing lessons. These findings suggest a strong commitment among teachers to incorporate cultural considerations into their teaching practices, highlighting their awareness of the importance of cultural responsiveness

Figure 6

Distribution of Responses on Implementing Lesson Plans
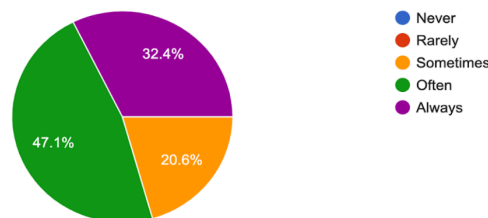
Buying Books and Materials

When participants were asked whether they consider their students' cultures when selecting books and materials for classroom lessons, 47.1% indicated they always do, 29.4% said they often do, and 23.5% reported they sometimes do. These responses suggest that all participants take their students' cultural backgrounds into account when making such decisions.

Figure 7

Distribution of Responses on Buying Books and Materials

I take the cultures of my students into consideration when I decide what books/materials to buy for my classroom.

34 responses

- Never
- Rarely
- Sometimes
- Often
- Always

47.1% 29.4% 23.5%
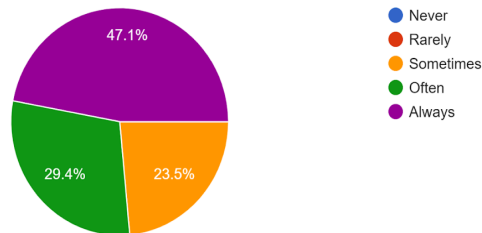
Choosing Assessments

When asked whether participants consider their students' cultures when selecting assessments, 26.5% reported they never do, 8.8% rarely do, 20.5% sometimes do, 23.5% often do, and 20.6% always do. These responses reveal that nearly 55% of participants tend to not consistently factor in students' cultural backgrounds when determining which assessments to use.

Figure 8

Distribution of Responses on Choosing Assessments

I take the cultures of my students into consideration when I choose my assessments.

34 responses

- Never (I don't have a choice)
- Rarely
- Sometimes
- Often
- Always

23.5% 20.6% 20.6% 8.8% 26.5%
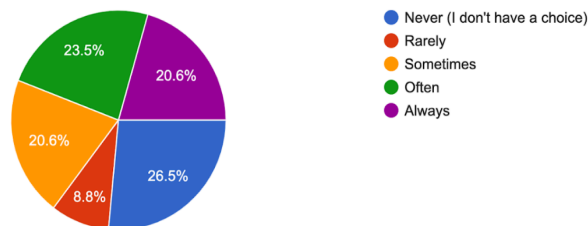
Administering Assessments

When asked about considering their students' cultures when administering assessments, 32.4% of respondents reported they always do, 23.5% said they often do, 20.6% indicated they sometimes do, 14.7% responded rarely, and 8.8% stated they never do. While teachers may not consistently factor in student cultures when selecting assessments, over half (55.9%) do take cultural considerations into account when administering them.

Figure 9

Distribution of Responses on Administering Assessments

I take the cultures of my students into consideration when I administer my assessments.
34 responses
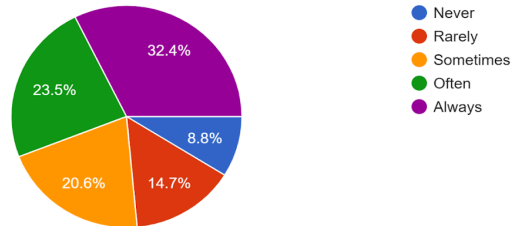
Incorporating Current Events

When asked about considering their students' cultures when incorporating current events into lessons, 50% of participants reported they rarely do, 29.4% indicated they sometimes do, and 20.6% said they often do. These findings suggest that half of the respondents seldom integrate current events into their instruction while accounting for cultural considerations.

Figure 10

Distribution of Responses on Incorporating Current Events

I take the cultures of my students into consideration when I incorporate current events in my lessons.
34 responses
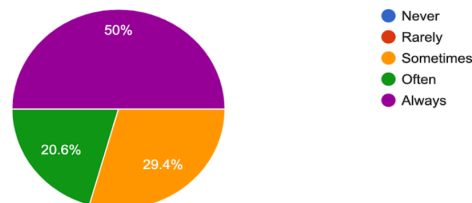
Building Relationship

When asked about efforts to build close relationships with students from marginalized groups, 58.8% of respondents reported they always do, while 38.2% indicated they often do. These results highlight that nearly all participants make a concerted effort to establish strong relationships with students from marginalized groups.

Figure 11

Distribution of Responses on Building Relationships

I try to build a close relationship with my students from underrepresented groups.
34 responses

- Never
- Rarely
- Sometimes
- Often
- Always

58.8%
38.2%
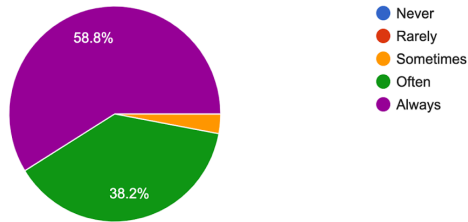
Social Justice Awareness

When asked if they help students from marginalized groups become aware of social justice issues in their lives, 8.8% of respondents reported they always do, 14.7% said they often do, and 38.8% indicated they sometimes do. Meanwhile, 32.4% answered rarely, and 13.1% stated they never do. These results suggest that only about one-third of respondents consistently try to raise students' awareness of social justice issues and their personal experiences.

Figure 12

Distribution of Responses on Social Justice Awareness

I try to make my students from underrepresented groups aware of social injustice issues in their lives.
34 responses

- Never
- Rarely
- Sometimes
- Often
- Always

14.7%
8.8%
38.2%
32.4%
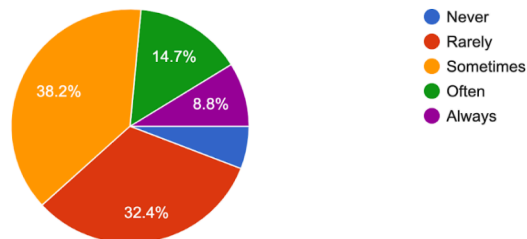
Advocating for Students

When asked about advocating for students from underrepresented groups, 50% of respondents reported they always do, 26.5% said they often do, and 14.7% indicated they sometimes do. Only 8.8% of respondents rarely advocate for these students. These results suggest that the majority of participants actively advocate for students from marginalized populations, reflecting a strong commitment to supporting equity and inclusion.

Figure 13

Distribution of Responses on Advocating for Students

I advocate for the needs of my students from underrepresented groups.
34 responses
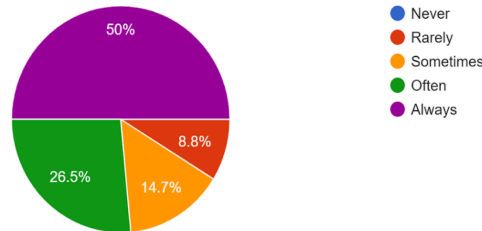
Discussion

  The researchers were encouraged to find that 91% of respondents believe Culturally Responsive Teaching is an effective pedagogy. Moreover, about 85% believe that marginalized students will improve their social-emotional learning and academic achievement through Culturally Responsive Teaching. This response is consistent with what Siwatu et al. (2016) found in their study, which is that pre-service teachers generally believe in the value of culturally responsive teaching. Regarding the participants' knowledge about this pedagogy, about 53% of them reported having extensive or much knowledge about the pedagogy. This confirms what the other research has found (Ebersole et al., 2016; Evans et al., 2020; Matteis, 2022) that there is a persistent gap in teachers' understanding of the pedagogy, with many requiring further training to enhance their comprehension and application. An example of the gaps revealed by some research is that some teachers only see Culturally Responsive Teaching as designing a couple of culturally responsive teaching activities instead of a whole different perspective on students from diverse backgrounds to guide their interactions with students, creating an affirming classroom environment, utilizing responsive materials, adapting instruction and assessment, raising students' critical consciousness and effectively partnering with culturally and linguistically diverse families and communities. As Hammond (2015) effectively put it, Culturally Responsive Teaching does not just offer a series of teaching activities but a change in perspectives about students from diverse backgrounds.

  Our literature review found no research on teachers' comfort level in talking about this pedagogy with their colleagues, so our research provided some new insight into this issue. Data shows that only about 29% of the participants in our study feel comfortable talking about Culturally Responsive Teaching around their colleagues. This highlights a noticeable uneasiness among teachers in openly discussing the pedagogy (collaboration, sharing ideas and resources) with other colleagues. The researchers believe this may be due to the current political environment where there is a pushback in many states and communities against Diversity, Belonging, Inclusion and Equity (DBIE) in education.

  As for classroom practices, previous research has found that teachers have a certain level of readiness (Seyda & Hanife, 2021), but there are also some areas of weaknesses (Ebersole at al., 2016; Evans et al., 2020). Our research found that most respondents (over 75%) can correctly implement Culturally Responsive Teaching, from using culturally diverse materials to making their classroom environment more welcoming and affirming to incorporating current events. One of the weak areas was assessment, however. Due to mandated assessments, teachers reported

having little choice in deciding what assessments to administer (35%) or how to administer for students from diverse backgrounds (24%).

The researchers did not include any focus groups in this research, which could have offered deeper insights and richer elaboration on the participants' responses. For example, regarding their uneasiness in discussing the pedagogy with colleagues, what specific factors make them uncomfortable? What measures can schools take to make the environment more risk-free for teachers to discuss this pedagogy openly? Valuable information may have been gained on the influence of the political environment, support from the administrators, pressure from other colleagues, and other potential factors.

The research by Gay, Ladson-Billings, Hammond, and many others proves the positive outcomes of culturally responsive teaching on student learning. However, according to this research, one crucial area of need is that teachers should be encouraged and empowered to discuss this pedagogy in schools before collaborating to implement it in their classrooms effectively. Collaboration among teachers in sharing ideas and strategies is essential, as it can significantly enhance student outcomes. While teachers may not have full autonomy over assessment selection, adjustments to incorporate culturally relevant language, remove biases, and ensure inclusivity could yield more equitable outcomes.

References

Barron, H. A., Brown, J. C., & Cotner, S. (2021). The culturally responsive science teaching practices of undergraduate biology teaching assistants. *Journal of Research in Science Teaching, 58*(9), 1320–1358.

Bissonnette, J.D. (2016). *Privileged pages: Contextualizing the realities, challenges, and successes of teaching canonical British literature in culturally responsive ways* (Publication No. 1805560180) [Doctoral dissertation, University of North Carolina-Chapel Hill. ProQuest Dissertations & Theses Global.

Comstock, M., Litke, E., Hill, K. L., & Desimone, L. M. (2023). A culturally responsive disposition: How professional learning and teachers' beliefs about and self-efficacy for culturally responsive teaching related to instruction. *AERA Open, 9*(1).

Darling-Hammond, L. (2011). Forwarded. In A.F. Ball & C. A. Tyson (Eds.) *Studying diversity in teacher education* (pp. ix-x). Rowman & Littlefield Publishers.

Ebersole, M., Kanahele-Mossman, H., & Kawakami, A. (2016). Culturally responsive teaching: Examining teachers' understandings and perspectives. *Journal of Education and Training Studies, 4*(2), 97-104.

Evans, L. M., Turner, C. R., & Allen, K. R. (2020). Good teachers with good intentions: misappropriation of Culturally Responsive Pedagogy. *Journal of Urban Learning, Teaching, and Research*, *15*(1), 51-73.

Gay, G. (2018). *Culturally responsive teaching: Theory, research, and practice (3rd ed.).* Teachers' College Press.

Hammond, Z. (2015). *Culturally responsive teaching and the brain: Promoting authentic engagement and rigor among culturally diverse students*. Corwin.

Hammond, Z. (2021). Liberatory Education: Integrating the science of learning and culturally responsive practice. *American Educator, 45*(2)*,* 4–11.

Ladson-Billings, G. (2011). Is meeting the diverse needs of all students possible? *Kappa Delta Pi Record, 48(1),* 13-15.

Ladson-Billings, G. (2009). *The dreamkeepers: Successful teachers of African American children*. Jossey-Bass Publishers.

Leedy, P., & Ormrod, J. (2018). *Practical research: Planning and design*. Pearson.

Matteis, M. D. (2022). *Elementary teachers' knowledge of implementing culturally responsive pedagogy for culturally diverse students*. [Doctoral Dissertation, Walden University]. Proquest Dissertations & Theses Global. https://eric.ed.gov/?id=ED62508

Mburu, J. M. (2022). All children matter: A preservice teacher's understanding and practice of culturally responsive teaching in a third-grade mathematics classroom. *International Journal of Multicultural Education, 24*(1), 27-46.

McKoy, C. L., MacLeod, R. B., Walter, J. S., & Nolker, D. B. (2017). The impact of an in-service workshop on cooperating teacher's perceptions of culturally responsive teaching. *Journal of Music Teacher Education. 26*(2), 50-63.

Morrison, S., Brown, C., & Glazier, J. (2022). Culturally responsive teacher education: Do we practice what we preach? *Teachers and Teaching: Theory and Practice, 28*(1), 26-50.

Nation's Report Card: Reading Achievement by Race/Ethnicity. Retrieved September 10, 2025, from https://www.nationsreportcard.gov/reading/nation/groups/?grade=4

Seyda Subasi, S., & Hanife, A. (2021). Culturally responsive teaching: beliefs of pre-service teachers in the Viennese context, *Intercultural Education, 32*(1), 46-61.

Tanase, M. F. (2022). Culturally responsive teaching in urban secondary schools. *Education and Urban Society, 54* (4), 363-388.

Enhancing Preservice Teacher Self-Efficacy through 360-Degree Video and Virtual Reality Reflection: A Quantitative Study

Heather Stefanski, Arkansas Tech University
Mohamed Ibrahim, Arkansas Tech University

Abstract

This study investigates the impact of 360-degree video and virtual reality (VR) reflection on preservice teacher (PST) self-efficacy. While traditional video has long been used as a reflection tool in teacher preparation, it often centers attention on the teacher and can evoke discomfort, defensiveness, and negative self-assessment. In contrast, immersive 360-degree video and VR headsets expand the field of view to include the entire classroom, enabling PSTs to shift their focus from themselves to student engagement and learning. Building on prior qualitative findings, this quantitative study examines whether immersive video reflection enhances PSTs' teaching self-efficacy by reducing self-confrontation and highlighting instructional effectiveness from a broader perspective. Results indicate that the use of 360-degree video with VR headsets provides PSTs with a more authentic and less threatening reflective experience, supporting the development of self-efficacy in teacher preparation programs. Implications for integrating immersive technologies into teacher education are discussed.

Keywords: Preservice teachers' self-efficacy, 360-degree video, virtual reality, reflective practice

Introduction

Recent advances in video technology have created new possibilities for improving preservice teacher (PST) self-efficacy through enhanced classroom observation and reflection. While analyzing data from a prior study (Stefanski & Ibrahim, 2024), an open-ended participant response revealed an important point. The participant described how the use of 360-degree video, when used with a virtual reality (VR) headset, allowed her to shift attention away from herself and toward her students. This shift changed her interpretation of how she conducted the lesson. Although she initially felt that the lesson had failed, the immersive review experience showed that her students were engaged and appeared to understand the material. This realization led to an increase in her teaching self-efficacy, not because her behavior changed, but because technology allowed her to see her own effectiveness from a new vantage point.

Traditional video reflection remains a fundamental tool in teacher preparation programs. However, encouraging PSTs to engage meaningfully with footage of themselves is an ongoing challenge. Self-observation can trigger discomfort and defensiveness. In a study by Leung et al. (2021), PSTs associate viewing videos of themselves with negative emotions and critical metaphors, in contrast to more positive reactions when watching peer footage. The researchers suggested that this pattern may be rooted in self-confrontation, where viewing one's own teaching performance leads to heightened self-awareness and vulnerability. Earlier work by Watts (1973) reached a similar conclusion. While video can initially raise curiosity, it often produces "frustration, confusion, and humiliation" as individuals are forced to confront discrepancies between intent and performance (p. 212).

One limitation of traditional two-dimensional video is its limited visual scope. Fixed camera placements often focus narrowly on the teacher, leaving student behavior outside the

frame. As Ferdig and Kosko (2020) noted, 360-degree cameras address this limitation by capturing the entire classroom environment. When used in combination with VR headsets, PSTs can re-enter the classroom and direct their observation across the room, viewing interactions and student engagement that would otherwise be missed. This immersive, panoramic perspective supports more authentic reflection by allowing PSTs to decenter themselves and focus on student learning.

This shift in perspective has important implications for self-efficacy. When PSTs view classroom events through a broader lens, they may be better able to recognize signs of instructional success. By minimizing self-confrontation and emotional discomfort, immersive video tools offer a promising alternative to traditional reflection. This study builds on previous research by examining the quantitative effects of using 360-degree video and VR headsets to support teacher self-efficacy development in preservice educators.

Literature Review

The teaching profession continues to face a crisis in retaining educators. Across the United States, school systems report serious teacher shortages, with approximately 40% to 50% of early-career teachers leaving the classroom within five years (Nguyen et al., 2022; Zhang & Zeller, 2016). Researchers identify low self-efficacy as a key psychological factor contributing to this crisis (Ma et al., 2021, p. 944). Preservice teachers (PST) self-efficacy, which is defined as their belief in their capacity to facilitate student learning, serves as a powerful predictor of perseverance, motivation, and instructional resilience. For this reason, teacher preparation programs must proactively encourage self-efficacy before candidates begin full-time teaching.

Social cognitive theory provides a useful framework for understanding how self-efficacy develops and influences behavior. Bandura (1997) defined self-efficacy as an individual's belief in their capacity to organize and execute actions necessary to achieve specific goals (p. 3). More broadly, social cognitive theory proposes a model of triadic reciprocal causation in which behavior, personal cognition, and the environment interact dynamically. Within this framework, teacher self-efficacy does not emerge in isolation; it forms through repeated interaction with instructional contexts, social modeling, feedback, and affective states. When PSTs believe they are capable of influencing student outcomes, they are more likely to plan effectively, persist through challenges, and respond adaptively to classroom dynamics (Tschannen-Moran & Woolfolk Hoy, 2001; Clark & Newberry, 2019).

The sources of self-efficacy, mastery experiences, vicarious experiences, verbal persuasion, and physiological arousal, function as mediating mechanisms through which environmental and behavioral factors influence beliefs (Bandura, 1997). Among these, mastery experiences are the most influential. When PSTs successfully complete a teaching task and perceive students learning because of their actions, this sense of accomplishment enhances future confidence and motivation. However, access to meaningful mastery experiences remains uneven across teacher education programs. Limited field placements, logistical constraints, and inconsistent mentorship often reduce opportunities for authentic teaching practice (Billingsley et al., 2019).

In the absence of consistent field experiences, programs often rely on vicarious learning, observing others model effective practice. Video recordings of expert teachers are widely used in methods courses to illustrate pedagogical strategies (Huang et al., 2022). While these examples offer structured observation, they rarely create the conditions for self-directed action, which is necessary for mastery learning. Moreover, observational learning must be coupled with reflection

and cognitive engagement to influence beliefs. Vicarious learning without active involvement limits PSTs' ability to connect what they observe with their own practice (Kleinknecht & Schneider, 2013).

Some programs address this limitation through self-video reflection. By recording their own lessons, PSTs can review and evaluate their teaching with guidance. However, the emotional discomfort of self-confrontation often disrupts this process. In a study by Leung et al. (2021), PSTs reported overwhelmingly negative emotions when viewing themselves on video. Rather than focusing on student engagement or learning, participants fixated on their appearance and mannerisms. The limited camera angle of traditional video exacerbates this inward focus. As social cognitive theory emphasizes, the affective state during reflection matters. Negative arousal undermines the internalization of efficacy beliefs and increases avoidance behaviors (Bandura, 1997).

Recent developments in immersive technology offer new possibilities for addressing these limitations. 360-degree video captures the entire classroom, allowing users to explore the visual environment beyond a fixed frame. When PSTs review their teaching using 360-degree video, they are more likely to notice student behavior and classroom interactions, shifting their attention away from themselves and toward learning outcomes (Ferdig & Kosko, 2020). This change in observational focus supports the formation of more accurate efficacy judgments by aligning the reflective process with behavioral outcomes, one of the core principles of social cognitive theory.

While 360 video alone is still a vicarious experience, pairing it with virtual reality (VR) headsets introduces a sense of immersion that deepens cognitive and emotional engagement. In VR environments, PSTs experience presence, a psychological state in which users feel physically and socially situated in the environment. This immersion improves affective stimulation and makes reflection more represented and immediate (Huang et al., 2022). In a study by Hatami (2024), PSTs who engaged in VR-based reflection showed measurable gains in self-efficacy, likely due to the sense of agency and presence created by the medium. Social cognitive theory suggests that these affective states contribute directly to the evaluation of personal competence and influence future behavioral choices.

Mixed reality simulations take this further by allowing PSTs to act within a simulated environment. Platforms like TeachLivE create opportunities for real-time interaction with student avatars, allowing PSTs to practice instruction, classroom management, and decision-making in a low-risk context (Ersozl et al., 2021). These simulations support mastery experiences by providing action-outcome sequences, feedback, and repeated practice. In a study by Gundel et al. (2019), a single 90-minute simulation led to self-reported gains in efficacy. However, the high cost, technological demands, and required suspension of disbelief limit the scalability of these systems (Allen & Stecker, 2023; Dalinger et al., 2020).

Given these constraints, combining 360-degree video with VR headsets presents a more feasible and scalable option. While not fully interactive, this approach allows PSTs to re-enter their own classroom through an immersive, first-person perspective. By directing attention toward student learning and classroom outcomes, this method can simulate elements of a mastery experience while reducing the emotional discomfort of direct self-observation. According to social cognitive theory, this combination, affective engagement, environmental context, and behavioral review, creates the conditions necessary for increasing self-efficacy (Bandura, 1997).

To test this hypothesis, Stefanski and Ibrahim (2024) conducted a study exploring how immersive technologies support reflection and influence efficacy beliefs. The study used 360-degree cameras and VR headsets alongside a modified version of Gibbs' Reflective Cycle.

Two central research questions guided the study:
1. How does using 360-degree cameras and VR headsets with a structured reflection protocol affect PSTs' ability to objectively reflect on their teaching?
2. Can the use of 360-degree video and VR headsets increase PSTs' self-efficacy?

This manuscript presents findings from the second question, analyzing how immersive video-supported reflection can strengthen efficacy beliefs in alignment with the core mechanisms of social cognitive theory.
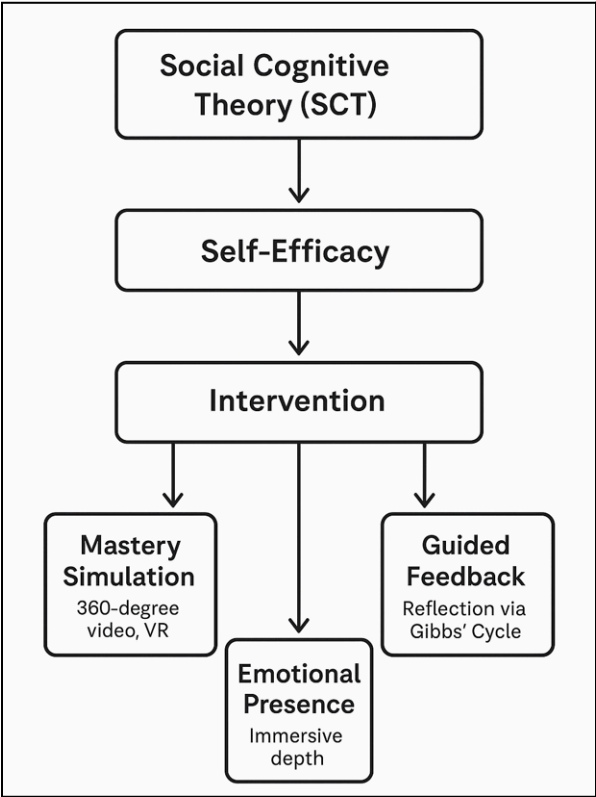
Figure 1: Theoretical Framework

Mapping Social Cognitive Theory to Immersive Technologies in Teacher Preparation

SCT Component	Definition	Technology or Practice	Application in PST Preparation
Mastery Experience	Direct performance that produces successful outcomes, reinforcing self-belief	Self-recorded lessons using 360-degree cameras	PSTs record their own teaching, then review from multiple angles to see student engagement and evidence of success.
Vicarious Experience	Observing others succeed to develop	Expert teaching videos; classroom simulations in VR	PSTs observe model practices from a first- or third-person perspective,

	belief in one's own ability		identifying strategies and outcomes.
Verbal Persuasion	Encouragement and feedback from others	Guided reflection protocols; mentor feedback sessions	Structured reflection using Gibbs' cycle; targeted feedback reinforces teaching strengths and growth areas.
Physiological Arousal	Emotional and physical reactions to self-performance and perceived success	VR headsets during reflection; immersive 360-degree playback	Heightened presence and emotional engagement help PSTs internalize competence and future readiness.
Behavioral Rehearsal	Practicing skills in simulated or low-risk settings	Mixed reality simulations (e.g., TeachLivE)	PSTs interact with avatars in real time, developing teaching responses and classroom management strategies.
Environmental Context	External social and physical environment shaping behavior and cognition	360-degree classroom capture	Full-classroom video increases awareness of classroom dynamics and the influence of space, student behavior, etc.
Self-Observation	Monitoring one's own actions in context	360 video + VR review of own teaching	PSTs view themselves in the classroom, shifting perspective toward student learning rather than self-presentation.
Agency & Presence	Sense of control and immersion in one's environment	Virtual reality immersion	VR promotes embodied reflection, giving PSTs a sense of "being there," which enhances cognitive and affective impact.

Methodology

Research Design

This study used a quantitative pre-post research design to investigate the impact of immersive video reflection on preservice teachers' self-efficacy. The design allowed for measurement of individual changes over time, focusing on self-perceptions of teaching competence before and after a targeted intervention involving 360-degree video and virtual reality (VR). The intervention was designed to simulate a mastery-like experience by shifting attention from self-observation to student learning, thereby addressing emotional and cognitive barriers associated with traditional reflection. This study builds on earlier mixed-methods research by Stefanski and Ibrahim (2024), which explored the reflective and emotional dimensions of VR-enhanced teaching.

Participants

The participants included in this study were 12 preservice teachers (PSTs) who enrolled in a teacher preparation program at a mid-sized public university in the United States. Four participants completed the study during Spring 2023, and eight during Spring 2024. All were in the final phase of their licensure program and completing full-time teaching internships at local public middle schools. Content areas represented among the participants included English Language Arts, Science, Social Studies, and Mathematics. Inclusion criteria required that PSTs complete both the pre-survey and post-survey and consent to the use of their instructional video recordings for research analysis. Participants were recruited through the program's internship seminar and provided informed consent in accordance with IRB guidelines.

Procedure

Each participant received training on using a 360-degree camera and VR headset before the intervention. During the internship, each PST selected and recorded one lesson using the 360-degree camera. The camera was placed in a central location in the classroom to maximize coverage of both teacher and student interactions. After teaching the lesson, participants reviewed their recorded footage using a VR headset, which allowed them to scan the classroom environment freely, simulating a first-person, student-centered perspective.

Following the VR viewing session, each PST completed a guided written reflection using a modified version of Gibbs' Reflective Cycle. The reflection protocol consisted of structured prompts targeting five core areas: lesson planning, classroom management, student engagement, teacher-student interactions, and perceived instructional effectiveness. The prompts were designed to reduce self-conscious fixation by directing attention toward observable student behaviors and instructional outcomes. The aim was to encourage objective self-assessment and reduce emotional reactivity associated with self-viewing, aligning the intervention with social cognitive theory's emphasis on affective and behavioral feedback as sources of efficacy belief (Bandura, 1997).

Instrumentation

The primary instrument for measuring self-efficacy was a researcher-developed survey informed by the Teacher Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001). The adapted survey contained 16 items distributed across four domains of teaching self-efficacy:

1. Managing classroom interactions
2. Creating an engaging learning environment
3. Demonstrating content relevance and clarity
4. Organizing and maintaining classroom logistics

Participants responded using a 5-point Likert scale ranging from 1 (not at all confident) to 5 (extremely confident). The instrument was designed to assess personal belief in teaching capability rather than actual performance. Face validity was established through expert review by faculty in educational psychology and teacher preparation, and internal consistency was assessed post hoc using Cronbach's alpha.

Data Collection and Analysis

The self-efficacy survey was administered online via Qualtrics at two time points: immediately prior to the teaching and VR-reflection session (pre-test), and within one week of completing the reflection (post-test). All responses were anonymized prior to analysis. Quantitative analysis was conducted using SPSS. Descriptive statistics (mean, standard deviation) were calculated for each of the four efficacy domains. To assess the impact of the intervention, a paired samples t-test was performed comparing pre- and post-survey scores for each domain. Assumptions of normality, dependence, and interval-level measurement were verified using Shapiro-Wilk tests and inspection of Q-Q plots. A Pearson correlation analysis was also conducted to explore the relationship between pre- and post-intervention efficacy levels, assessing whether baseline self-efficacy was predictive of subsequent gains.

Effect sizes were calculated using Cohen's *d* to evaluate the magnitude of observed differences. A threshold of $p < .05$ was used to determine statistical significance. These analyses provided a basis for determining whether the immersive reflection experience had a measurable and meaningful influence on participants' beliefs about their teaching capacity, central to the study's theoretical grounding in social cognitive theory.

Results

The purpose of this study was to examine whether the use of 360-degree video and virtual reality (VR) headsets, paired with a structured reflection protocol, could significantly improve preservice teachers' (PSTs') self-efficacy during their teaching internship. Self-efficacy was measured using a researcher-developed survey instrument administered before and after the intervention.

Descriptive Statistics

Pre-intervention scores indicated moderate levels of self-efficacy (M=50.00, SD=8.87), while post-intervention scores showed a noticeable increase (M=58.25, SD=6.77). This change represents a mean increase of 8.25 points (see Table 1). Standard errors of the mean indicate that the distribution of scores was reasonably consistent across participants.

Table 1				
Descriptive Statistics for Pre- and Post-Intervention Self-Efficacy Scores				
Measure	**M**	**SD**	**SE**	**n**
Pre-intervention	50.00	8.87	2.56	12
Post-intervention	58.25	6.77	1.96	12

Inferential Statistics

A paired samples *t*-test was conducted to determine whether the increase in self-efficacy was statistically significant. The analysis revealed a significant difference between pre- and post-survey scores, $t(11)= -3.64$, $p=.004$, with a 95% confidence interval for the mean difference ranging from -13.24 to -3.26. These results indicate a statistically reliable improvement in PSTs' self-perceived teaching competence after engaging in immersive reflection (see Table 2).

Table 2							
Paired Samples T-Test for Self-Efficacy Scores							
Measure Comparison	**M Difference**	**SD**	**SE**	**95% CI (Lower)**	**95% CI (Upper)**	**t(11)**	**p**

| Post – Pre Self-Efficacy Score | -8.25 | 7.85 | 2.27 | -13.24 | -3.26 | -3.64 | .004 |

Note. A negative mean difference reflects an increase from pre- to post-survey.

Correlation Analysis

A Pearson product-moment correlation was used to explore the relationship between pre- and post-intervention scores. The analysis yielded a moderate positive correlation (r=.52), though not statistically significant (p=.081). This suggests a tendency for participants with higher baseline self-efficacy to retain relatively higher post-intervention scores while still demonstrating growth (see Table 3).

Table 3
Pearson Correlation Between Pre- and Post-Survey Scores

Measures	*r*	*p*	*n*
Pre- and Post Self-Efficacy Scores	.52	.081	12

Assumption Checks

Assumptions for the paired samples *t*-test were evaluated and found to be satisfactorily met:

- **Normality**: The difference scores were approximately normally distributed, supported by visual inspection and skewness statistics. Given the small sample size (n=12), the central limit theorem provides additional justification for approximate normality.
- **Dependence**: The within-subjects design ensured dependence, as each participant completed both the pre- and post-surveys.
- **Scale of Measurement**: The self-efficacy scores, based on interval-level Likert data, met the assumption required for parametric analysis.

Interpretation

The statistically significant increase in PSTs' self-efficacy following the intervention supports the study's hypothesis. The combination of immersive 360-degree video and VR reflection provided participants with an embodied and student-centered lens through which to view their teaching. This experience likely facilitated a shift from self-critical observation to objective appraisal of instructional impact, aligning with Bandura's (1997) model of self-efficacy development. Specifically, the intervention offered opportunities for mastery interpretation, affective arousal, and reflective processing—each of which contributes to stronger efficacy beliefs.

Although the correlation between pre- and post-survey scores did not reach significance, the trend suggests consistency in individual self-belief across the intervention period. The findings highlight the potential for immersive technologies to serve as meaningful components of efficacy-building strategies within teacher preparation programs.

Discussion

The results of this study demonstrate that integrating 360-degree video and virtual reality (VR) headsets into teacher preparation was associated with a statistically significant increase in preservice teachers' (PSTs') self-efficacy. The 8.25-point increase in mean self-efficacy scores suggests that the immersive teaching and reflection experience strengthened PSTs' confidence in their ability to manage classrooms, engage students, and implement instructional strategies

effectively. These findings offer preliminary support for the use of immersive technologies as a scalable method for reinforcing teaching self-efficacy within clinical practice.

The improvement in efficacy appears to be driven in part by the affordances of 360-degree video and VR reflection. Traditional two-dimensional video tends to center the teacher and narrow the visual field, often reinforcing self-focused critique and affective discomfort (Leung et al., 2021; Walshe & Driver, 2019). In contrast, 360-degree video allows PSTs to explore the entire classroom space and observe student behaviors that might otherwise go unnoticed (Ferdig & Kosko, 2020). When paired with VR headsets, the perspective becomes more embodied, allowing PSTs to adopt a student-centered point of view. This perceptual shift reduces the likelihood of self-confrontation and may allow participants to focus more accurately on learning outcomes. These conditions approximate what Bandura (1997) describes as a mastery experience, an authentic, task-specific success that serves as the strongest source of self-efficacy.

In addition to mastery interpretation, the VR environment may have activated physiological stimulation by immersing participants in a simulated teaching context. Bandura (1997) identifies physiological and emotional states as critical sources of efficacy judgments. The increased sense of presence generated by VR may have intensified participants' cognitive and emotional engagement with the lesson review, leading to more meaningful and internalized reflections on instructional effectiveness. This aligns with Hatami's (2024) findings that VR-facilitated reflection can promote self-efficacy through embodied cognitive processing. Unlike passive video observation, the immersive quality of VR appeared to support deeper metacognitive awareness and foster emotional resilience.

The moderate positive correlation between pre- and post-survey scores (r=.52) suggests a trend in which those with higher initial self-efficacy tended to retain their confidence, while those with lower starting points showed notable improvement. Although this correlation did not reach statistical significance, the pattern aligns with prior findings suggesting that structured, student-centered reflection can benefit PSTs across a range of baseline confidence levels (Clark & Newberry, 2019). The individualized nature of the intervention, combined with the reflective guidance provided by the modified Gibbs' Cycle, may have contributed to these outcomes by promoting agency and attentiveness to feedback, key constructs in social cognitive theory.

The findings also speak to broader challenges in teacher education. Early-career self-efficacy often declines due to mismatches between preservice preparation and the demands of full-time teaching (Ma et al., 2021; Zhang & Zeller, 2016). Logistical barriers such as limited field placements, inconsistent mentorship, and time constraints further restrict access to mastery experiences (Billingsley et al., 2019). The results of this study suggest that immersive technologies can provide a partial solution by offering a psychologically safe, replicable, and context-rich alternative. Unlike live classroom teaching, immersive reflection allows PSTs to revisit and analyze their instruction without external pressure or real-time performance demands.

Limitations and Recommendations

This study provides preliminary evidence that 360-degree video and virtual reality (VR) headsets can enhance preservice teacher (PST) self-efficacy through structured, student-centered reflection. However, several limitations should be noted when interpreting the results. The small sample size (n=12) limits statistical power and reduces the generalizability of the findings. The sample may not reflect the diversity of PST populations in terms of background, teaching context, or technological experience. The absence of a control or comparison group

prevents conclusions about the relative effectiveness of immersive tools compared to traditional video reflection or live coaching. Without a comparative framework, the specific contribution of VR-based reflection remains unclear.

The study also relied exclusively on self-reported data using a researcher-developed survey instrument. Although grounded in established self-efficacy literature, the instrument was not fully validated and did not disaggregate efficacy across instructional domains. As a result, the analysis cannot determine which aspects of teaching—such as classroom management, content clarity, or student engagement, benefited most from the intervention.

In addition, the short time frame between pre- and post-testing does not allow for conclusions about the durability of the observed efficacy gains. Self-efficacy is sensitive to context and experience, and longer-term follow-up is needed to assess whether immersive reflection produces sustained changes in teacher confidence. Finally, the study did not analyze the reflective narratives produced by participants. Because social cognitive theory emphasizes interpretation as a mechanism of efficacy development, qualitative data could offer deeper insight into how PSTs understand and internalize their growth.

To address these limitations, future research should increase sample size and demographic diversity, incorporate comparison groups, and use validated, domain-specific measures of self-efficacy. Longitudinal designs with delayed post-tests would help determine whether efficacy gains persist over time. In addition, mixed methods design that include reflective writing or interviews could clarify how participants construct meaning from the immersive experience.

Together, these recommendations would strengthen the evidence base for immersive reflection as a scalable approach to developing PST self-efficacy and inform more targeted instructional design practices in teacher education.

References

Allen, A. A., & Stecker, P. M. (2023). Using mixed-reality simulation in teacher preparation in reading. *Intervention in School and Clinic, 59*(1), 59–65. https://doi.org/10.1177/10534512221130077

Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.

Billingsley, B., Bettini, E., Mathews, H. M., McLeskey, J., & McCray, E. D. (2019). Improving teacher education to advance inclusive instruction and outcomes. *Teacher Education and Special Education, 42*(2), 123–142. https://doi.org/10.1177/0888406418776714

Clark, S. K., & Newberry, M. (2019). Are we building preservice teacher self-efficacy? A large scale study examining teacher education experiences. *Asia-Pacific Journal of Teacher Education, 47*(1), 32–47. https://doi.org/10.1080/1359866X.2018.1497772

Dalinger, T., Thomas, K. B., Stansberry, S., & Xui, Y. (2020). A mixed reality simulation offers strategic practice for pre-service teachers. *Computers and Education, 144*, 103694. https://doi.org/10.1016/j.compedu.2019.103694

Ersozlu, Z., Ledger, S., Ersozlu, A., Mayne, F., & Wildy, H. (2021). Mixed-reality learning environments in teacher education: An analysis of TeachLivE™ research. *SAGE Open, 11*(3). https://doi.org/10.1177/21582440211032155

Ferdig, R. E., & Kosko, K. W. (2020). Preservice teacher field experiences in the time of COVID-19. *Journal of Technology and Teacher Education, 28*(2), 373–381.

Gundel, E., Piro, J. S., Straub, C., & Smith, K. (2019). Self-efficacy in mixed reality simulations: Implications for preservice teacher education. *The Teacher Educator, 54*(3), 244–269.

https://doi.org/10.1080/08878730.2019.1591560

Hatami, A. (2024). Virtual reflection and teacher identity: A study of immersive presence and self-efficacy. *Journal of Educational Technology Research, 49*(2), 215–234.

Huang, Y., Richter, E., Klickmann, T., & Richter, D. (2022). Comparing video and virtual reality tools for fostering interest and self-efficacy in classroom management: Results of a pre-registered experiment. *British Journal of Educational Technology, 54*(2), 467–488. https://doi.org/10.1111/bjet.13254

Kleinknecht, M., & Schneider, J. (2013). What do teachers think and feel when analyzing videos of themselves and other teachers teaching? *Teaching and Teacher Education, 33*, 13–23. https://doi.org/10.1016/j.tate.2013.02.002

Leung, J. Y. H., Rizzuto, M., & Sim, C. (2021). "It's hard to watch myself": Preservice teachers' emotional responses to video reflections. *Australian Journal of Teacher Education, 46*(7), 1–17.

Ma, X., Lai, H., & Li, X. (2021). Factors influencing early-career teachers' retention intention: The role of self-efficacy and emotional exhaustion. *Teaching and Teacher Education, 105*, 103433. https://doi.org/10.1016/j.tate.2021.103433

Nguyen, T. D., Lam, B. C., & Bruno, P. (2022). Is there a national teacher shortage? A systematic examination of reports of teacher shortages in the United States. *Annenberg Institute at Brown University*. https://doi.org/10.26300/76eq-hj32

Stefanski, H., & Ibrahim, M. M. (2024). Enhancing critical reflection in preservice teacher internships: Examining the impact of 360-degree video and virtual reality technology. *International Journal of Modern Education Studies, 8*(2), 319–340. https://doi.org/10.51383/ijonmes.2024.379

Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17*(7), 783–805. https://doi.org/10.1016/S0742-051X(01)00036-1

Walshe, G., & Driver, C. (2019). Video-stimulated recall in teacher education: A tool for promoting reflective practice. *Teaching and Teacher Education, 78*, 97–106. https://doi.org/10.1016/j.tate.2018.11.009

Watts, M. W. (1973). Behavior modeling and self-devaluation with video self-confrontation. *Journal of Educational Psychology, 64*(2), 212–215.

Zhang, Z., & Zeller, N. (2016). A longitudinal investigation of teacher attrition: The mediating role of self-efficacy. *Educational Research Quarterly, 40*(2), 29–49.

Faculty Perspective on Artificial Intelligence in Education: A Needs Assessment

Lauren Hays, University of Central Missouri
Nabat Erdogan, University of Central Missouri
Charlene Atkins, University of Central Missouri

Abstract
The purpose of this project was to assess faculty at one college of education's current knowledge, attitudes, and needs regarding the integration of artificial intelligence (AI) in education programs. Through this needs assessment, the project aimed to identify the specific types of AI tools and applications that faculty perceive as beneficial for teaching and learning, as well as the barriers and challenges they face in adopting these technologies. The findings provide valuable insights to guide the development of targeted professional development programs, institutional support strategies, and resources to facilitate effective AI adoption in academic settings, ultimately enhancing teaching practices and student outcomes.

Keywords: teacher preparation, artificial intelligence, professional development

Introduction
Educators hold diverse perspectives on artificial intelligence (AI) implementation in K-12 settings (Hays et al., 2023). Nevertheless, many K-12 teachers are proactively integrating AI into their professional practice. These applications include developing lesson plans (Kim, 2025), facilitating personalized learning experiences (Pitrella et al., 2023), and weaving AI directly into classroom instruction and student activities (Li et al., 2024). School districts have responded by purchasing AI platform licenses for institutional use. Due to the widespread use of AI, nearly 50% of U.S. school districts offered AI-focused professional development opportunities for educators during the 2024-2025 academic year (Diliberti et al., 2025).

As AI becomes prevalent in K-12 education, faculty in educator preparation programs must restructure their curricula and instructional approaches to equip future educators with essential AI competencies necessary for classroom implementation. Gerlich (2025) recommended that faculty include instructional activities that engage students critically with AI to maintain academic rigor. Yet, faculty in higher education have raised concerns about AI adoption, particularly regarding the potential diminishment of critical thinking skills when students become overly dependent on AI for cognitive processes (Al-Mughairi & Bhaskar, 2025; Gerlich, 2025; Major & Chiarelott, 2023).

Additional faculty concerns center on the inappropriate use of AI technologies by students (Bittle & El-Gayar, 2025). Studies indicate that some higher education instructors lack familiarity with generative AI tools, highlighting the need for targeted professional development initiatives (Baytas & Ruediger, 2025; Roe et al., 2024). Research by Al-Mughairi and Bhaskar (2025) found that professional development motivated faculty to integrate AI into their teaching practices. Deaton and Carter (2024) specifically encouraged teacher education faculty to engage in professional development related to the ethical use of AI and using AI in pedagogically sound ways.

As part of faculty development initiatives addressing AI integration, it is important to consider comprehensive discussions about establishing clear classroom policies for AI usage. In their analysis of course policies, Tong et al. (2025) discovered that the majority of faculty

members delegated the responsibility for ethical AI use primarily to students themselves. This finding highlights a critical gap, as placing such responsibility on students assumes they possess sufficient knowledge and judgment to navigate complex ethical considerations independently. Therefore, this finding underscores the need for faculty to develop substantial AI literacy and expertise (Mah & Groß, 2024; Nazaretsky, 2022). Without adequate understanding of AI capabilities, limitations, and ethical implications, instructors cannot effectively guide students in appropriate usage or provide meaningful support when ethical dilemmas arise. Faculty must be sufficiently knowledgeable about AI technologies to establish informed policies, recognize potential misuse, and offer guidance that helps students develop responsible AI practices rather than simply expecting them to self-regulate (Chan, 2023; Walter, 2024).

Methodology

Research Design

This study employed a mixed-methods quantitative descriptive research design in the form of a needs assessment to explore teacher education faculty members' knowledge, experiences, and perceptions regarding the use of AI in higher education. More specifically, the study sought to identify the specific types of AI tools and applications that faculty perceive as beneficial for teaching and learning, as well as the barriers and challenges they face in adopting these technologies. The ultimate goal of the study was to gather data that could inform the development of targeted professional development, institutional policies, and support strategies for the integration of AI tools into teaching and learning practices. It was approved by the University of Central Missouri IRB protocol #2576.

Research Questions

The study was guided by the following research questions:

1. What are faculty members' current practices with using AI technologies in education?
2. What are faculty members' current level of comfort with discussing appropriate uses of AI technologies with their students?
3. What are the perceived barriers or challenges (e.g., technical, ethical, pedagogical, or organizational) that faculty members face in incorporating AI into their teaching and how can these barriers be addressed through professional development and institutional support?

Participants

The study took place at the College of Education (CoE) of a public university in the Midwest. A total of 139 faculty members, including 58 full-time and 81 adjunct faculty, taught at the CoE during Fall 2024 and Spring 2025. Inclusion criteria required participants to be at least 18 years old and currently serving as full-time, part-time, or adjunct faculty within the CoE. Faculty were recruited via an email sent through the CoE Dean's office. The email provided a summary of the study, its purpose, and a link to the informed consent form and online survey. The survey was initially emailed to potential participants on November 21, 2024, with a completion deadline of December 18, 2024. However, due to a low response rate, the survey was re-sent to faculty members on January 6, 2025, with a new deadline of January 21, 2025. Participation was entirely voluntary and anonymous.

Data Collection

Data were collected through a self-administered, web-based survey hosted on Google Forms. The survey consisted of both multiple-choice and selected-response items designed to capture current uses of generative AI in teaching and faculty's professional development needs regarding the use of AI, as well as an open-ended item aimed at exploring faculty's perceptions of AI-related challenges and concerns. The survey took approximately 15 minutes to complete, and a total of 25 faculty members, out of 139 full-time and adjunct faculty, completed the survey.

The survey included items addressing:
- Purposes of AI use by faculty (e.g., for lesson planning, writing, research, and administrative tasks)
- Whether and how faculty involve students in using generative AI tools
- Faculty comfort level with discussing AI use and ethics with students
- Challenges or concerns with the use of AI
- Existing AI policies included in syllabi
- Preferences for professional development delivery (virtual, in-person, hybrid).
- Topics of interest for future training on the use of AI (e.g., prompt engineering, ethical issues, application-specific instruction)

A copy of the informed consent was embedded at the beginning of the survey. Participants had to indicate their agreement before gaining access to the survey questions. Data were collected anonymously, with no personally identifying information recorded.

Descriptive Statistical Data Analysis

This section presents the results of the data analysis conducted on the survey responses collected during the study. Descriptive statistics were employed to summarize and describe the main features of the dataset, providing a clear overview of the study participants and their responses. These statistics include measures such as frequencies and percentages. The following tables display data regarding participants' perspectives and use of AI in education.

Table 1 displays the distribution of faculty respondents based on the levels of instruction they reported teaching—undergraduate, graduate, or both. This categorization provides an overview of the instructional scope among respondents and serves as a basis for understanding their teaching responsibilities within the institution. The distribution of faculty respondents based on the primary course delivery format for the courses they taught, categorized as in-person, online, or a combination of both, is provided in Table 2. This breakdown offers insight into the teaching modalities utilized by faculty during the period of data collection.

Table 1
Faculty Instructional Assignments

Level of Instruction	Number of Responses	Percent of Responses
Graduate Students Only	9	36%
Undergraduate Students Only	4	16%
Both Graduate and Undergraduate Students	12	48%
Total	25	100%

Table 2
Instructional Delivery Methods

Mode of Course Delivery	Number of Responses	Percent of Responses
Online	6	24%
In-person	7	28%
Both online and in-person	12	48%
Total	25	100%

Table 3 presents faculty responses to the statement: *"I feel comfortable discussing appropriate uses of AI with my students."* This item aimed to assess faculty confidence in engaging students in conversations about the ethical and effective integration of artificial intelligence in academic contexts. Table 4 presents faculty responses to the statement: *"I have an AI policy statement in my syllabi."* This item was designed to gauge the extent to which faculty formally address the use of artificial intelligence through written policies included in their course syllabi.

Table 3
Faculty Level of Comfort

Statement: I feel comfortable discussing appropriate uses of AI with my students.		
Response	Number of Responses	Percent of Responses
Yes	16	64%
No	4	16%
Sometimes	5	20%
Total	25	100%

Table 4

Inclusion of AI Policy in Course Syllabi

Statement: I have an AI policy statement in my syllabi.		
Response	Number of Responses	Percent of Responses
Yes, in every syllabus.	11	44%
No, I do not have any policy statements in my syllabi.	10	40%
I have an AI policy in at least one syllabus, but not in all syllabi.	4	16%
Total	25	100%

To understand faculty access to generative AI, faculty were asked to report the types of tools they are currently using. This information is valuable for identifying AI adoption among faculty, highlighting differences in access, including willingness to invest in AI tools. Table 5 presents the level of access reported by faculty as being used in their teaching or academic work.

Table 5

Faculty AI Tool Access

Response	Number of Responses	Percent of Responses
I do not use AI tools.	5	20%
Free versions of AI tools.	19	76%
Both free and paid versions of AI tools.	1	4%
Total	25	100%

Figure 1 illustrates the purposes for which faculty reported using AI tools in their academic work. These purposes include activities such as idea generation, writing support, lesson planning, administrative support, research, and other uses, offering a snapshot of how AI is being integrated into various aspects of teaching and learning. Figure 2 illustrates the ways in which faculty encourage their students to use AI tools in their academic work.

Figure 1

Faculty AI Use Purpose
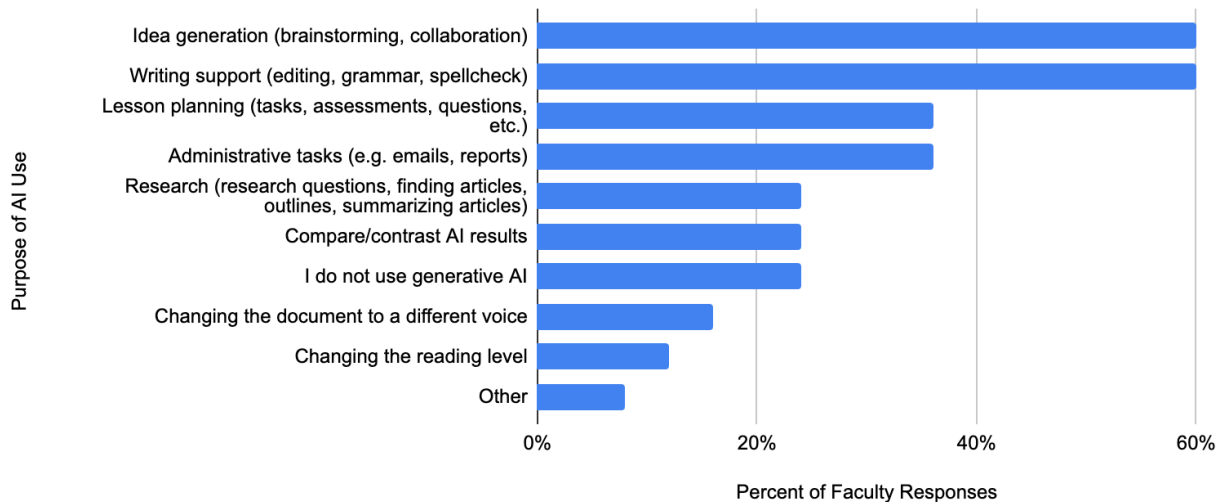
Other responses: I don't use AI with my professional work, but I use generative AI for personal projects and interests; A jumping off point to create rubrics. Also seeing how AI can complete assignments I've created (and perhaps then editing them if students are able to use AI on them).

Figure 2

Encouraged Student Use of AI
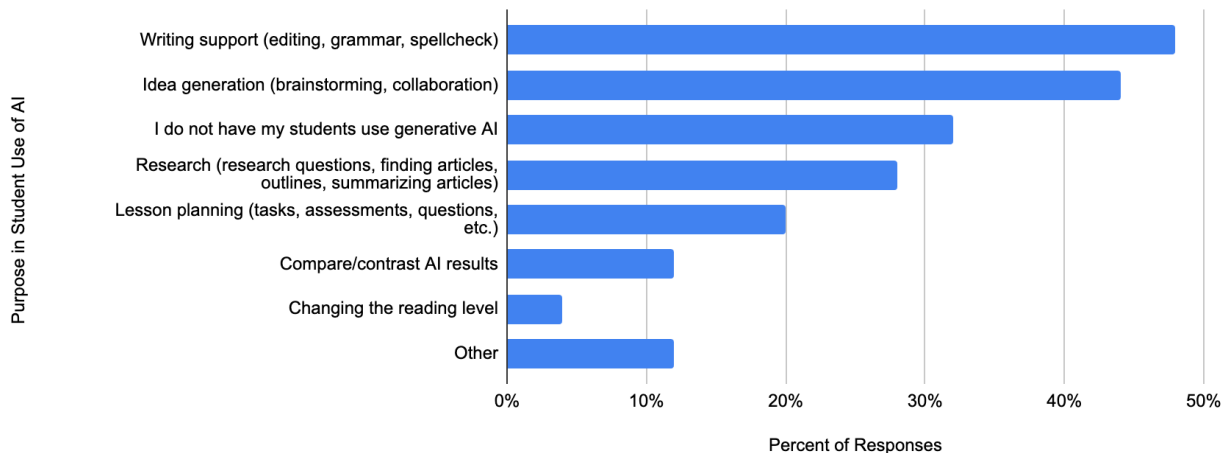
Other responses: I've encouraged students to download Grammarly to improve their writing; I do not feel I have had sufficient time to identify and include AI opportunities within my current courses but continually think about meaningful ways this can be done; there just is a huge lack of time to incorporate all we are being asked to each semester; Unsure.

Table 6 presents faculty preferences for professional development formats related to artificial intelligence. The comparison includes options of in-person, virtual or hybrid formats providing insight into how faculty prefer to engage in learning about AI integration in education.

Table 6
Professional Development Delivery Preference

Response	Number of Responses	Percent of Responses
In-person	4	17.4%
Virtual	12	52.2%
Hybrid	7	30.4%
Total	25	100%

Figure 3 compares faculty preferences for professional development topics related to AI integration. This comparison highlights which areas faculty prioritize for training and support in effectively incorporating AI into their teaching practices.

Figure 3

Faculty Preferred Professional Development Topics
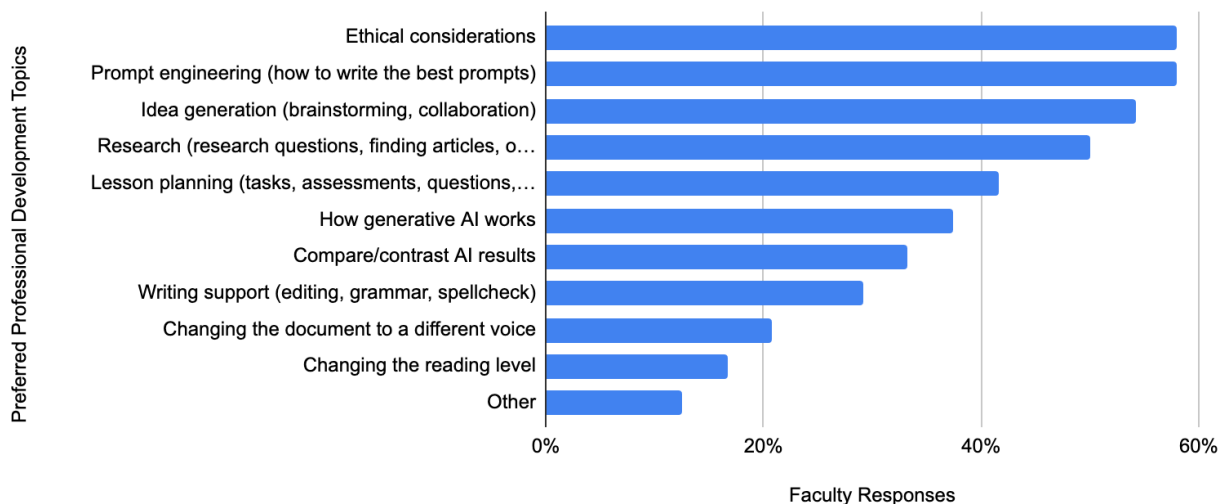
Other responses: Ways to increase efficiency; Different AI tools to use; Teaching students to use it correctly, as a resource, and not a way to get better grades on assignments and exams. I have difficulty keeping with the different AI options and which option is best for specific tasks.

An open-ended question was included in the faculty survey to explore the challenges faculty face when integrating AI into their teaching and learning practices. To analyze these qualitative responses, two researchers independently conducted a coding process to systematically categorize the data. Coding involves labeling segments of text with descriptive tags that capture key ideas or concepts. Through this iterative process, common patterns and themes emerged, allowing for a structured interpretation of the diverse challenges reported by

faculty. This thematic analysis provides deeper insight into the barriers to AI adoption beyond what quantitative measures can capture.

Qualitative Data Analysis

One open-ended question in the survey explored the challenges and concerns that faculty see with generative AI. The responses to this question were analyzed thematically to identify common patterns, concerns, and perceptions among faculty regarding the use of AI in teaching and learning. Using an inductive coding approach, responses were initially coded by two researchers independently and later reviewed collaboratively to establish consensus on key themes. The analysis yielded six overarching themes, described below and supported by evidence from participant responses.

1. Overreliance on Generative AI

Many faculty expressed concerns that students may become too dependent on AI tools, leading to reduced engagement in critical thinking, writing, and content mastery. Respondents noted that students were using AI to complete assignments without fully understanding the content or rationale behind their work ("My main concern is when students use it to simply get an assignment done without learning anything in the process"; "I am concerned with AI in lesson planning because our students do not know the 'why' behind each element of the lesson plan."). Faculty expressed that AI-generated content often lacks the nuance, personalization, and contextual understanding needed for effective teaching and learning. Respondents emphasized that AI cannot "know" students, differentiate instruction, or adapt to specific classroom needs.

2. Academic Integrity and Ethical Use of AI

A recurring theme involved concerns over plagiarism and students submitting AI-generated work as their own without attribution. Several faculty members reported doubts about the authenticity of student writing ("I no longer trust students' written work. It's too easy to have AI generate it and then run it through a second AI to make it sound as if a human wrote it.") and observed a lack of understanding or adherence to ethical standards in AI use. Faculty's comments such as "AI-generated writing submitted as students' own work", "I do not mind AI use in presentations or papers, but what I am finding is that students are not citing AI as a support", or "Straight plagiarism", emphasizes the importance of establishing clear guidelines for ethical AI use, promoting academic integrity, and providing students with education on proper attribution practices.

3. Lack of Faculty Knowledge and Preparedness

Some respondents acknowledged their own limited understanding of generative AI tools ("I think our biggest problem in the COE is lack of faculty knowledge about all that it can do"; "I have difficulty keeping with the different AI options and which option is best for specific tasks"), highlighting the need for more targeted support and ongoing professional development to build faculty confidence and competence in using AI effectively and responsibly.

4. Rapid Technological Change and Keeping Up with AI

Faculty expressed stress and uncertainty about keeping up with the rapid pace of AI development ("I am only concerned about keeping up with the constant changes") and noted

challenge of staying current with tools and the limitations imposed by institutional access ("I was hoping we would get the paid version of Gemini, but that seems to be stalled out for now").

5. Privacy Concerns

One of the respondents voiced concerns about data privacy ("I would like to use it even more for efficiency, but also have concerns about privacy when using it for certain things"). While many respondents did not express this concern, it is a major issue in discussions around the use of AI in any field, including education.

6. Shifting Pedagogical Practices and Positive Perceptions

While concerns regarding the use of generative AI dominated, some faculty recognized opportunities to rethink assessment practices ("AI has forced us to reconsider our assessment practices (in a good way)") and observed that students themselves were becoming more critical users of AI ("I have actually been surprised and proud of how skeptical my undergraduate students have become when using AI"). One of the respondents noted that they intentionally promoted using AI as a brainstorming partner ("I try to teach my students how to use it as a brainstorming partner"). These perspectives suggest a growing awareness among faculty not only of the challenges but also of the potential benefits regarding the use of AI, encouraging more reflective and student-centered approaches to teaching and learning.

Limitations

The limited sample size constrains the external validity and generalizability of these findings. Furthermore, the participants, drawn exclusively from a single college of education, may not adequately represent the broader population of faculty within educator preparation programs across diverse institutional contexts. The accelerated pace of AI development presents additional challenges to the longevity and applicability of these results. The rapid evolution of AI technologies necessitates continuous adaptation of faculty development initiatives, potentially requiring frequent updates within relatively compressed timeframes.

Data collection took place during late fall and early spring (November 2024-January 2025), which may have impacted participation due to academic calendar constraints such as finals, winter break, and the start of a new semester. This could have resulted in the low response rate and contributed to the small sample size.

The study relied entirely on self-reported survey responses, which may be subject to bias. Participants may have overestimated or underestimated their AI use, comfort, or concerns about using AI due to their lack of knowledge about AI tools and what they can actually do as well as due to a tendency to give socially acceptable answers.

To mitigate these findings in future studies, the researchers recommend surveying faculty in education preparation programs from multiple universities. They also suggest sending the survey at a different time of the year to avoid academic breaks. Finally, including additional open-ended questions to hear about specific AI use may provide the researchers with a more thorough understanding, so that results are not as connected to self-reported quantitative data.

Discussion and Implications

The quantitative findings from the survey revealed that 64% of faculty feel comfortable discussing ethical responsibilities related to AI with their students, and 60% have already implemented an AI policy in at least one of their courses. These findings suggest a strong

foundational awareness and initiative among educators regarding the ethical implications of AI use in academic settings. However, the fact that many faculty members (56%) also expressed a desire for professional development in this area indicates that comfort and policy implementation do not necessarily equate to comprehensive preparedness. This points to a critical gap between awareness and deeper understanding or confidence in applying ethical frameworks consistently and effectively. These results underscore the importance of institutionally supported professional development opportunities that go beyond surface-level policy adoption. Faculty may need structured opportunities to explore nuanced ethical scenarios, stay updated on evolving AI capabilities, and align their approaches with best practices. Offering professional development tailored to these needs could empower faculty not only to teach ethical use more effectively but also to model it in their own work.

Among the various reported uses of AI, idea generation and writing support emerged as the most frequently cited routine applications, with 60% of faculty indicating regular use in each of these areas. In addition to their own use, faculty identified idea generation and writing support as the top two purposes for which they encourage students to use AI. This alignment suggests that faculty are generally comfortable with certain productivity-enhancing applications of AI and see value in students engaging with these tools to support their learning and creativity.

Interestingly, despite the widespread use and endorsement of AI for idea generation, this emerged as the third most requested topic (52%) for professional development. This reveals an important contrast: while faculty actively use and promote idea generation through AI, many still feel uncertain about the pedagogical, ethical, or disciplinary boundaries of this practice. This finding points to a broader need for deeper, reflective professional development that helps faculty critically examine how AI-driven idea generation fits within academic integrity, authorship, and creative thinking. The discrepancy between frequent use and desire for further training suggests that faculty may recognize the complexities and potential risks of relying too heavily on AI in these cognitively rich tasks and are seeking guidance on how to responsibly integrate such tools into their teaching and scholarship.

Very few faculty reported using AI to adjust the voice (16%) or reading level (12%) of existing documents used for instruction. This low usage may indicate limited awareness of these AI capabilities or reflect a focus on content creation over adaptation in how faculty currently engage with AI tools. Similarly, few faculty reported encouraging students to use AI for adjusting reading levels (4%) or for comparing and contrasting AI-generated outputs (8%). This may also reflect a narrower focus on content generation, but points to opportunities for expanding faculty awareness of generative AI features that could support student learning. In addition, 32% of participating faculty indicated that they do not encourage student use of generative AI.

The quantitative findings reveal a level of faculty engagement with generative AI. While there appears to be some enthusiasm and initiative in using AI for productivity-related tasks and in shaping ethical guidelines, there exists a desire for deeper professional development and a more comprehensive understanding of AI's capabilities and implications. Faculty appear to embrace certain familiar functions but may be overlooking or underutilizing features that support adaptability and critical thinking. The gap between current practices and areas of uncertainty underscores the importance of targeted institutional support that empowers educators to confidently navigate the evolving role of AI in teaching, learning, and academic integrity.

The qualitative findings from the survey highlight both widespread concerns and emerging possibilities regarding the use of generative AI in higher education. Faculty responses

revealed a clear sense of caution, especially in areas related to academic integrity, instructional effectiveness, and faculty readiness. A dominant theme was the overreliance on AI by students, particularly in lesson planning and writing tasks, with several faculty members reporting that students were unable to explain or defend AI-generated content, which can negatively affect students' content knowledge as well as their critical thinking skills. This overuse was often coupled with a lack of personalization, raising concerns about AI's inability to adapt to specific student needs or classroom contexts.

Academic integrity emerged as another major concern. Respondents noted frequent instances of plagiarism or improper use of AI without citation, contributing to a general mistrust of student-authored work. These concerns point to the urgent need for clearer institutional guidelines and instruction on ethical AI use, including proper attribution and boundaries for acceptable support.

Some faculty members also acknowledged their own lack of preparedness to fully understand or teach with AI tools. The rapid pace of AI advancement was also seen as a barrier, making it difficult for faculty to keep up with available tools and their best uses. While the majority of faculty concerns centered on ethical use, academic integrity, and overreliance on AI, it is noteworthy that only one respondent explicitly mentioned privacy issues related to AI use. This limited mention is concerning given the well-documented privacy risks associated with generative AI tools, especially when handling sensitive student data or educational records (Ismail, 2025; Kitson & Erdogan, 2025; Lim & Shim, 2022). The relative lack of faculty attention to privacy could reflect a gap in awareness or understanding of how AI tools collect, store, and use data, as well as potential implications for student confidentiality and compliance with privacy regulations. This absence of privacy concerns among faculty can signal an urgent need to include data privacy and security education as another core component of professional development on AI integration in higher education. Educators must be made aware not only of how to use and have their students use AI ethically and effectively, but also of how to protect student information when leveraging these tools. This includes understanding institutional policies, federal regulations (such as FERPA), and the privacy practices of various AI platforms. These discussions should also be incorporated into educators' teaching practices as they prepare future teachers to critically evaluate AI tools and their usage.

Despite the aforementioned concerns and challenges, it is important to note that some faculty have recognized that AI has prompted them to rethink their assessment practices. This highlights the need for support in designing learning activities and assessments that encourage critical engagement with AI rather than passive reliance. In this sense, professional development for faculty that focuses on how assignments and assessments can be redesigned to encourage original thought, reflection, and understanding of content is crucial.

Together, the quantitative and qualitative results highlight a gap between teacher education faculty's awareness of AI and their feelings of preparedness to address AI-related concerns. Teacher education faculty have foundational knowledge, but need nuanced support to ensure they are prepared to incorporate AI in pedagogically sound ways and to address the use of AI by students. Furthermore, future professional development for teacher education faculty should include real-life examples of ethical AI issues so that faculty become comfortable using AI in ways that enhance work while maintaining ethical boundaries. Once faculty are comfortable with their own use of AI, adding professional development that discusses the transfer of that knowledge and skill to their instruction is the next step. In summary, AI-themed

professional development for teacher education faculty needs to be responsive to specific ways of teaching and changes in the AI landscape.

Conclusion

The purpose of this study was to assess faculty perceptions, practices, and preparedness related to the integration of AI in higher education, specifically within a college of education at a public Midwestern university. Through both quantitative and qualitative methods, the study explored faculty members' current use of AI tools, their comfort discussing AI with students, and their perceived barriers to effective implementation. Findings revealed that while many faculty members are already engaging with AI for instructional tasks such as writing support and idea generation, a significant portion still lack confidence or training in areas such as ethical AI use, pedagogical integration, and data privacy. Although some faculty have begun including AI policies in their syllabi and see potential for AI to improve educational practice, a consistent call for structured, targeted professional development emerged, especially around ethical use, instructional application, and keeping up with AI advancements.

The results of this needs assessment underscore an important gap in faculty awareness and faculty readiness, suggesting that professional development must move beyond simple tool exposure to focus on deeper engagement with AI's implications for teaching and learning. Institutions must support faculty through ongoing, responsive training that addresses the ethical, pedagogical, and technical dimensions of AI integration. This includes fostering data privacy awareness, promoting critical thinking in AI-assisted learning environments, and providing strategies for guiding students in responsible AI use. As the AI landscape continues to evolve rapidly, it is essential that higher education institutions invest in comprehensive faculty development initiatives that not only enhance individual confidence and competence but also ensure alignment with evolving educational goals and standards in a digitally driven academic world.

References

Al-Mughairi, H., & Bhaskar, P. (2024). Exploring the factors affecting the adoption AI techniques in higher education: Insights from teachers' perspectives on ChatGPT. *Journal of Research in Innovative Teaching & Learning*. https://doi.org/10.1108/JRIT-09-2023-0129

Baytas, C., & Ruediger, D. (2025). Making AI generative for higher education: Adoption and challenges among instructors and researchers. *Ithaka S&R*. https://doi.org/10.18665/sr.322677

Bittle, K., & El-Gayar, O. (2025). Generative AI and academic integrity in higher education: A systematic review and research agenda. *Information, 16*(4), 296. https://doi.org/10.3390/info16040296

Chan, C. K. Y. (2023). A comprehensive AI policy education framework for university teaching and learning. *International Journal of Educational Technology in Higher Education, 20*(1), 38. https://doi.org/10.1186/s41239-023-00408-3

Deaton, S., & Carter, V. (2024). Exploring the potential of artificial intelligence in teacher education. *Action in Arkansas Teacher Education, 14*(2), 47-54. https://www.arkansasate.org/documents/Vol%2014%20No%202.pdf

Diliberti, M. K., Lake, R. J., & Weiner, S. R. (2025). *More districts are training teachers on artificial intelligence: Findings from the American School District Panel.* Rand. https://www.rand.org/pubs/research_reports/RRA956-31.html

Gerlich, M. (2025). AI tools in society: Impacts on cognitive offloading and the future of critical thinking. *Societies, 15*(1), 1–28. https://doi.org/10.3390/soc15010006

Hays, L., Jurkowski, O., & Kerr Sims, S. (2024). ChatGPT in K-12 education. *TechTrends, 68*(2), 281-294. https://doi.org/10.1007/s11528-023-00924-z

Ismail, I. A. (2025). Protecting privacy in AI-enhanced education: A comprehensive examination of data privacy concerns and solutions in AI-based learning. *Impacts of Generative AI on the Future of Research and Education*, 117-142. https://doi.org/10.4018/979-8-3693-0884-4.ch006

Kim, W. J. (2025). Teachers' use of generative artificial intelligence for designing science lessons in support of environmental science agency. *Research in Science Education*, 1-20. https://doi.org/10.1007/s11165-025-10262-0

Kitson, C., & Erdogan, N. (2025). Leveraging AI tools to enhance writing skills and assessment in language education. *In Harnessing AI for multigenerational English language learning* (pp. 65-96). IGI Global Scientific Publishing.

Li, L., Yu, F., & Zhang, E. (2024). A systematic review of learning task design for K-12 AI education: Trends, challenges, and opportunities. *Computers and Education: Artificial Intelligence, 6*, 100217. https://doi.org/10.1016/j.caeai.2024.100217

Lim, S., & Shim, H. (2022). No secrets between the two of us: Privacy concerns over using AI agents. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 16*(4). https://doi.org/10.5817/CP2022-4-3

Mah, D. K., & Groß, N. (2024). Artificial intelligence in higher education: Exploring faculty use, self-efficacy, distinct profiles, and professional development needs. *International Journal of Educational Technology in Higher Education, 21*(1), 58. https://doi.org/10.1186/s41239-024-00490-1

Major, K., & Chiarelott, C. (2023). Slow down: Generative AI, faculty reactions, and the role of critical thinking in writing instruction. *Double Helix*, 11. https://doi.org/10.37514/DBH-J.2023.11.1.03

Nazaretsky, T., Ariely, M., Cukurova, M., & Alexandron, G. (2022). Teachers' trust in AI‑powered educational technology and a professional development program to improve it. *British Journal of Educational Technology, 53*(4), 914-931. https://doi.org/10.1111/bjet.13232

Pitrella, V., Perna, S., Allegra, M., Gentile, M., Ottaviano, S., Re, A., Tosto, C., & Città, G. (2023, September). Artificial intelligence for personalized learning in K-12 education. A scoping review. *In International Conference on Higher Education Learning Methodologies and Technologies Online* (pp. 372-382). Cham: Springer Nature Switzerland.

Roe, J., Perkins, M., & Ruelle, D. (2024). Understanding student and academic staff perceptions of AI use in assessment and feedback. *arXiv preprint arXiv*:2406.15808.

Tong, S. T., DeTone, A., Frederick, A., & Odebiyi, S. (2025). What are we telling our students about AI? An exploratory analysis of university instructors' generative AI syllabi policies. *Communication Education*, 1-22. https://doi.org/10.1080/03634523.2025.2477479

Walter, Y. (2024). Embracing the future of artificial intelligence in the classroom: The relevance of AI literacy, prompt engineering, and critical thinking in modern education. *International Journal of Educational Technology in Higher Education, 21*(1), 15. https://doi.org/10.1186/s41239-024-00448-3

Impact of an Infant Feeding Module on Adolescent Knowledge and Attitudes

Sheri Deaton, University of Arkansas
Kelly Vowell Johnson, University of Arkansas
Allison L. Scott, University of Arkansas

Abstract

Early introduction of infant feeding options is essential for informed decision-making about infant nutrition practices and future caregiving choices. This study examined the impact of an online infant feeding module on secondary students' knowledge and attitudes about breastfeeding, prompted by state-level legislation, House Bill 1526, which requires all public-school secondary health and safety courses to include breastfeeding benefit information. Using a quasi-experimental pretest-posttest design, 120 eighth graders in health-related courses completed surveys assessing knowledge and attitudes before and after the module, with pre-post outcomes analyzed by gender and ethnicity. Results from this study showed significant gains in understanding breastfeeding benefits. Male students displayed reduced uncertainty about nutritional differences, while female students gained confidence in feeding recommendations. Overall, knowledge improved among all participants. Findings support structured infant feeding education in school curricula to enhance adolescent awareness and promote informed choices about infant nutrition.

Key Words: Infant Feeding, Adolescent Health Education, Quasi-experimental Study, Breastfeeding

Introduction

Developmentally appropriate health education on infant feeding options and benefits could allow young adults to make informed breastfeeding decisions. While most eighth graders are not immediate decision-makers regarding infant feeding, early adolescence is a critical period of time for increasing knowledge while also shaping beliefs and attitudes regarding options for infant feeding. Understanding knowledge and attitudes towards breastfeeding is key to normalizing breastfeeding in communities (Scott et al., 2023). This study assessed a structured breastfeeding education module's impact on adolescent knowledge and attitudes about infant feeding. Results highlighted the importance of incorporating targeted education efforts within school curricula to improve public health awareness, which in turn impacts the mother's health, infant nutrition, and early developmental outcomes.

A review of literature from peer-reviewed publications within the last 10 years revealed that no single, standardized, validated tool was found throughout the existing literature. One online breastfeeding education course, the "BreastfeedingBasics," was designed for healthcare professionals in 1999; however, this tool was created for healthcare professionals, not adolescents (Lewin & O'Connor, 2012), thus limiting the applicability to our clinical questions' target population of adolescents. Bond et al. (2017) used the *"Healthy Moms"* tool, an online

game-based learning intervention designed to educate women about breastfeeding using 3D Gamelab®. Barriers identified with this tool included a lack of validation, variance in the completion of the game among participants, and reliance on advanced/expensive technology (Bond et al., 2017). Additionally, this study was conducted using a population of adult women, not adolescents. Another online survey was conducted by Spear (2007), where attitudes and experiences of male and female college students were examined as they related to breastfeeding education. This survey was not validated and may be prone to retrospective bias. Educational intervention about breastfeeding is not just an American construct, but is one examined by researchers across the globe. Catipovic et al. (2018) worked with secondary students at four different high schools in Bjelovar and reported that the completion of online breastfeeding education modules consistently improved breastfeeding knowledge for adolescent participants. Study-specific questionnaires and pretest and posttest tools surveys were used in combination with statistical analysis to assess the knowledge and attitudes of adolescents (Catipovic et al., 2018; Martens, 2001).

While numerous studies have examined this topic, there is currently no standardized, validated instrument reported in peer review literature. The purpose of this study was to evaluate the effect of an evidence-based, developmentally appropriate breastfeeding module on eighth grade students' knowledge and attitudes towards infant feeding, specifically breastfeeding. This project was developed in response to state legislation requiring all public-school secondary health and safety courses to include breastfeeding benefit information (Arkansas Legislature, 2023). Researchers designed the infant feeding module and curriculum to align with public school standards, used evidence-based instructional strategies, and incorporated developmentally appropriate practices for secondary students. Topics embedded within this specific module included the concepts related to the science of breastmilk, what is in it and why it is beneficial, economic and social impacts for breastfeeding, differences between breastmilk and artificial infant milk, benefits of breastfeeding for the infant and mother, laws related to breastfeeding, and strategies for supporting mothers and infants.

Method

A quasi-experimental pretest-posttest design assessed the module's impact on the knowledge and beliefs of secondary students. Use of the quasi-experimental methodology allowed all participants to participate in the infant feeding module without the use of random assignments to groups. While participants were not randomly assigned to intervention or control groups, this design allowed us to examine changes in knowledge and behavior before and after the educational intervention, with a focus on differences between male and female participants as well as among different ethnicities.

The 20-minute module was developed by a Pediatric Nurse Practitioner and an International Board-Certified Lactation Consultant with subject-matter expertise in maternal and infant health education. The module content was informed by current evidence-based infant feeding guidelines and was aligned with the public health and education standards and legislative

mandates. Module implementation and activity creation was guided by developmentally appropriate practices and educationally grounded applications of effective teaching for an online presentation. While the infant feeding module itself was not a previously validated instrument, this approach is consistent with other educational intervention studies which used brief curriculum-based instructional modules. Content reliability was established by the module developers who evaluated the accuracy and relevance of the material for the targeted age group. Construct validity of the infant feeding module was assessed indirectly through the use of the pretest-posttest measures designed to capture changes in knowledge and beliefs following the intervention.

        The following research questions guided this study.

1) How do attitudes toward infant feeding practices vary from pretest to posttest among male and female participants after completing an infant feeding module?
2) How do knowledge scores vary among ethnic groups following an infant feeding module?

        These research questions were important to guide this study understanding that infant feeding knowledge and attitudes have long-term implications for child health and development. Early adolescence is a critical period of life where beliefs, and knowledge are shaped regarding nutrition and health, with attitudes toward breastfeeding being formed early in life (Goulet et al., 2003). Beliefs carried into adulthood impact not only each individual's future, but also the nutritional and developmental futures of the next generation. Understanding how knowledge and attitudes change after an educational intervention can assist educators design evidence-based programs which can effectively promote healthy behaviors early. Additionally, understanding differences by gender and ethnicity is important to ensure the equitable and inclusive nature of educational modules.

Participants

        A convenience sample of eighth-grade students from six college and career readiness (CCR) course sections at a public school participated in this study. The innovation-oriented school emphasizes personalized and flexible learning pathways and accelerated standards-based instruction. This school operates as an open-enrollment public school within a larger district and integrates in person, online, and blended learning options to meet the diverse student needs. The CCR course integrates concepts related to college and career readiness, with intentional integration of health and safety content across the curricula as well to meet the state expectation of a health and safety course. Topics related to health and safety were embedded in the content for this course, with specific emphasis given to prenatal and postnatal care of a newborn. All students enrolled in the CCR sections were invited to participate in this study, with 120 students completing the informed consent form and participating in this study. Of this total, 107 students completed both the pretest and posttest, 56 (52%) identified as male, and 51 (48%) identified as female. Table 1 includes the participants' demographic information, including gender and ethnicity.

Table 1

Participant Demographics

Gender	*n* (%)	Hispanic	White/ Caucasian	Asian/Pacific Islander	Black/African American	Alaskan Native
Male	*n* = 56 (52%)	24	25	3	1	3
Female	*n* = 51 (48%)	22	21	6	2	0

According to 2022-23 data (ADE My School Info, 2024), the study site school district had one of the largest student enrollments in the state, with 21,801 students enrolled in 29 schools. The participating school included students enrolled in grades 7-12, with an enrollment of 2,116 students. Additionally, 70.3% of the students were eligible for free and reduced meals compared to the statewide average of 58.6%. Furthermore, 58% of students enrolled were identified as coming from low-income homes, and 12% were English Language Learners (ELLs). Demographics for the school included 47.2% Hispanic/Latino, 2.2% Hawaiian/Pacific Islander, and 42.4% white (ADE My School Info, 2024).

Instrument

Participants completed a 20-question pretest survey via Google Forms® embedded in weekly class slides. Questions included demographics and knowledge/attitude items, five of which were analyzed. See Table 2. The Iowa Infant Feeding Attitude Scale (IIFAS) was included due to its established reliability (De la Mora et al., 1999).

Table 2

Selected Survey Questions

Question Number	Survey Questions
Q1	Breast milk and formula contain almost the same ingredients, so there is no real nutritional advantage over the other.
Q4	Infants should ideally be fed only breast milk for the first six (6) months of life before formula or other foods (like baby foods) are given.
Q 14	Babies fed breast milk are healthier than babies who are fed formula.
Q18	Breast milk is easier to digest than formula.
Q 19	Formula is as healthy for an infant as breast milk.

Procedure

Informed consent was obtained in English, Spanish, and Marshallese. The cooperating teacher at the school of innovation was sent a link to a site containing the pretest, infant feeding module, posttest, and STEM (science, technology, engineering, and mathematics) enrichment activities related to infant feeding. The teacher posted the pretest Google Form® in their weekly lesson slides. After students completed the pretest, the teacher posted the infant feeding module. Students completed the infant module, interacted with the questions embedded within the module, and then completed the posttest. All activities were completed within one class period, and participation was part of the students' daily work.

Data Analysis

Researchers used Microsoft Excel® to clean, organize, and analyze matched pretest and posttest data. Thirteen incomplete responses were excluded. Data were sorted by participant, gender, and ethnicity. Paired t-tests ($p < 0.05$) assessed the significance of changes in knowledge overall, by gender, and between the two ethnic groups.

The instrument used to measure students' perceptions consisted of 20 questions related to infant feeding. All survey questions related to infant feeding; however, five specific questions were analyzed to assess the impact of the educational module on participants' knowledge of breast milk compared to formula. Two of these questions, Question 1 and Question 4, used a scale with the options True, False, and Unsure. The remaining questions—Questions 14, 18, and 19—used a Likert scale, where 1 represented Strongly Disagree and 5 represented Strongly Agree. It is important to note that Question 19 required reverse coding before analysis. The reliability of the measure for Questions 14, 18, and 19 was assessed using Cronbach's alpha, which resulted in a value of .7639. This indicated acceptable internal consistency, as Cronbach's alpha above .70 is generally considered reliable (Gliem & Gliem, 2003). The result suggested that the items within the scale are moderately correlated, providing a reasonable level of consistency.

To address how attitudes toward infant feeding practices changed by gender, an independent t-test compared male and female scores on the pretest. Dependent t-tests measured growth from pretest to posttest for both genders. For deeper analysis, Likert responses from Q14, Q18, and Q19 were transposed to a new scale of 1-3 to assess posttest attitudes by gender. Data from the posttest were organized into three categories: strongly disagree/disagree responses were transposed to a score of 1, neutral responses to a score of 2, and agree/strongly agree responses to a score of 3.

A low number of responses were received from students of African American, Native American, and Pacific Islander ethnicities; however, the number of responses from Hispanic and Caucasian students allowed for further analysis. Hispanic ($n = 46$) and Caucasian ($n = 46$) students' results were analyzed using paired t-tests within each group to assess individual growth from the pretest to the posttest. To further investigate differences in Hispanic and Caucasian perspectives on the posttest, scores from the three questions using the Likert scale (Q14, Q18, and Q19) were transposed to reflect a new scale of 1-3 to allow each survey question to be

analyzed. Data from the posttest were organized into three categories: strongly disagree/disagree responses were transposed to a score of 1, neutral responses to a score of 2, and agree/strongly agree responses to a score of 3.

Results

Survey questions 1 and 4 asked students to identify if the statements were true, false, or if they were unsure regarding breastmilk being nutritionally superior to formula and exclusive breastfeeding being recommended during the first six months. A copy of the entire Infant Feeding Survey can be found [here](). Results from this study indicated that participants' perceptions and knowledge of infant feeding were affected by their experiences with the educational module. Specifically, the number of students who moved from unsure to certain of their understanding was a noteworthy finding. A closer analysis of male and female responses highlighted differences in participants' perceptions before and after experiencing the infant feeding module. See Table 3.

Table 3.
Male and Female Pretest and Posttest Analysis

	Pretest		Posttest	
	Male	Female	Male	Female
	n = 56	*n* = 51	*n* = 56	*n* = 51
Q1 Breast milk and formula contain almost the same ingredients, so there is no real nutritional advantage over the other.				
True	*n* =6 (11%)	*n* =0 (0%)	*n* =1 (2%)	*n* =4 (8%)
False	*n*=37 (66%)	*n*=41 (80%)	*n*=55 (98%)	*n*=42 (82%)
Unsure	*n* =13 (23%)	*n* =9 (18%)	*n* =0 (0%)	*n* =5 (10%)
Q4 Infants should ideally be fed only breast milk for the first six (6) months of life before formula or other foods (like baby foods) are given.				
True	*n* =35 (63%)	*n* =36 (71%)	*n* =46 (82%)	*n* =40 (78%)
False	*n* =7 (13%)	*n* =9 (18%)	*n* =10 (18%)	*n* =10 (20%)
Unsure	*n*=14 (25%)	*n* =6 (12%)	*n* =0 (0%)	*n* =1 (2%)

*Chart reflects posttest data from students who chose to participate in the study.

Male participants in this study experienced a notable change in understanding concerning breast milk versus formula, with 23% reporting they were unsure of the merits of breastfeeding, while on the posttest, 0% (*n* = 0) were unsure, while 98% (*n* = 55) were certain of the superiority of breastmilk. Additionally, male participants also demonstrated a notable change in certainty concerning whether infants should ideally be fed only breast milk for the first six (6) months of life before formula or other foods (like baby foods) are given." On the pretest, 25% (*n* = 14) of male participants were unsure of the validity of only breastfeeding, while on the posttest, 0% (*n* = 0) were unsure.

Female participants demonstrated a change in understanding concerning breastmilk and formula, containing almost the same ingredients, so there is no real nutritional advantage over the other. On the pretest, 18% ($n = 9$) of female participants were unsure of the merits of this statement, while on the posttest, 10% ($n = 5$) were unsure, while 82% ($n = 42$) indicated that this statement was false. Additionally, female participants in this study also showed a change in certainty concerning exclusive breastfeeding during the first six months. On the pretest, 12% ($n = 6$) of female participants were unsure of the merits of this statement, while on the posttest, 2% ($n = 1$) were unsure, while 78% ($n = 40$) indicated that this statement was true.

To better understand the difference in infant feeding knowledge after participating in the feeding module, an independent samples t-test was used to analyze how participants differed from one another on the posttest using data from three questions (Q14, Q18, and Q19) using the Likert scale. Among the participants ($n = 107$) knowledge assessment there was a statistically significant difference in scores between the pretest and posttest, with students averaging significantly higher on the posttest, $t(105) = 2.00, p = <.05$. This finding indicated that participants involved in this study were impacted by the infant feeding module concerning these questions related to infant feeding.

To better understand the question regarding how male and female participants differed on the pretest, an independent t-test was used. To examine changes within each group, a dependent t-test was conducted to measure growth from pretest to posttest. To further investigate differences in male and female perspectives on the posttest, scores from the three questions using the Likert scale (Q14, Q18, and Q19) were condensed to a new scale of 1-3 to allow each survey question to be analyzed. Data from the posttests were organized into three categories: strongly disagree/disagree responses were condensed to a score of 1, neutral responses to a score of 2, and agree/strongly agree responses to a score of 3. Among the male participants in this study ($n = 56$), there was a statistically significant difference in how participants scored on the pretest and posttest with students averaging significantly higher on the posttest, $t(54) = 2.00, p = <.05$. Among the female participants in this study ($N = 51$), there was a statistically significant difference in how participants scored on the pretest and posttest with students averaging significantly higher on the posttest, $t(49) = 2.00, p = <.05$.

An assessment of knowledge of breastfeeding and how this differed among ethnic groups was analyzed. Results from this study indicated that participants' perceptions and knowledge of infant feeding were impacted by their experiences with the educational module. A closer analysis of Hispanic and Caucasian responses highlighted differences in participants' perceptions before and after experiencing the infant feeding module. See Table 4.

Table 4

Hispanic and Caucasian Pretest and Posttest Analysis

	Pretest		Posttest	
	Hispanic *n = 46*	Caucasian *n = 46*	Hispanic *n = 46*	Caucasian *n = 46*
Q1 Breast milk and formula contain almost the same ingredients, so there is no real nutritional advantage over the other.				
True	*n* =5 (11%)	*n* =1 (2%)	*n* =1 (2%)	*n* =2 (4%)
False	*n*=32 (70%)	*n*=36 (78%)	*n*=41 (89%)	*n*=44 (96%)
Unsure	*n* =9 (20%)	*n* =9 (20%)	*n* =4 (9%)	*n* =0 (0%)
Q4 Infants should ideally be fed only breast milk for the first six (6) months of life before formula or other foods (like baby foods) are given.				
True	*n* =28 (61%)	*n* =34 (74%)	*n* =35 (76%)	*n* =39 (85%)
False	*n* =10 (22%)	*n* =6 (13%)	*n* =10 (22%)	*n* =7 (15%)
Unsure	*n* =8 (17%)	*n* =6 (13%)	*n* =1 (2%)	*n* =0 (0%)

*Chart reflects posttest data from students who chose to participate in the study.

Hispanic participants in this study experienced a change in understanding concerning breastmilk and formula containing the same ingredients and the nutritional value over the other. On the pretest, 20% (*n* = 9) of Hispanic participants were unsure of the merits of this statement, while on the posttest, 9% (*n* = 4) were unsure, and 89% (*n* = 41) indicated that this statement was false. Additionally, Hispanic participants in this study also demonstrated a notable change in certainty concerning Question 4, regarding what infants should be fed for the first six (6) months of life. On the pretest, 17% (*n* = 8) of Hispanic participants were unsure of the merits of this statement, while on the posttest, 2% (*n* = 1) were unsure, and 76% (*n* = 35) indicated that this statement was true.

Caucasian participants experienced a change in understanding of breast milk vs formula. On the pretest, 20% (*n* = 9) of Caucasian participants were unsure of the merits of this statement, while in the posttest, 0% (*n* = 0) were unsure, and 96% (*n* = 44) indicated that this statement was false. Additionally, Caucasian participants in this study also demonstrated a significant change in certainty concerning Question 4, which stated that "Infants should ideally be fed only breast milk for the first six (6) months of life before formula or other foods (like baby foods) are given." On the pretest, 13% (*n* = 6) of Caucasian participants were unsure of the merits of this statement, while on the posttest, 0% (*n* = 0) were unsure, and 85% (*n* = 39) indicated that this statement was true.

Discussion

Building on the work of Catipovic et al. (2018), the online infant feeding module rendered statistically significant results, indicating a significant impact on middle school students' knowledge regarding infant feeding. The findings of this study underscore the significant impact of the infant feeding educational module on participants' knowledge and attitudes toward infant feeding practices, demonstrating that both males and females benefited from the infant feeding module. Statistical analysis of participants revealed a marked improvement in understanding, as evidenced by the transition from uncertainty to certainty regarding key statements on infant nutrition. Notably, males exhibited substantial changes in their perceptions about the nutritional differences between breast milk and formula, while females similarly showed improved knowledge and confidence in their beliefs regarding optimal feeding practices for infants. Additionally, the comparison between different ethnic groups further highlights the effectiveness of the module across diverse populations. Both Hispanic and Caucasian participants demonstrated significant growth in understanding after the educational intervention, with minimal initial differences in knowledge levels, indicating that the module was equally beneficial irrespective of ethnicity. These results suggest that targeted educational initiatives can effectively bridge knowledge gaps concerning infant feeding practices among various demographic groups.

Implications for School Health Policy, Practice, and Equity

At the time of implementation, no standard curriculum had been developed by the State Department of Education or the Health Department. The entire module, located at https://sites.google.com/view/infant-feeding/home, was made available to all state public schools for use to fulfill the mandate from the state legislature. It is free, evidence-based, and effective in providing improvement in basic infant feeding knowledge and positive breastfeeding attitudes. The positive outcomes highlight the critical need for ongoing education efforts aimed at educating adolescents, particularly in diverse demographics. Future research should explore long-term retention of knowledge, real-world application of learned concepts, and potential adaptations for diverse demographic groups to maximize educational impact. By fostering a greater understanding of infant nutrition, we can contribute to better health outcomes for infants and support parents in making informed feeding choices.

Limitations of the Study

The study used a convenience sample taken from a single study site and a teacher with whom the researchers had an existing relationship. The demographics of the school district and the specific school involved in the research may not represent the broader population demographics of the state or nation. Additional limitations included reliance on self-reported data, which may be subject to social desirability bias, and the quasi-experimental design, which does not fully control external variables. Although the study demonstrates a positive short-term

effect of infant feeding education, it is unclear whether long-term feeding knowledge and attitudes are similarly affected.

Conclusion

The results of this study showed that a structured infant feeding education module can significantly improve students' knowledge and attitudes toward breastfeeding. Participants showed increased comprehension and confidence, with gains observed across both male and female students, as well as Hispanic and Caucasian groups. These findings underscore the value of early, evidence-based breastfeeding education within school health curricula to promote informed decision-making and greater awareness. An education intervention has the potential to influence generational attitudes, improve maternal and infant health outcomes, and reduce financial burdens related to infant feeding. By introducing structured, comprehensive infant feeding education in schools, educators can support family members and students to better equip them with accurate information about infant nutrition and breastfeeding.

References

ADE My School Info. (2024). Retrieved 4 April 2024, from https://myschoolinfo.arkansas.gov/SRC/33/7207000

Arkansas Legislature (2023). House Bill 1526. 94th General Assembly. Retrieved from Bill Drafting Template

Bond, L., Connor, K.C., & Grassley, J.S. (2017). Game-based online antenatal breastfeeding education: A pilot. *Applied Nursing Research, 33*, 93–95. https://doi.org/10.1016/j.apnr.2016.10.011

Catipovic, M., Grguric, J., & Markovic, M. (2018). Educational intervention about breastfeeding among secondary school students. *Health Education,118*(4), 339-353. https://doi.org/10.1108/HE-10-2017-0057

De la Mora, A., Russell, D., Dungy, C., Losch, M., & Dusdieker, L. (1999). The Iowa infant feeding attitude scale: Analysis of reliability and validity. *Journal of Applied Social Psychology 29(11). doi:10.1111/j.1559-1816.1999.tb00115.x*

Gliem, J. A. & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. *Midwest Research-to-Practice Conference in Adult, Continuing, and Community Education*, 82-88.

Goulet, C., Lampron, A., Marcil, I., & Ross, L. (2003). Attitudes and Subjective Norms of Male and Female Adolescents Toward Breastfeeding. *Journal of Human Lactation*, *19*(4), 402–410. https://doi.org/10.1177/0890334403258337

Lewin, L.O. & O'Connor, M. (2012). Breastfeeding basics: Web-based education that meets current knowledge competencies. *Journal of Human Lactation, 28*(3). https://doi.org/10.1177/089033441143599

Martens, P. J. (2001). The effect of breastfeeding education on adolescent beliefs and attitudes: A randomized school intervention in the Canadian Ojibwa community of Sagkeeng.

Journal of Human Lactation, 17(3), 245–255.
https://doi.org/10.1177/089033440101700308

Scott A., Lambert A., Wang C-h., Johnson K., Weiss J., & Stankus T. (2023). University campus breastfeeding, knowledge, and perceptions of support: An exploratory study. *PLoS ONE 18*(5), e0285008. https://doi.org/10.1371/journal.pone.0285008

Spear, H. J. (2007). College students' experiences and attitudes regarding middle and high school-based breastfeeding education. *The Journal of School Nursing, 23*(5), 276-282. https://www.proquest.com/scholarly-journals/college-students-experiences-attitudes-regarding/docview/68316296/se-2