# A Critical Discourse Analysis of Teacher’s Emotionality of Teaching LGBTQ+ History

Colleen Kollasch

This study examines the critical emotional responses of high school social studies teachers to integrating LGBTQ+ history into their curriculum. Rooted in critical discourse analysis, it reveals varied emotional responses influenced by institutional support, colleague interactions, and legislation, underscoring the need for teacher support in navigating challenging curriculum changes. The primary goal is to understand how the discourse teachers use reveals their emotionalities when queering their curriculum, with the main research question being: “In what ways does the language used by high school social studies teachers reveal their emotionalities when queering their curriculum?”

Using James Paul Gee's seven-building task framework, the study employs critical discourse analysis (CDA) as both a theory and a method. Teachers from urban Iowa and suburban Wisconsin were interviewed via Zoom while analyzing a lesson plan about the Stonewall Inn events, capturing their immediate emotional responses to implementing the lesson plan in their classrooms. The language used by teachers reveals their emotionalities in several significant ways: confidence and enthusiasm when they have access to quality materials, feelings of security and encouragement with robust support systems, and relief and assurance with accurate materials. Administrative and collegial support is crucial, with solid backing leading to confidence and motivation, while a lack of support results in anxiety and frustration. Supportive legislation fosters feelings of validation and encouragement, whereas its absence can cause vulnerability and concern. Time and space for social-emotional learning reflect growth, understanding, and preparedness, indicating teachers feel more equipped to handle the emotional complexities of teaching LGBTQ+ history.

Teachers must tailor online resources to meet students’ needs and align with social justice values, critically assessing the historical content in pre-made lessons. Professional development is essential for teachers to process their emotions surrounding complex topics and to gain knowledge and confidence in teaching LGBTQ+ history. This training ensures accurate representations of queer identities and historical experiences in social studies classrooms. The study highlights teachers' need for robust support systems, including quality materials, administrative backing, and time for social-emotional learning. These supports are essential for effectively integrating LGBTQ+ history into social studies curricula, helping students see themselves in the history they learn, and fostering a more inclusive educational environment.

This study embodies the theme of this conference, Education in the 21st Century: Designing a More Inclusive Future because it focuses on helping teachers emotionally process how their instruction can incorporate LGBTQ+ inclusion in their classrooms.

# A Shakespearean Theatre Program and its Pedagogical Impact on the Future Orientation of Incarcerated Youth at a Juvenile Jail Study Site.

Ozivell Ecford

This preliminary study examines how a Shakespearean Prison Program/arts education program influences future orientation development among five incarcerated youth (aged 16-18) at a Midwestern juvenile correctional facility. Research suggests that developing future orientation - the ability to envision and plan for the future - serves as a protective factor for justice-involved youth. However, trauma histories and institutional constraints often impede this development. This study investigates how arts-based programming might create unique pathways for cultivating future orientation in this vulnerable population.

The research employs a mixed-methods approach combining ethnographic observation, participant narratives, and teaching artist reports to examine how theatrical engagement influences different types of future orientation: professional, social-emotional, educational, and survival-based. The study specifically analyzes three key workshops: an original musical about retaliation choices, Romeo and Juliet scene work, and personal narrative development.

Early findings reveal multiple pathways through which arts-based intervention supports future orientation development. Participants demonstrate progression from survival-based thinking (focused on sentence reduction) to broader future orientation, including professional skill development and emotional regulation. The data suggests that artistic engagement creates unique opportunities for processing past experiences while developing future-oriented thinking. However, institutional constraints and trauma histories continue to impact development patterns.

Key findings include: (1) identification of four distinct manifestations of future orientation in incarcerated youth, (2) documentation of how arts-based intervention can facilitate transition from survival-based to broader future orientation thinking, and (3) recognition of how institutional constraints affect program effectiveness. The study also reveals the need to adapt traditional assessment methods for literacy-challenged populations.

These preliminary results suggest that effective future orientation development requires programming that addresses both immediate survival needs and longer-term emotional and professional growth. The findings have implications for both practice and policy in juvenile justice arts programming, suggesting the need for more integrated approaches to rehabilitation.

This research contributes to more inclusive educational practices by demonstrating how arts-based programming can create accessible pathways to development for traditionally marginalized youth. By adapting classical texts and assessment methods to meet participants' needs while maintaining high expectations, the program models how education can simultaneously honor lived experiences and encourage growth. The study's emphasis on multiple modes of expression and achievement particularly aligns with the conference theme of designing more inclusive educational futures.

# A sketch of Child Rights Education by children's literature in Vietnam - a case study from examining Vietnamese Award-winning Picture Books for Children (2018- 2023)

Lan Anh Hoang

In the context of the 21st century, when significant opportunities go along with the multi-dimensional challenges in assuring children a democratic and freedom education as well as sustainable development, teaching children about the Convention on the Rights of the Child (CRC), or Child’s Rights Education (CRE) - is essential (UNICEF, 2014). “For every child, every right” (UNICEF), CRC, and CRE help children have knowledge and skills to protect and develop themselves and other children as a human being.

Children’s literature is critical for educating Children’s Rights (Todres & Higinbotham, 2016). Besides Child Rights in children’s versions, children’s books are generally “filled with human rights scenarios” (Todres & Higinbotham, 2016, p. 1). Children’s literature nurtures children’s imaginational skills while conveying the content of Child’s Rights, including un-friendly children topics, to young readers, helping CRC to be more accessible to children and more relatable to their lives” (Todres & Higinbotham, 2016). Educators and stakeholders can somehow estimate social consciousness about Children’s Rights and Child Right Education through the current publication of children's literature.

In Vietnam, since 2018, CRC has been included in the Civic education textbook of Grade 6 and taught to Vietnamese students nationwide. (Tran et al, 2021; Dinh et al; 2021, Nguyen et al, 2021). This study examines the reflection on Child Rights in Doa Hoa Dong Thoai Award-winning picture books for Children in Vietnam from 2018 to 2023 to see how Vietnamese adults and children authors know and are interested in CRC. From the result, this study sketches the current status of Child Rights Education, including writing and using children's literature. It discusses solutions for CRE in Vietnam as well as other countries.

The study used both qualitative and quantitative methods. We code stories, score them in four general contents in CRC: Survival Rights, Protective Rights, Development Rights, and No-Discrimination Rights, and then build tables and charts to show the results. The study finds that Vietnamese children’s literature can be a critical CRE source. Being contextualized by Vietnamese culture and society, the stories help Vietnamese children access CRC more easily. However, reflecting unevenly on the contents of CRC in the stories reduces the ability to protect children. This gap calls for writers, educators, and stakeholders to discuss solutions for CRE in Vietnam and other countries.

# Advanced Placement Access and College Enrollment: The Postseconday Effects of Advanced Placement State Policies

Ian Callen

Postsecondary education is a critical mechanism for addressing economic inequality, however, barriers in accessing a postsecondary education persist. Financial costs are often highlighted as a significant barrier; however, inadequate academic preparation (towards postsecondary education) also impedes students’ success in higher education. Advanced Placement (AP) courses offer a potential solution, serving as both a rigorous introduction to college-level work and a means to reduce the financial burden of higher education through college credit earned from passing AP exams. However, access to AP courses remains inequitable, with schools in rural and high-poverty areas less likely to offer them.

To address these disparities, states have implemented policies aimed at increasing access to AP opportunities, such as mandating AP course offerings in high schools and funding AP exam for all students. This study investigates the effects of these policies on college outcomes, leveraging data from the Integrated Postsecondary Education Data System (IPEDS) and employing difference-in-differences and event study methodologies. We analyze aggregate changes in college enrollment, sorting between institutional types, and longer-term outcomes like first-year retention and graduation rates for all fifty states (plus the District of Columbia).

Our results suggest that these policies do not broadly increase overall college enrollment or shift enrollment patterns between two- and four-year institutions. However, we find small positive effects on enrollment at private institutions following AP funding policies. These findings suggest that such policies may primarily benefit students already inclined to pursue postsecondary education, particularly those attending private colleges. Building on prior work (Callen & Stoddard, 2024), which showed increased AP exam participation but lowered pass rates following policy implementation, our findings offer new insights into the downstream effects of expanded AP access. While more students gain the potential to earn college credit, our findings suggest participation increases observed at the secondary-level do not appear to translate into broader college enrollment gains. Preliminary estimates suggest that these policies may improve retention rates however, effects are small in magnitude. A further exploration into longer-term effects is still ongoing.

In alignment with the conference theme, our study underscores the importance of tailoring educational policies to foster equitable access and outcomes for students. A better understanding of the ways in which education policy can promote equality of opportunity within schools while improve student outcomes is critical as policymakers consider strategies to address educational and economic inequality.

# Affordances and constraints of curriculum case studies in professional learning

Nicholas Leonardi, Julia Poel

One goal expressed by reform efforts is to expand what counts as science to make classrooms equitable (NASEM, 2022). To expand what counts as science, curriculum materials and instructional practices should make space for students to navigate Multiple Ways of Knowing (MWK; Bang & Medin, 2010). To support teachers in expanding what counts as science, professional learning (PL) experiences can help teachers make changes to their practice. One strategy to support teacher learning is using case studies, which allow teachers to discuss and reflect on teaching problems (Loucks-Horsley et al., 2008). When using cases as a PL tool, understanding the learning from different case formats is valuable (Levin, 1999), as this can provide insight into future design and facilitation strategies. Therefore, this study explores the question: How, if at all, do learning opportunities differ across teams of participants when engaging in case discussions during a professional learning institute? This study is part of a project focused on translating basic science associated with a large biology institute into curriculum materials. As part of this effort, Authors have held three Summer PL institutes to partner science and education graduate students, and K-12 classroom teachers to co-design curricula. The data set for this study comes from a four-day PL that was held during June 2024 with 27 participants. Throughout the PL, participants engaged in activities to support them in co-designing units. One activity was the use of case studies. To answer the research questions, Authors used a constant comparative method (Strauss & Corbin, 1998) to examine two design team’s conversations across one case discussion. Utilizing this approach allowed Authors to examine the conceptual resources that were leveraged by each team and how participants imagined using those in their future work. Our findings show that learning opportunities can differ for PL participants when they engage in case discussions since teams may mobilize conceptual resources differently. Although cases designed to explore problems of practice can help in-service teachers move toward adopting equitable pedagogical approaches, this study demonstrates that learning about a concept, even through strategic tools such as cases, may not be enough to help teachers make the bridge between the hypothetical and concrete practices. This study is relevant to the conference theme of designing a more inclusive future, as it provides insight into the development of PL tools that can support teachers in adopting instructional pedagogies that move beyond dominant forms of knowing.

# Applying Mindfulness in STEAM Youth Education: A Reflexive Auto-ethnographical Perspective

Darcy Yue Lu, Monisha Sharma

Mindfulness, defined as a state of conscious awareness (Langer, 1992), has been effectively incorporated into various interventions and practices in clinical psychology since the 1980s (Kabat-Zinn, 1980). This approach has also been applied in educational settings, including middle schools and colleges (Leland, 2015; Bamber & Schneider, 2016), where it enhances students’ mental health and contributes to improved academic performance. However, there remains a significant lack of research concerning the impact of mindfulness on STEAM education for youth, especially from a pedagogical perspective.

This study, therefore, aims to explore two main questions: (1) How can mindfulness practices in a STEAM curriculum influence student engagement and emotional regulation? (2) What are the challenges and opportunities in embedding mindfulness into traditional classroom settings?

The research employs an auto-ethnographic approach, reflecting on the researcher’s experience of implementing mindfulness into a STEAM curriculum as a full-time middle school science teacher in 2018. The researcher developed and executed four distinct mindfulness practices tailored for 6th-grade students. These included: (1) A Visit to Mind introduced students to mindfulness as a scientific phenomenon through daily activities such as mindful breathing, mindful eating, nature-based mindfulness exercises, and sensory awareness practices. (2) What Went Well Wall involved a gratitude writing practice where students posted sticky notes of daily positive experiences. (3) Honest Confessions provided a safe, anonymous platform for students to express and confront hidden truths, fostering self-honesty and improving social skills through group discussions. (4) Peace Table offered a neutral space for conflict resolution, encouraging empathy and active listening among peers.

Through a reflexive lens on examining teaching journaling, classroom observations, and pedagogical designs, this study concludes that mindfulness practices, when thoughtfully integrated, can transform STEAM classrooms into spaces of compassion and inclusivity. By addressing the emotional and cognitive needs of learners, the study demonstrates how educators can foster environments where diversity is celebrated, and students thrive holistically. Besides, challenges included my initial hesitation to integrate mindfulness into a traditional results-driven curriculum, as well as time constraints within an already packed schedule.

Aligned with the conference sub-theme of Compassionate Design, this research highlights how mindfulness can challenge traditional educational biases, and contribute to a more humanizing approach to teaching and learning by prioritizing empathy, and inclusivity. It offers educators actionable strategies to embed mindfulness within STEAM curricula, paving the way for an equitable and inclusive approach to education in the 21st century.

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# BarrelBots: Measuring Self-efficacy and Puzzle-based Computational Thinking in Minecraft

Samuel Hum

Computer science education continues to be a leaky pipeline for historically and statistically underrepresented groups in STEM. To support computational thinking (CT) development and self-efficacy (SE) with participants from these backgrounds, we introduce a puzzle-based block coding activity in Minecraft that was used with middle school participants who were a majority African American and all participants were from low-SES backgrounds. The intervention was designed to be consistent with literature for promoting interest in computing with underrepresented elementary and middle school students and effective puzzle-based activities. During a summer camp in the Midwest, participants (n = 15) solved researcher-designed puzzles that incorporated sequencing, loops, conditionals, and functions. They also had the opportunity to design their own puzzles and share them with a partner and the class. In this paper, we investigate whether the activity promoted CT, STEM SE, or coding SE development from pre- to post-test using validated measures. In addition, we analyzed log data to examine correlations between in-game behaviors and participant post-test scores. We found that there was a significant improvement in STEM SE using a Wilcoxon signed-rank test and there were some significant Spearman rank correlations between the individual problem solving log data behaviors and the CT post-test scores. These findings have implications for designing scaffolds for future redesigns of the activity and the design of other computational thinking interventions designed around inclusivity. With regards to analyzing the participant-made puzzles, our findings indicate that further analysis of participant log data and Minecraft artifacts are necessary to fully understand the effect of the intervention.

# Beyond Buildings: Designing and Maintaining Classroom Laboratory Spaces for Accessibility

Natalie Taylor

There is increased awareness of the need to create inclusive classroom experiences for students, largely focused on traditional lecture-based courses. Beyond lectures, laboratory training and research experiences enhance educational and cultural experiences for students. These courses necessitate a disruptive approach to full inclusion when considering accessibility for engineering students with physical disabilities (SWD-P).

This research seeks to understand SWD-P’s experiences in laboratory courses and their effects on SWD-P retention and perspectives toward STEM. The goal is to establish relatively short term, and achievable, recommendations for faculty and instructors of engineering laboratory courses to improve the accessibility of laboratory courses and therefore increase SWD-P’s feelings of belonging in these essential educational experiences.

A literature review identified research into these areas that was used to create a list of proactive measures for instructional laboratories. Limited existing literature is supplemented by insights from the authors’ experiences as instructors and students with and without disabilities. Additional considerations were elucidated through investigation into parallel fields, such as software accessibility. A detailed evaluation of select laboratory and design spaces that were intentionally designed to be inclusive for SWD-P demonstrates potential laboratory modifications in practice.

Federal regulations mandating accessible educational experiences are not sufficient to promote the inclusion of SWD-P in laboratory spaces. SWD-P report intentionally choosing theory-based over laboratory courses, or choosing not to pursue a STEM degree despite interest. SWD-P have also disclosed barriers such as unreachable work surfaces or low instructor expectations. Universal design principles can address these barriers by advocating for solutions that accommodate many abilities. Proposed proactive measures include ensuring open spaces, utilizing secondary indicators, and providing tool variability.

In conclusion, minimal guidance exists for the design and maintenance of laboratory spaces and it is instructors’ responsibility to ensure their accessibility. Leveraging universal design to create more accessible spaces demonstrates to SWD-P that they belong in engineering, and subsequently supports their retention in the field.

This research envisions a more inclusive future for engineering learners with disabilities in laboratory courses. The envisioned and actual accessible spaces provide inclusive environments that encourage collaboration between diverse learners across disciplines. This research inspires compassion for the poor experiences of SWD-P in laboratories and provides recommendations to meet the needs of these learners. Instructors must understand how to teach SWD more effectively so that they can be retained to address complex engineering issues in the workforce.

# Breaking Barriers: Strategies for Retaining and Advancing Women Faculty in STEM at R1 Universities

Monica Liu

Topic Breaking Barriers: Strategies for Retaining and Advancing Women Faculty in STEM at R1 Universities

Women faculty in STEM face persistent systemic barriers that impede their career advancement, including biases in evaluations, masculinized workplace cultures, and work-life conflicts (Laursen & Austin, 2020). These challenges contribute to their underrepresentation in tenure-track and leadership positions and hinder the broader goals of diversity, equity, inclusion, and belonging within U.S. higher education. This study aims to identify the institutional barriers faced by women faculty in STEM and examine the strategies employed by R1 universities to support their retention and advancement, utilizing insights from NSF ADVANCE awards between 2001 and 2024.

Research Questions

(1) What institutional barriers do women faculty in STEM face at R1 universities, as identified by change leaders who have received NSF ADVANCE grants?

(2) What strategies and interventions do these change leaders and their teams propose to address these identified barriers and promote the retention and advancement of women faculty in STEM at R1 universities?

Methodology

This research employs a mixed-methods approach, combining thematic analysis and structural topic modeling (STM) to analyze 51 NSF ADVANCE Institutional Transformation award abstracts granted to R1 universities from 2001 to 2024. Qualitative data from award abstracts are performed thematic coding following Braun and Clarke’s framework, while STM quantitatively identifies prevalent topics and trends over time.

Results

The integrated findings reveal a complex landscape of institutional barriers and effective strategies for retaining and advancing women faculty in STEM. Thematic analysis identifies persistent biases, inequitable policies, unsupportive departmental climates, and limited mentoring and networking opportunities as key impediments. Over time, organizational interventions have evolved from addressing foundational issues like raising awareness and establishing baseline metrics to incorporating intersectional perspectives and implementing iterative organizational changes.

Specifically, early initiatives focused on basic gender-equity measures and foundational structural supports. By the mid-2000s to early 2010s, more nuanced strategies emerged, integrating intersectional analyses, reshaping departmental cultures, and implementing accountability measures. From the mid-2010s onward, approaches evolved further, drawing on data-driven decision-making, adaptive policies, intersectional frameworks, and continuous feedback loops. Taken together, this progression marks a shift from localized, leader-dependent interventions toward integrated, evidence-based policies and practices. This progression signifies a move from leader-dependent interventions to integrated, evidence-based policies that balance top-down support with bottom-up engagement.

Implications

The study’s findings offer valuable insights into best practices for fostering gender equity in STEM at R1 universities. By highlighting the shift towards systemic, data-driven, and intersectional strategies, the research underscores the importance of comprehensive and sustainable approaches in creating inclusive and supportive academic environments. These insights can guide women faculty, academic institutions, and policymakers in developing and implementing effective interventions that promote sustained gender equity in STEM academia.

Conclusion

This research underscores the necessity of adaptive, multilayered strategies for transformative change in STEM academia. Moving beyond isolated or leader-dependent efforts, the study highlights the importance of integrated policies and continuous, data-informed refinement to achieve lasting gender equity.

# Bridging Theory and Practice: Exploring Teacher Roles in Implementing Project-Based Learning for 21st-Century Skills Development

Viphawee ( Bee) Butler

21st-century skills, also referred to as "lifelong learning competences" or "key skills" (Anderson, 2008; Law et al., 2008; OECD, 2004), include critical thinking, creativity, collaboration, problem-solving, and self-directed learning. Project-Based Learning (PBL), a student-centered approach emphasizing inquiry-based instruction and collaborative problem-solving (Hmelo-Silver, 2004), provides an effective framework for cultivating these essential skills. The integration of 21st-century skills with PBL offers a promising pathway to equipping students for future challenges.

While the theoretical benefits of 21st-century skills and PBL are well-documented, their application in classroom settings presents notable challenges (Hmelo-Silver, 2004; Helle et al., 2006; Boothe et al., 2017). Teachers often struggle to distinguish PBL from other instructional strategies (Mentzer, 2017) and encounter difficulties in designing objectives and activities that align with its principles (Dos Santos et al., 2009; Kim, 2012). These challenges reveal a critical gap between the theoretical foundations of PBL and its practical implementation in active classroom environments.

This study focuses on the pivotal role of teachers in bridging this gap. It seeks to explore whether their instructional practices align with theoretical frameworks and whether unique characteristics of PBL emerge from classroom experiences or teacher insights. The central research question guiding this investigation is: What teacher roles are essential for effectively enacting the PBL approach in real-world classroom environments? Addressing this question sheds light on the practical dynamics of PBL and its potential to cultivate 21st-century skills in students.

This qualitative study explores the classrooms of five middle school teachers from a PBL pedagogy-focused Secondary School in Hong Kong. The data set includes video recordings of classroom sessions, teacher interviews, audio recordings, and transcripts of both classroom interactions and teacher reflections. Thematic analysis, utilizing open coding and inductive coding to establish appropriate coding schemas, was employed to identify patterns and gain insights, offering a comprehensive understanding of teacher practices.

The findings revealed that teacher instruction in these classrooms was characterized by high instructional quality and clearly communicated expectations. Teachers provided constructive feedback and actively engaged students in content-focused activities, fostering a dynamic and interactive learning environment.

These results highlight the critical role of interactive, feedback-rich teaching practices in enhancing student engagement and learning outcomes (Gresalfi et al., 2012; Blumenfeld, 2011; Spinrad et al., 2009; Stronge et al., 2010). The study suggests that professional development programs should prioritize equipping teachers with strategies for effective instruction and feedback, ensuring successful PBL implementation and fostering the development of 21st-century skills.

# Can Low-Cost Online Pronunciation Instruction Work? A Case Study of the ACEPC

Ivan Crespo

This study investigates the potential of low-cost online pronunciation instruction to improve segmental pronunciation among international graduate students, particularly those preparing for roles as International Teaching Assistants (ITAs). Recognizing the importance of clear pronunciation for effective communication and professional success, the research addresses the challenges of traditional, high-cost pronunciation courses by developing the Academic English Pronunciation Course (ACEPC), which is a course specifically designed for graduate students preparing for the Oral English Assessment Interview (OEAI) at the University of Illinois Urbana-Champaign.

The study aims to answer two key questions: (1) Can a low-cost online pronunciation course improve the production of segmental pronunciation? (2) What challenges do educators face in implementing such a course? 9 participants from diverse linguistic backgrounds engaged in the ACEPC, a 12-week course delivered via Moodle and supported by free tools like Clips, InShot, and YouGlish. Using a mixed-methods approach, data were collected through audio recordings, surveys, instructor feedback, and participant reflections.

Findings demonstrate significant improvements in the pronunciation of both vowel and consonant sounds. Participants reported high engagement with tools that supported independent learning. Challenges included minor technical barriers and the need for educators to develop basic video production skills.

The study concludes that low-cost courses like the ACEPC are effective and practical for institutions with limited resources, offering a scalable model for pronunciation instruction. These findings contribute to inclusive educational practices by providing accessible solutions to enhance communication skills in diverse academic settings. This work aligns with the conference theme by addressing the need for innovative, inclusive approaches to education in the 21st century.

# Caregiver Coaching in Early Intervention

Maryana Al Tobi

In this literature review, I examined the current frameworks and practices of caregiver coaching within early intervention and early childhood special education. By investigating both the perspectives of practitioners who deliver caregiver coaching and parents receiving coaching in early intervention, as well as the existing relevant theoretical frameworks, I found that practitioners recognize the significance of caregiver coaching and the implementation of culturally responsive practices. However, further research is needed to identify effective recommended culturally responsive practices for parent coaching and to explore implementing these strategies to address potential equity concerning access to caregiver coaching by marginalized and minoritized families.

Caregiver coaching practices relate to the subtheme "Diverse and Innovative Perspectives on Education in the 21st Century". This topic explores both established and novel strategies for designing equitable caregiver coaching services for diverse families, ensuring that every family has access to high-quality early intervention services.

# Comparing Immersive Simulations in XR and Web-based Environments: Differences in User Preferences, Learning Outcomes, and Design Implications

Chris Palaguachi

Immersive Virtual Reality (IVR) offers new opportunities for education, yet little research has systematically compared experiences across Extended Reality (XR) and web-based platforms. Such comparisons are challenging due to the distinct affordances and features of these technologies. Developing simulations across multiple platforms demands significant technological resources and careful design considerations, further contributing to the scarcity of comparative studies. This study presents the design and iterative development of HoloOrbits, a physics and astronomy simulation aimed at enhancing students’ understanding of orbital mechanics. Initially designed for Microsoft’s Hololens 2, HoloOrbits utilizes XR’s immersive capabilities to allow students to visualize and interact with a fictitious exoplanet orbiting a fictitious sun. The simulation supports collaborative learning as pairs of students calculate the eccentricity of the exoplanet. In Experiment 1, six sessions of paired participant data were collected, including pre- and post-tests, questionnaires, audio, video, and interviews. This data informed our understanding of users’ experiences and provided valuable feedback for improving the simulation. Despite the potential of IVR, its scalability for whole-classroom studies posed significant challenges. While Hololens 2 facilitates engagement for 1-2 students at a time, we sought to design a version of HoloOrbits that could accommodate larger groups. This led to the development of a WebGL-based version of the simulation, allowing small groups of 3-4 students to engage in a classroom setting. In Experiment 2, we collected data from two classroom sessions involving 20+ students working in groups. The data included pre- and post-tests, questionnaires, audio, video, and group feedback. This paper discusses the iterative design process and compares the results from both experiments to highlight the differing affordances of XR and web-based platforms. Findings address key considerations for designing accessible, scalable educational simulations while maintaining collaborative and immersive learning experiences. These insights contribute to the broader understanding of how to effectively leverage platform-specific strengths in educational technology.

# CyberGuardian: A Role-Playing Educational Game for Mastering Cryptographic Primitives and Enhancing Real-World Cybersecurity Awareness

Shan Huang

We report on our experiences fielding CyberGuardian, an interactive educational game designed to introduce students to foundational concepts in cryptographic primitives while simultaneously raising awareness of real-world cyber threats. Tailored for students with no prior background in computer science, the game provides an accessible and engaging platform to explore cybersecurity concepts without requiring advanced technical knowledge. Players assume the role of a cybersecurity advisor, navigating dynamic messages that simulate real-world challenges, such as safeguarding secure communication, ensuring data integrity, and verifying authenticity. In this role, players are tasked with providing accurate and timely guidance to simulated clients and analyzing realistic messages to detect and mitigate security risks.

The game leverages key cryptographic techniques, including symmetric encryption, asymmetric encryption, and digital signatures, to challenge players to think critically and apply these principles to solve security problems. CyberGuardian is designed as a single-player offline experience, ensuring accessibility even in environments without internet connectivity. Each gameplay session is followed by a structured debriefing to connect in-game experiences with broader real-world cybersecurity practices and implications.

The primary objectives of CyberGuardian are to (1) help students understand the practical importance of cryptographic primitives, and (2) equip them with the ability to recognize and apply these techniques in real-world cybersecurity contexts. To assess the game's effectiveness, we plan to conduct a thorough evaluation using surveys, focus groups, and interviews. This approach will help refine the game to better meet its educational goals while enhancing the overall user experience.

# Decolonizing U.S. Education Abroad: A Call for Systemic Change

Gabrielle Haggins, Logan Pender

This session critically examines the decolonization of education abroad programs by focusing on the institutional and systemic shifts necessary to dismantle colonial power structures embedded in U.S. higher education. The historical foundations of American transnational education have long upheld Western-centric models that perpetuate colonial attitudes, practices, and policies. These frameworks continue to shape study abroad programs in ways that marginalize non-Western perspectives and limit the scope of global learning. This session seeks to challenge these colonial structures by promoting the inclusion of diverse voices, aiming to create more equitable, culturally relevant, and inclusive education abroad experiences.

The decolonization of education abroad goes beyond confronting Eurocentric norms; it involves reimagining the entire system of global learning. By addressing the persistent inequalities inherent in current frameworks, we can develop strategies for dismantling colonial legacies and fostering mutual understanding across cultural boundaries. This work aims to promote cultural equity, where students from all backgrounds have access to transformative global learning opportunities that reflect the diversity and interconnectedness of the modern world. Furthermore, this session is dedicated to laying the groundwork for contributing a robust framework that can serve as a foundation for future decolonization efforts, emphasizing the need for tangible institutional change and sustainable practices.

As we move beyond 2024, the necessity of decolonizing education abroad becomes even more urgent. The increasing interconnectedness of global societies means that education abroad programs must evolve to reflect and support this complexity. This session envisions a future where global education systems prioritize inclusion, respect, and equity, breaking free from the colonial legacies that hinder meaningful progress. By incorporating diverse perspectives and making systemic reforms, institutions can equip students with the tools to thrive in a multicultural world, leading with a deep understanding of global issues rooted in justice, respect, and cultural awareness.

# Designing inclusive pathways for non-profit data science

Vien Nguyen

Data science is a rapidly emerging discipline (National Academies, 2018). Will data science teach youth to follow the example of Big Tech corporate data science, which if unchecked leads to negative social consequences? (Noble, 2018; O’Neil, 2017). Perhaps. But I argue that data science should draw from images of data science the prioritizes civic good. Therefore I have been a 501(c)(3) charitable civic technology non-profit that I call Civic Technology Volunteers, whose members volunteer to use data primarily to advance civic good in a large midwestern city.

In this paper, I am focusing on how a person becomes the kind of data scientist who puts civic good over profit. This is an uncommon direction for a data scientist to take, contrasted to “selling out”. My research question is “How does a person become the kind of data scientist who puts civic good over profit?”

For my methods, I have conducted semi-structured interviews with 12 participants from the CTV (Holstein & Gubrium, 2003). I have selected them to maximize variation in the years they have been at the CTV, which allows for the possibility that becoming such a person takes years. I have conducted two interviews with each participant, one more general, and the other that gets into specifics. Analytically, I compared the stories to look for possible generalizations about the experiences and values that lead a person to become a civic data scientist.

Regarding “anticipated findings”, my participants have taken a number of trajectories to becoming civic data scientists. Some have worked in Big Tech data science jobs and searched for volunteer opportunities on the side. Others have quit their jobs, and taken jobs at non-profits. Some had jobs outside of technology and then transitioned into technology. Yet still others have started their own businesses where they choose clients that align with their values and reject those that do not. All had access to relationships with both technologists and public service professionals, like journalists and community organizers, who have helped them to navigate through civic technology in their city.

This paper has the following implications for education. The case studies, taken together, show that the participants have had diverse trajectories into their current work in civic technology. Undergraduate education should, similarly, have supports for diverse students to transition into technology majors.

# Dismantling the Iron Cage of Neoliberalism: Critical Economic Literacy for Teachers in the Promotion of Critical Global Citizenship Education

Catherine Ho

Abstract: While Global Citizenship Education (GCE) has taken on growing prominence over the years, yet Critical GCE and teacher professional development (PD) for Critical GCE is still sorely lacking. Furthermore, the influence of neoliberalism as a modern form of “iron cage” with the attendant rise of global crises and inequality render many teachers at a loss as to ways to question the Economics that has built and maintained this “iron cage”. It is posited that there is a need for an “alternate criticality” since Critical Pedagogy and Critical Thinking, while valuable, have not effectively countered the rise of neoliberalism over the past four decades. Critical Economic Literacy is proposed to be an additional epistemic lens that can empower teachers to identify, analyze and critique the Economics in their personal and professional lives, such that teaching for Critical GCE becomes more salient and powerful.

Research Questions:

To what extent does gaining Critical Economic Literacy by non-Economics secondary subject teachers promote their teaching for Critical Global Citizenship?

What do non-Economics secondary teachers say about the impacts of an 8-lesson Critical Economic Literacy course on their personal and professional life?

What is the relationship between non-Economics secondary teachers’ development of Critical Economic Literacy and their understanding of Critical Global Citizenship?

Methodology:

This study is based on a 8 week Participatory Action Research where non-Economics teachers of a secondary school based in Beijing explore and are given approaches to question the current neoliberal Economics in each of their own subject fields. The research uses a thematic analysis to analyze the ways that teachers adapt their unit plans pre and post PAR to more effectively teach for Critical GCE.

# Evaluating Different International Learning Modalities in Engineering Courses

Joshua Katz, Joie Gindorf

Collaborative Online International Learning (COIL) is a teaching pedagogy that facilitates deep global engagement for students without physical travel abroad, providing undergraduates with global learning opportunities. Through COIL, students and educators from diverse countries explore various subjects, themes, issues, or ideas through project-based learning experiences. This method addresses the challenge of limited student mobility, particularly highlighted during the pandemic, by offering numerous virtual engagement possibilities. The traditional COIL framework can be expanded by establishing full-semester COIL courses accompanied by an optional post-course short-term study abroad component, COIL+. This experience offers students a unique combination of virtual and physical international learning opportunities. The study aims to qualitatively analyze undergraduate students' experiences comparing COIL, COIL+, and no-COIL (traditional short-term programs) while focusing on understanding and assessing associated benefits, challenges, and opportunities with each. To achieve this, a moderator conducted in-depth focus groups ranging from one to seven students participating in the COIL, COIL+, or no-COIL programs. The focus groups were structured around eight questions to elicit insights into students' experiences in the program and their overall university experience post-program completion. The discussions in these focus groups were open-ended, with no specific length restrictions, allowing students to provide feedback on the questions as comprehensively as they wished. Transcripts from the focus group discussions were then analyzed using an inductive approach to coding the data to identify emerging themes and patterns within the responses. Preliminary findings indicate that students engaged with various themes during the discussions, including advice for other students, career prospects, applications of class learning, cultural interactions and exchanges, cultural intelligence, educational perspectives, and skill development. These preliminary results will be further elaborated to compare students' responses from COIL, COIL+, and no-COIL programs by analyzing student experiences during the spring 2024 semester.

# Evaluating the impact of AI-driven writing tools on student writing skills: insights from the CGScholar AI Helper Project

Raigul Zheldibayeva

This study examines the impact of AI and peer feedback on the development of academic writing skills among Kazakhstani scholars using the CGScholar platform. The study aimed to find out how familiarity with AI tools and peer feedback processes affects participants’ openness to incorporating feedback into their academic writing. The study involved 36 Bolashak scholars enrolled in a scientific internship focused on education at the University of Illinois at Urbana-Champaign (UIUC) during 2024-2025 academic year. To gather insights, a survey with 15 questions comprising multiple-choice, Likert scale, and open-ended questions was conducted via Google Forms in three languages including Kazakh, Russian and English to ensure linguistic accessibility. Demographic information such as age, gender, and first language was collected to provide a nuanced understanding of the data.

The analysis revealed a moderate positive correlation between familiarity with AI tools and openness to making changes based on feedback, and a strong positive correlation between research writing experience and expectations of peer feedback, especially in the area of research methodology. These results indicate that although participants are receptive to AI-assisted feedback, they still highly value peer input, especially in terms of methodological guidance. This study demonstrates the potential benefits of integrating AI tools with traditional feedback mechanisms to improve research writing quality in academic settings. Further research is recommended to evaluate the long-term impact of AI and peer feedback on academic writing skills and to balance the contributions of technology and human factors to create an effective feedback environment that promotes skill development.

# Exploring and Implementing Social-Emotional Competence Coaching for BIPOC Early Childhood Teachers: A Mixed-Method Study

Casey Kim

This study employs an exploratory sequential mixed methods design to investigate the impact of Practice-Based Coaching (PBC) on BIPOC Early Childhood Education (ECE) teachers' social-emotional teaching practices. Initially, qualitative data from focus groups will be used to develop culturally inclusive coaching components. These components will then be tested quantitatively through a single-case design to explore the functional relationship between PBC and teaching practices. This methodological approach allows for the integration of BIPOC ECE teachers' insights into the development of intervention strategies, ensuring that the coaching is culturally responsive. The ultimate goal is to enhance the effectiveness of PBC in supporting the unique needs of BIPOC ECE teachers, thereby improving their capacity to foster social-emotional learning in diverse classrooms.

This session aims to elucidate the exploratory sequential mixed methods design applied to assess the impact of PBC tailored for BIPOC ECE teachers. The primary objectives are: 1) to understand the facilitators and barriers experienced by these educators a one-size-fits-all professional development approach, 2)to explore how culturally inclusive PBC can enhance social-emotional teaching practices among BIPOC ECE teachers, and 3) to generate actionable insights that can inform policy and practice in teacher training programs.

# Exploring Female Engineering Students' Gendered Internship Experiences

Jing Zhang, Hou Xie

Women remain underrepresented in U.S. engineering, accounting for only 23% of engineering degrees awarded in 2020 and 13% of the engineering workforce in 2019 (Meiksins & Layne, 2022). Successful engineering internships are vital for retaining women and fostering their long-term career development. However, existing research has notable gaps: 1) it often lacks an in-depth analysis of the gendered nature of experiences, and 2) it does not address whether women interns receive adequate support or are able to identify the specific support they need to navigate challenges. Additionally, previous studies have largely overlooked male perspectives in gender dynamics.

This study aims to 1) explore the gendered experiences of female engineering students during internships, 2) examine factors influencing these experiences, and 3) identify support mechanisms to help them thrive in their internships and careers. In the current study, we will recruit 20 undergraduate engineering students (15 females, 5 males) with at least one internship experience from a 4-year public university in the U.S. Semi-structured interviews, lasting 45-60 minutes, will be conducted to understand students’ internship experiences. For female students, the focus is on describing and interpreting their gendered experiences, while male participants reflect on their roles in workplace dynamics, particularly in interacting with their female counterparts.

Interview data will be transcribed and collaboratively coded using inductive thematic analysis to identify emerging themes, supported by representative cases from participants. The findings from this exploratory study will inform the development, implementation, and evaluation of future professional development programs designed to enhance female engineering students' internship experiences with the goal of improving gender representation in the workforce.

# Fostering Adolescents’ Reading Motivation in the 21st Century: Toward Inclusive and Humanizing Approaches

Cigdem Yurekli

In an era shaped by technological advancements and diverse global changes, fostering adolescents’ reading motivation is essential for developing engaged, empathetic, and critical readers and learners (Guthrie & Klauda, 2014; Merga, 2015). This literature review aims to explore the intrinsic and extrinsic factors affecting adolescents’ reading attitudes and motivation in 21st-century classrooms and their implications for creating inclusive and equitable educational practices.

This literature review is guided by two research questions: (1) What has been studied in the last decade regarding adolescents’ reading attitudes and motivation? (2) What factors foster reading motivation considering 21st-century technological and social developments? Drawing from a review of 22 peer-reviewed articles published between 2012 and 2022, the study synthesizes findings related to teachers’ roles, classroom practices, social interactions, and digital literacy.

The findings of this literature review indicate that teachers play a crucial role in increasing students’ motivation toward reading with the help of student-centered practices, diverse and inclusive reading materials, and technological opportunities. In addition, teacher attitudes, knowledge, and preferences might positively influence adolescent readers’ reading engagement and motivation (Munson-Warnken, 2017). Classroom practices integrated into the reading curriculum, such as self-selected reading, book clubs, and interactive online discussions, further enhance motivation by encouraging autonomy and collaborative learning among readers (Merga, 2015). Social interactions were identified as significant motivators when aligned with students’ personal and cultural interests (Schreuder & Savitz, 2020).

The review highlights the importance of further research on diverse and inclusive reading opportunities and the need for more qualitative studies on reading motivation. Embracing humanizing strategies for reading instruction that prioritize student agency are all practical implications. Moreover, teachers can encourage their students to engage with challenging social issues by creating inclusive classrooms that adjust to adolescents’ interests. This motivates them to cultivate lifelong reading habits.

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# Fostering Agency through Feedback: A Critical Discourse Analysis in 11th Grade Special Education English Class

Justine Rovin

This study critically examines the nature of teacher feedback and its impact on fostering student agency versus reinforcing power imbalances within an 11th-grade special education English classroom. The research argues that while suggestive feedback promotes student reflection and autonomy, its effectiveness is contingent on students' feedback literacy, an often overlooked factor.

Guided by Fairclough’s (1989) Three-Dimensional Framework, this study focuses on two randomly selected essays written by high school students. Teacher feedback comments were analyzed at the micro-level, paying close attention to lexical choices, grammar, syntax, tone, and modality to determine whether feedback was directive (imposing solutions) or suggestive (encouraging student-driven revisions). The analysis also explored broader implications for equitable feedback practices in education.

Findings indicate that suggestive feedback, such as prompts and reflective questions, constitutes the majority of teacher comments, fostering critical thinking and student agency. However, gaps emerged where students struggled to interpret and implement suggestions, highlighting the need for explicit feedback literacy instruction.

The implications of this research emphasize the importance of feedback practices that empower students by promoting dialogue, equity, and self-regulation, particularly for marginalized learners in inclusive classrooms. These findings align with the conference theme, "Education in the 21st Century: Designing a More Inclusive Future," by advocating for pedagogical strategies that reduce hierarchical dynamics and support diverse student needs through responsive, dialogic feedback.

# Generative AI with RAG vs. Peer Review: A New Frontier for Assessment in Higher Education

Akash Saini

As educational institutions grapple with the challenge of delivering timely, personalized, and actionable feedback at scale, the potential of Artificial Intelligence (AI) to transform assessment and feedback processes is becoming increasingly evident. This study explores how generative AI, specifically GPT-4 augmented with Retrieval-augmented Generation (RAG), can enhance feedback systems in higher education, particularly for graduate students. In our case, RAG leverages a 35-million-word vector database, which includes students' work, instructor writings, academic publications, and other authoritative sources, to retrieve targeted information that allows the AI to generate more accurate, relevant, and contextually aware feedback. The primary research goal is to assess the effectiveness of AI-generated feedback in conjunction with traditional peer review processes. Conducted over the 2024 academic year at a U.S.-based university, through an exploratory design, we gathered quantitative data on multiple dimensions of feedback efficacy, including quality, usefulness, and actionability, as well as feedback classification factors such as task constraints, conceptual and procedural knowledge, error identification, and metacognitive insights. Our findings demonstrate that AI-generated feedback consistently outperforms peer feedback across all categories, revealing the capacity of AI to not only complement but surpass traditional methods. These results signal a potential paradigm shift in higher education, advocating for the integration of AI-augmented feedback systems to enhance student learning and formative assessment. This study contributes to the ongoing discourse on generative AI in education, offering practical insights for educators and policymakers on optimizing feedback practices and integrating AI with human expertise in feedback mechanisms.

In the context of the conference theme, "Education in the 21st Century: Designing a More Inclusive Future," this study underscores the transformative potential of generative AI to create more personalized, scalable, and efficient feedback systems that can be tailored to individual student needs, thereby supporting a more inclusive and effective learning environment for students.

# How Institutional Messaging Shapes Inequity: A Study of the OEAI Website

Minjoo Chong

The Oral English Assessment Interview (OEAI) at the University of Illinois Urbana-Champaign plays a pivotal role in determining whether non-native English-speaking graduate students are eligible for teaching assistant positions. While the test aims to ensure adequate English proficiency for effective classroom communication, its design and implementation may inadvertently reinforce structural inequalities. This study investigates inequities embedded within the OEAI process, focusing on its institutional messaging.

This research addresses a key question: How does the OEAI website emphasize certain information while omitting or downplaying other details? The analysis examines linguistic strategies, tone, rhetorical emphasis, and visual elements to uncover how these features shape students’ understanding of the test's necessity, preparation, and assessment process. By identifying patterns of inclusion and exclusion, the study seeks to reveal how seemingly neutral communication may subtly contribute to inequitable outcomes. Non-native English speakers often face additional barriers to voicing their concerns, which risks further obscuring issues of inequity; this underscores the critical importance of this research in bringing these hidden challenges to light.

Preliminary findings indicate that the OEAI website omits critical information, such as the fact that students cannot choose or request changes to their test schedule. This lack of flexibility disproportionately affects students with test anxiety or competing obligations, denying them the ability to select a testing environment that supports their comfort and performance. Additionally, the qualifications of examiners are not clearly outlined, creating uncertainty about the assessment process. While the website adopts a neutral tone, its language enforces a rigid structure that discourages student engagement, autonomy, and trust. These factors potentially perpetuate inequities by assuming all students have equal access to resources and understanding of the system.

This study highlights how institutional communications, even when appearing objective, can perpetuate inequitable outcomes for non-native English-speaking graduate students. Anticipated findings include identifying further discursive patterns that reflect systemic inequities and proposing actionable recommendations for more inclusive and transparent practices. By critically examining these subtle inequities, this research aims to advocate for more comprehensive and equitable language assessment systems. Ultimately, it aligns with the conference theme, “Education in the 21st Century: Designing a More Inclusive Future,” by offering insights to foster equity and accessibility for diverse student populations in higher education.

# Integrating Multiple Ways of Knowing and Sustainability into Co-Designed Science Curriculum Units

Julia Poel, Nicholas Leonardi

As teachers work to implement the Next Generation Science Standards (NGSS) and create equitable science learning environments, they have been challenged to take a three-dimensional approach to science learning and expand what counts as science (National Academies of Sciences, Engineering, and Medicine, 2022). One way teachers can begin to address these challenges is to support students in navigating Multiple Ways of Knowing (MWK) and sustainability issues (Bang & Medin, 2010; Marouli, 2021). Our research addresses the following question: How do professional learning participants integrate Multiple Ways of Knowing (MWK) and sustainability concepts in co-designed science units while engaging in a structured brainstorming activity during a professional learning institute?

Authors held a four-day professional learning institute during June 2024 to co-design units. Professional learning participants, which included K-12 teachers and science and education graduate students, engaged in activities designed to support them in making connections between the science graduate students’ research, NGSS, MWK, and sustainability as part of the co-design. This study’s data was selected by identifying key artifacts (e.g. audio, collective and individual artifacts) of a brainstorming activity focused on integrating MWK and sustainability in curriculum units. The Authors completed thematic analysis (Braun & Clarke, 2006) of identified moments from audio transcripts and related artifacts during the brainstorming activity to focus on how participants integrated MWK and sustainability in their units.

We identified four themes for how participants integrated MWK and sustainability in their curriculum units, which consisted of design features that: (1) allow students to bring in MWK (2) allow teachers to bring in MWK (3) allow students to bring in sustainability and (4) allow teachers to bring in sustainability. Further, we found that the integration of MWK and sustainability was most successful when the design features in the unit created opportunities for both students and teachers to bring in MWK and sustainability. Professional learning facilitators should consider how professional learning activities can be designed to support teachers in navigating both MWK and sustainability with their students in their instruction and help them move beyond the NGSS.

# International Graduate Students’ Perspectives on Sense of Belonging in Leisure

Kshitij Tewari

Previous research on international graduate students (IGS) focuses primarily on the associations of a sense of belonging (SB) to increased academic engagement, enjoyment, and motivation. Contrarily, this study aimed to explore IGSs’ SB in leisure spaces by addressing the following questions: (a) How do IGS’ leisure experiences change after migrating to the US? Furthermore, (b) How does the orientation of IGS towards leisure spaces post-immigration impact their SB? This study relates to the conference theme because IGS form a large share of tertiary students, and their SB affects their inclusivity significantly. We highlight how leisure experiences relate to IGS’ life-systems and propose a new framework for studying SB amongst IGS.

Methods

This research employed an intersectionality lens to examine the experiences of five IGS from diverse nationalities enrolled in a doctoral program at a Midwestern US university. Intersectionality enabled a critical assessment of our privileges and marginalizations and their interaction with our SB in leisure spaces. Using autoethnographic vignettes, we ensured trustworthiness by iteratively revisiting and revising the vignettes based on group feedback and discussion.

Results

Three themes were identified from the vignettes and collective reflexive exercise: 1) Social Hierarchies in Leisure Spaces, 2) Situated Safety, and 3) Availability of Leisure Opportunities. While Author#1’s fear of social stratification before arriving in the US faded after arriving, he wrote: “…I never feel like an odd man out as there are always people from every ethnicity and culture present.” Author#2, on the other hand, noted social hierarchies in leisure spaces and presented a contrasting view of gender and how multiple identities intersect to transform meanings and experiences. Author#2 wrote: “…I have modified my outer looks to not draw attention to myself in public spaces. Going under the radar has been a protection mechanism….”

Discussion and Conclusion

This study sheds light on the underexplored leisure experiences and SB of IGS, emphasizing the role of leisure educators and university administration in facilitating their cultural transition to help them ‘belong,’ thereby enhancing their well-being. It challenges the homogenization of international students, revealing the diversity of their experiences. The authors’ varied backgrounds illustrate how cultural differences may compel IGS to ‘integrate’ rather than ‘belong,’ potentially disconnecting them from their culture. The study’s novelty lies in reconceptualizing the intersectional ecological model (Levine & Breshears, 2019) for IGS research, wherein intersectionality informs the authors’ reflexivity and positionality in autoethnography, and the ecological model contextualizes their experiences and SB.

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# "Just Fumbling Through It": Exploring First-Hand Perspectives of Diabetes and Exercise

Annalisa Murphy

Type 1 Diabetes (T1D) is a complex chronic illness that can be difficult to manage due to the need to understand a variety of different factors that can impact blood glucose levels and how these factors interact with each other. The understanding and intersections of these factors are further complicated when engaging in exercise. We wanted to explore how people living with T1D learn to manage their condition and where they feel gaps in their knowledge exist. We surveyed 188 people with T1D about their learning experiences, including questions related to their learning about exercise. Many participants pointed to trial and error as an important process in their learning about exercise and wish that they had learned and been supported in doing so sooner. Most participants wanted to learn more about their diabetes while exercising, and despite exercising consistently, do not feel that they have all the knowledge they need in this area. The current materials, coaches, and consultants available to help support people living with T1D are not adequately supporting them to navigate the fitness landscape. To help people with T1D learn to make management decisions with confidence, informal instruction is needed, and technology-enhanced learning (such as simulations) could provide a unique solution to support people with T1D to engage in the trial-and-error process needed to learn about exercise safely while addressing management knowledge gaps. The results of this survey point to a need for developing informal learning technology for diabetes education, working towards an Intentional Technology for Designing a More Inclusive Future.

# Language and Legality: The Role of English in Shaping Mexican American Citizenship

Sylvia Rosillo

This paper explores the intersection of language, legality, and citizenship in shaping the experiences of Mexican Americans in the United States, focusing on the historical role of English proficiency as a criterion for naturalization and civic inclusion. Through a historiographical approach, it examines key legal frameworks, including the Treaty of Guadalupe Hidalgo and the Naturalization Act of 1906, which institutionalized racial qualifications and linguistic assimilation as prerequisites for citizenship. The study highlights how courts wielded discretionary power to define racial identity, as seen in the landmark case In re Rodriguez, where racialized perceptions of whiteness and language proficiency were pivotal in determining eligibility for naturalization.

The paper delves into the Americanization movement’s influence on educational policies, particularly the implementation of English-only curricula that sought to erase minority languages and cultures. Schools became battlegrounds for enforcing cultural conformity, perpetuating stereotypes that framed Mexican Americans as unfit for citizenship. Drawing from government bulletins and archival records, the study underscores how these policies reflected a broader agenda of cultural domination and racial hierarchy.

By tracing the historical evolution of these exclusionary practices, the research reveals the enduring impact of language policies on Mexican-American cultural identity and civic participation. The findings contribute to a deeper understanding of the systemic inequities embedded in legal and educational institutions, offering critical insights into the contemporary struggles for bilingual education and linguistic equity. This study emphasizes the need to challenge the legacy of linguistic assimilation in shaping notions of citizenship and belonging.

Research Questions:

How did legal frameworks like the Treaty of Guadalupe Hidalgo and the Naturalization Act of 1906 racialize citizenship for Mexican Americans?

What role did educational institutions play in enforcing language assimilation and shaping civic identity under the Americanization movement?

The primary sources used throughout this paper include the Treaty of Guadalupe Hidalgo, Naturalization Act of 1906, government publications such as the Department of Interior's “State Americanizaton” bulletin, and court ruling In re Rodriguez.

# Methodology of Systematic Reviews in Educational Research

Ruiping Huang

Systematic reviews are characterized by their strict adherence to scientific principles, rigorous methodologies, and a transparent, replicable approach aimed at minimizing errors that could bias results. However, comprehensive guidance for conducting systematic reviews in education and social sciences (ESS) is limited. To address this, we reviewed methodological papers on systematic reviews and formulated a clear process.

We included English studies that provide guidance on the methodology and process of systematic reviews across various disciplines. Our search was primarily conducted using Google Scholar with no date restrictions, utilizing keywords related to the entire process and each step of systematic reviews (e.g., "methodology of systematic review," "research question," "data extraction"). Additionally, we employed forward and backward snowball searching to identify further relevant papers. We reviewed methodological papers identified to formulate the systematic review process and collected additional details from other methodological papers related to each specific step.

This review summarizes the systematic review process in ESS into four main phases: planning, selection, extraction, and reporting. Each phase includes detailed steps, practical strategies, and typical examples. Key steps include formulating research questions, developing protocols, managing data, conducting searches and screenings, performing quality assessments and data extraction, synthesizing and analyzing data, reporting and interpretation of findings, and considering limitations.

By clarifying the process and providing practical tools, this study offers a step-by-step guide for researchers to conduct high-quality systematic reviews, supporting evidence-based decision-making in education. It aligns with the theme of Education in the 21st Century: Designing a More Inclusive Future by addressing the methodological barriers that hinder systematic reviews in education and social sciences. By offering a structured, accessible framework tailored to these fields, this study empowers researchers and educators to effectively conduct systematic reviews in education. The framework emphasizes transparency and practicality, enabling equitable participation in evidence synthesis. By focusing on inclusivity in research design and execution, this approach supports the development of evidence-based solutions that address the diverse needs of learners and educational communities. Ultimately, this work contributes to a more inclusive, data-informed educational landscape, advancing equity and innovation in the 21st century.

# Multiplying the ‘Multiplicador’: A Liberatory Learning Framework for Digital Transformation

Armando Jose Torres

This community-led research aims to support favela community development by empowering favela community mobilizers (‘multiplicadores’) through a digital empowerment course. This research hypothesizes that the liberatory pedagogical approach will positively impact self and community empowerment, increasing digital literacy, and promoting stakeholder solidarity and collaboration. The purpose of this study is to effectively empower, build capacity, and support communities of practice to co-create and decolonize epistemological and technological production as a Digital Transformation for Development (DX4D) strategy to advance cognitive and social justice. This study uses an iterative and collaborative Design-based Implementation Research (DBIR) approach through a single case study design and decolonizing critical theory to implement, evaluate, and scale a digital empowerment course for sustainable, digital transformation. The research approach, the theory, the learning design work together to address a gap in DX4D literature by identifying transformational digital practices and lessons between similar development contexts to support and empower communities of practice. The iterative and collaborative approach of DBIR provides a systematic approach towards co-developing a liberatory learning framework for digital transformation for community mobilization as a scalable and sustainable development strategy in similar contexts within LMICs. Future research will build on the findings to test and validate this framework for digital transformation for sustainable community development in LMICs.

# Peer Reading Group & Dialogue as an Approach to “Designing a More Inclusive Future”: A Problem-Posing Symposium

Nathan Tanner, Chris Getowicz, Ini Periodi, Ashley Dawson, Raul Figueroa

Considering that “true reflection leads to action” (Freire, 1996, p. 48), this session resists conference imperatives for presenters to bank knowledge into audience members and instead share reflections to generate dialogue. As a complete conference session, we seek to ask ourselves and our “audience” (e.g., session participants and interlocutors), as Freire does, whether “education all over the world [is] generating an experience of creativity or the conquering experience of repetition?” This symposium seeks to utilize problem-posing to generate a dialogic session between the investigators listed as co-presenters, and the “audience” who attend, working together as coinvestigators. Each investigator affiliated with this symposium, or complete conference session, is prepared with a series of questions developed in connection with our summer 2024 reading group and dialogue, and in relation to our own social positions.

In the summer of 2024, a group of graduate student peers formed a reading group to discuss Paulo Freire’s Pedagogy of the Oppressed (1996). Comprised of graduate students from a diverse background of class, caste, sex, gender, race, religion, and national origin, the group also featured participants from different educational backgrounds, institutions, and academic or intellectual traditions. Freire reminds us we are, as incomplete beings, “conditioned by a concrete existential situation” and “submerged” in perceptions shaped by a “reality of oppression” (Freire, 1996, p. 27). We undertook the task of reading the word of Freire and the world around us.

We intend for this problem-posing session to grapple critically with some shortcomings of Pedagogy of the Oppressed regarding race, sex, gender, and the environment for example (Corman, 2011; Haymes, 2002; McLaren, 1999), while also seeing, as bell hooks did, that these “contradictions are embraced as part of the learning process, part of what one struggles to change,” (hooks, 1996, p. 56). As graduate student educators occupying particular positions in the academy as teachers whose students are future teachers, we recognize that we “have no special immunity” to the current conjunctures of social, political, economic, and environmental crises affecting the world (McClaren, 1996, p. 152). We hope to engage others as coinvestigators absent of academic standards of measurement or assessment to dialogue about “designing a more inclusive future.”

# Policy Brief: Federal Financial Aid Challenges for Degree-Seeking Undergraduates with Long-Term Disabilities

Kelly Searsmith

The majority of U. S. undergraduate college students rely on student financial aid to afford college, as many as 72% in 2019–2020 (NPSAS, 2023). Student financial aid is especially important for students with disabilities (SWD), as the rate of poverty for their households is higher on average (24.2%) than that of students with no reported disabilities (SND, 17.%), as reported in 2019 (Cheng & Shaewitz, 2021). Moreover, the costs of living and attending college are higher for SWD (Perlow et al., 2021) Yet, SWD face special challenges in securing and maintaining financial aid of all types. Federal student financial aid serves as an important site for policy reforms to address these challenges because of its widespread use. In 2019–2020, slightly more SWD (58%) received Title IV financial aid than SND (54%). Thus, this policy brief focuses on the challenges SWD face in accessing and maintaining federal financial student aid. The brief provides an analysis of challenges by aid types (grants: Pell, FSEOG, and TEACH), federal work-study, and federal student loans) and processes (ADA/Section 504 v HEA on Reduced Course Load, Satisfactory Academic Progress, FAFSA on Disability and Post-Award Adjustments, Cost of Attendance and Disability-Related Expenses, and Coordinating Federal and State Student Aid). Based on these challenges, the brief presents policy alternatives, including currently proposed federal legislation, and concludes with three priorities for policy reform.

# Prepared to Collaborate: The State of Principal Preparation and School Counseling in Illinois

Jessica Mulder

School counselors play a critical role in the academic, social-emotional, and postsecondary success of students. In order for school counselors to be effective in these roles, school principals need to understand what school counselors do, and how to best support them. The purpose of this explanatory sequential mixed methods study is to understand the reasons behind Illinois Principal Preparation Programs' decisions to include or exclude content on school counseling and the ASCA National Model within their curriculum. The study is investigating the following research questions: How, if at all, are Principal Preparation Programs within Illinois providing specific preparation for principals to work with school counselors? What are the reasons Principal Preparation Programs are choosing to include or exclude specific preparation for principals to work with school counselors? To what degree do Principal Preparation Programs’ school counselor content align to the ASCA National Model? Sixteen of the twenty three ISBE approved Illinois Principal Preparation Programs have been surveyed to determine if they include information on school counseling and/or the ASCA model in their curriculum. Follow-up interviews were conducted with four program directors (two whose schools do include school counseling and two whose schools do not) to better understand the reasons for including/excluding school counseling content in the curriculum. Initial analysis indicates that school counseling may not be included at schools because it isn’t required by the ISBE code that outlines requirements for Principal Preparation Programs. It seems that schools that do include content are including it as part of MTSS curriculum and student support services. Initial analysis also seems to indicate that schools who have a school counseling program and/or have former school counselors in their Principal Preparation faculty are more likely to include school counseling content in their curriculum. Implications for this study may align with this conference's sub-theme of Critically Examining Policy for an Exclusive Future because the universal inclusion of School Counseling in Principal Preparation curriculum in Illinois may only be possible through advocacy and policy change at the State Level because each school interviewed viewed ISBE policy of the backbone of their curriculum and content.

# Preparing Educational Leaders to be "Fierce Advocates" for Equity

Leslie Ellis

Demographics of elementary and secondary students constantly change, creating a dynamic landscape of opportunities and challenges in our K-12 schools. Educational leaders encounter bias, racism, and inequities in their systems, their buildings, and their communities daily. Preparing educational administrators to lead as change agents in issues of race and equity is essential to a well-functioning school system that serves all of its diverse students and families (Brown, 2004; Dickens et al., 2021; Diem et al., 2024; Diem & Welton, 2021; Edeburn et al., 2023). Leadership preparation programs that prioritize social justice and equity proactively address cultural responsiveness and application of theory (Dickens et al., 2021; Gooden et al., 2018; Grissom et al., 2021; Leggett et al., 2023; Leggett & Smith, 2022; Miller & Martin, 2015; Rasmussen & Raskin, 2023). What happens when administrators enact their preparation in their schools and communities is less clear.

This qualitative study explores how educational administrators describe the practical ways they implement the knowledge and skills they acquired during their preparation programs. We conducted focus groups with graduates of an educational leadership program in a university with an expressed commitment to equity and social justice. Focus group participants were acting as administrators in their PK-12 school districts. We asked participants to describe how their educational leadership programs prepared them to lead their schools, districts, and communities in racial equity issues. Analysis is in progress and will be based on elements of anti-racist preparation frameworks. Implications are expected to provide insight into the practical application of their preparation and the ways their preparation advance racial equity.

This paper addresses the theme Diverse and Innovative Perspectives on Education in the 21st Century. In understanding how school administrators use their leadership program preparation to advance equity, preparation programs gain insight into the curriculum and experiences needed to prepare equity-focused administrators. PK-12 schools also gain insight into supports administrators need to bring equitable experiences to all children in their schools.

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# Project Based Learning Through Translanguaging: The Yew-Chung Approach to Integrating Multilingualism in a Project Based Primary Classroom.

Angelica Taylor, Zhiyue Lu

This study explores teachers' perceptions of multilingualism and the PBL approach to learning in an International Primary Charter school in Hong Kong, China. Yew Chung International School is a unique system of schools that educates children from infancy through secondary school in Hong Kong, Mainland China, the United States, and the United Kingdom. The school incorporates Chinese values rooted in Confucius' philosophy with Western educational pedagogies, such as progressivism, that promote child agency, democracy, multilingualism, and global citizenship, resulting in high-quality practice (Smith et.al, 2023). The guiding research question for this project investigates how teachers support project-based pedagogies throughout the multilingual curricula. This presentation will discuss preliminary findings of the strategies used in a Year 1 (5-year-old) level classroom and identifies adaptation challenges in implementation.

This instrumental case study (Stake, 1995) was conducted over two weeks at the primary level of YCIS Hong Kong. Data collection involved multiple sources, including 1,012 hours of classroom observations and 10 teacher interviews ranging from 35 minutes to 1 hour for each participant. The data were analyzed using thematic analysis to identify patterns in teaching practices and multilingual approaches.

In this study, teachers mainly played a central role in the guiding and planning of PBL instruction for Year 1 students. Teachers and students did several projects per year, each allowing playful investigation of students. The multilingual approach to learning created a space for children to use translanguaging in their academic and social settings (Garcia et. al, 2017). Children also received academic support through various co-teaching models (Honigsfeld & Nordmeyer, 2020; DeVoss, 2023). Translanguaging in the learning environment offered students the opportunity to engage in their PBL projects, teachers and peers using their native language and English for learning (Wei, 2011).

Our preliminary findings suggest that while YCIS strives to provide consistent support for multilingualism in the classroom, the model relies on proper staffing of both English and Chinese speaking teachers in the classroom. It also underscores the significance of ongoing training and professional development for teachers, particularly in addressing the challenges of PBL implementation and standards comprehension. Such training initiatives are crucial for enhancing teachers' proficiency in applying PBL effectively within the evolving educational environment in the future.

Keywords: International Education, Primary Education, Multilingual, Project-Based Learning, Translanguaging, Co-teaching Models

# Qualifying the Gesture-Eliciting Interventions that Promote Mathematical Learning: A Systematic Literature Review

Tiffany Reyes Denis

Gestures serve as a powerful and inclusive tool to communicate and build knowledge (Novack & Goldin-Meadow, 2017). Their non-verbal, bodily format transcends existing traditional and highly symbolic formats of learning (predominantly in STEM) making the learning experience more accessible for students with varying backgrounds and skills. But what are the various gesture elicitations and scaffolding that optimally support mathematical learning? This review explores the different types of gesture elicitations and scaffolding and their mathematical learning outcome. Following PRISMA, empirical quantitative and qualitative published research from the last 15 years were retrieved resulting in 28 studies that were tested for quality using MMAT (Hong et al., 2018), analyzed, and coded to answer the research question. The findings show that gestures elicitations include mimicry (i.e., instructor-modeled hand movements that students observed and reproduced) and tasks where students had to perform cued hand movements to achieve a given objective that was implicitly or explicitly connected to mathematical ideas. The instructions to reproduce gestures were either textual or verbal and involved a variety of mathematical topics but predominantly geometry and arithmetic. Across studies with both elicitations, concept-congruent gesture production generally led to enhanced learning. Mimicking instructors’ arm movements was predominant in early grades while cued hand movement was more frequently observed in secondary school through college. Most mimicking interventions and all gesture-cueing interventions promoted mathematical learning across topics. Aspects of the interventions such as the learning phase, the format of instruction, and individual differences were further analyzed in unsuccessful interventions to provide nuanced insight into the gesture elicitation interventions that promoted mathematical learning. Gestures have the power to help students overcome struggles in understanding complex mathematical ideas. For this potential to be exploited, there is a need for a nuanced understanding of how to design learning experiences that support learning. The results of this review shed light on understanding the what, when, which gesture elicitations, how they impact mathematical learning, and for whom. This insight helps bring the benefits of gestures into classroom implementation to make learning experiences more effective, accessible, and inclusive for all students.

# Race, History, Policy: Corporal Punishment of Schools in American South

Gariel Pierce

Corporal punishment (CP) is formally known as a discipline method where a supervising adult inflicts pain on a child due to inappropriate language or unacceptable behavior. Today, seventeen states, predominantly located in the South, legalize this form of discipline. This research project seeks to play a role in ending corporal punishment in American schools while answering the questions: How has race influenced the use of corporal punishment in public schools? In what ways have historical practices and policies influenced the use of corporal punishment in states that permit corporal punishment today? The race of students that this project focuses on is Black students.

The methodology used for this research project is categorized as critical historical and interpretative research. The essential questions within this research project will be answered through the critical lens of Critical Race Theory (CRT) and Critical Discourse Analysis (CDA). This project focuses on the South – specifically the states of Mississippi, Alabama, Arkansas, and Texas. Historical archives of legislatures from each state after the Brown v. Board of Education (1954) ruling and current corporal punishment policies of each state are used. Contemporary data, statistics, and various secondary sources make up this project.

The results of this project found that Black students and students with disabilities are corporally punished the most, while also finding how the historical practice of segregation and process of desegregation influences corporal punishment in schools today. The regulations of CP were discovered. The author concludes by sharing the start of corporal punishment’s story: Ingraham vs. Wright (1977). This research is important because it can help create positive experiences for Black students' in the public education system. It also unearths CP’s connection to the school to prison nexus and is the start of a significant project on education history and policy.

This historical research project connects to the conference theme of “Education in the 21st Century: Designing a More Inclusive Future” because it explores race, historical practices, and policies of corporal punishment – to emphasize the need for more holistic forms of discipline in public education. The current corporal punishment policies in Mississippi, Alabama, Arkansas, and Texas are critically examined to advocate for discipline policies that prohibit this form of discipline. If thirty three states have stopped this form of punishment, the last seventeen can – and this research seeks to contribute to this important topic of education.

# Redefining Disability in Adult Learning: Toward Inclusive and Transformative Educational Practices

Jeongsan Hwang

Disability remains an underexplored topic in adult learning and education (ALE), despite affecting 16.7% of the global population and 13% of U.S. residents (UNESCO UIL, 2022; WHO, 2023). This study addresses this gap by analyzing how disability is portrayed in ALE literature through three theoretical models: medical, social, and interactional. The research investigates how disability is conceptualized in adult learning and education (ALE), the methodologies and theories employed, and the implications for fostering inclusive educational environments.

The study employs a narrative literature review, focusing on 15 articles published in Adult Education Quarterly, Adult Learning, and Journal of Transformative Education, all of which are published by the American Association of Adult and Continuing Education (AAACE). Articles were selected based on their focus on disability and adherence to rigorous inclusion criteria. The analysis categorized them using predefined criteria, including research type, methodology, learning context, portrayal of disability, and the application of adult learning theories. The review reveals that nearly half (47%) of the studies utilized qualitative methodologies, focusing on phenomenology, narrative inquiry, and action research, while the remainder comprised conceptual studies. Notably, no articles employed mixed-methods approaches, and only one study used quantitative methods (Lipman, 1957). Regarding learning contexts, most studies addressed informal lifelong learning settings (57%), with fewer focusing on formal higher education contexts (29%).

Findings reveal that while no articles adopt the medical model, 40% employ the social model, framing disability as societal oppression, and 60% utilize the interactional model, emphasizing the lived experiences and agency of individuals within social contexts (Rule & Modipa, 2012; Shakespeare, 2013). Most studies lacked theoretical grounding, with only a few integrating frameworks such as Transformative Learning Theory, which highlights the role of critical reflection and identity transformation (Mezirow, 1990; Bialka et al., 2019).

The research highlights the critical need to integrate disability as a core dimension of diversity in adult learning and education (ALE), alongside race, gender, and class. It emphasizes the importance of individualized approaches to address the unique experiences of learners with disabilities, fostering inclusivity to challenge societal stigmas, enhance self-determination, and support meaningful participation in democratic societies. Aligned with the theme Education in the 21st Century: Designing a More Inclusive Future, the study advocates for equitable educational policies and practices that embrace disability as a vital aspect of inclusivity, promoting social justice and empowering all learners to thrive in diverse environments.

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# Rethinking Feedback: Empowering Human-Centered Design Education with Generative AI

Akash Saini

The purpose of this work is to develop and implement an AI reviewer tool utilizing generative AI (GenAI) to enhance the learning experience in a Human-Centered Design (HCD) course. In this study, we describe how we developed the AI reviewer tool including the design of rubric prompts, aligned with the HCD taxonomy. These prompts are specifically tailored for Retrieval Augmented Generation (RAG) enhanced AI-generated reviews, aiming to improve the quality, consistency, and relevance of feedback provided to students on their design projects. We conducted initial testing of the tool with both instructors and students. Qualitative data were gathered through focus group interviews with students and reflection questions for instructors. While data analysis is ongoing, preliminary responses suggest that both students and instructors viewed the AI-generated feedback as valuable, actionable, and aligned with the course objectives. Students found the feedback to be detailed, specific, and easy to navigate, offering a unique perspective that clarified key design concepts and highlighted areas for improvement. Instructors, on the other hand, valued the AI tool's consistency in delivering comprehensive and thorough feedback. These findings will guide the full implementation of the tool in future courses and offer insights into how integrating GenAI with rubric prompts can positively influence students’ perceptions of AI technologies and improve educational outcomes in HCD curricula.

This research aligns with the conference theme of "Education in the 21st Century: Designing a More Inclusive Future" by demonstrating how AI can support more individualized learning experiences, and improve educational practices, ultimately making education more inclusive and accessible in an increasingly digital world.

# School Variability in Service Delivery Model Provision: Placement Patterns and Resource Allocation for Students with Disabilities

Josefina Senese

Federal regulations mandate that students with disabilities (SWDs) receive special education (SPED) services in the least restrictive environment (ESSA, 2015; IDEA, 2004). Numerous service delivery models (SDMs), that is, different instructional and staffing approaches, allow schools to satisfy federal law (Epler & Ross, 2015; Zigmond, 2003). However, identifying the most suitable setting for each student remains a persistent challenge, as no single model effectively serves all students (Gilmour, 2018; Kaler et al., 2024).

This study uses longitudinal administrative data from Indiana (2011–2012 through 2021–2022) to analyze which schools support students with disabilities in general education, co-taught, pull-out, and self-contained settings. I explore the following research questions: (1) Conditional on student characteristics, do schools vary in their likelihood to place SWDs in certain SDMs? (2) How do schools with varying likelihoods of SDM placement differ regarding student composition and staffing patterns?

To answer the first research question, I predict school effects on SDM placement to then evaluate their dispersion. I employ Backer-Hicks et al. (2024) approach, which adapts teacher value-added techniques to measure school discipline effects. Based on a student’s observed characteristics, as well as year and grade fixed effects, I assess how likely schools are to place them in particular SDM. I break down the student-grade-year residuals into the school effect, annual variation across schools, and student-level idiosyncratic error. To assess their variation, I then create an empirical Bayes shrunken estimate of school effects, adjusting for enrollment. A lack of variability would suggest that schools assign students to SDMs similarly. Conversely, observed variation would indicate differences in how schools provide and allocate SPED services.

To address the second research question, I examine variations in student and staffing characteristics across schools with differing school effects on SDM placements. Specifically, I analyze student body composition, course offerings, teacher experience, qualifications, and demographics. Moreover, I examine whether the estimated school effects on SDM placement are independent of other school quality indicators, including test scores, graduation rates, and college-readiness assessments.

I have obtained the necessary data and am actively conducting analyses. While I do not yet have preliminary results, I am confident I will be well-prepared to present my findings at the Graduate Student Conference in March 2025.

# Socio-cultural theoretical approach to understanding high-school STEM education in rural west-central Illinois

Aparna Kapale

Statement of the Argument: High-school science, technology, engineering, and mathematics (STEM) education in rural west-central Illinois (WCI) is challenged in producing learning outcomes comparable to the national and international stage possibly due to lack of resources, out-of-discipline teaching responsibilities, and school district administration’s outlook on science literacy.

Rationale: This research forms a part of a doctoral dissertation. To deeply understand the factors governing the state of high-school level STEM education in the WCI region a detailed study of the high-school districts’ socio-cultural landscape that focuses on the perspectives and experiences of the influential stakeholders is necessary.

This research hinges on the following research questions:

• RQ1: What resources and opportunities are available to the educators to develop science literacy among high-school students in rural west-central region of Illinois?

• RQ2: What resources are available to the school districts and what sort of opportunities exist at the high-school (9 to 12 grades) level to prepare rural students to pursue STEM careers?

• RQ3: What methods are being employed in the rural school districts in west-central Illinois to meet the national Next Generation Science Standards (NGSS) and math competency by the time of graduation?

Methodology: The research methodology is built upon the concepts of scaffolding (Puntambekar, 2022), and zone of proximal development of Vygotsky’s socio-cultural (John-Steiner & Mahn, 1996; Shabani, 2016; Vygotsky, 1978) theoretical framework and epistemological framework grounded in constructivism (Creswell & Poth, 2023). This research plans to use a qualitative case-study approach (Gerring, 2016; Gustafsson, 2017; Yazan, 2015; Yin, 2018) and will prominently employ semi-structured interviews of the HS-STEM education stakeholders such as teachers, counselors, principals, district superintendents, and regional superintendents along with archival data collected on and from the school districts participating in the study.

Anticipated findings: The qualitative data collected will help identify prominent themes governing the HS-STEM education in rural WCI region that are either specific to the region or are universally applicable to guide further research in this arena.

Implications: The study will identify the existing philosophical stance of the administration on STEM education, best-practices in teaching and administrative procedures, challenges, and growth opportunities within the socio-cultural frameworks prominent in the region. The findings of the study may be broadly applicable to rural high-school across the United States.

Keywords: high-school STEM Education, rural schools, and west-central Illinois.

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# Study abroad before 'Abroad': the Case of Italy

Elena Broscritto

The U.S. higher education system promotes study abroad as an opportunity for students’ personal, academic, and professional growth. While many returnee students report these exposure to a different culture does not guarantee any of these benefits, study abroad practitioners introduced targeted pre-departure interventions to prepare students for their time abroad, maximize it on-site, and incorporate its benefits into their lives upon return (Kubota, 2016; Moreno, 2021; Pasquarelli, 2018). The pre-departure phase is especially relevant for programs in Italy: not only was Italy the most popular destination among U.S.-based students during the academic year 2021–22 (IIE, 2023), but it is the object of romanticization (Moreno, 2024) by students who are often unfamiliar with – and unprepared – to live in Italy besides stereotypical representations promoted by media, travel materials, and word of mouth.

While study abroad practitioners are expected to prepare students prior to departure, limited research investigates the intersection between their roles, program materials, and other pre-departure interventions. This qualitative case study, through the lens of neocolonialism, examines the pre-departure for the Italian study abroad portfolio at a land-grant institution in the Midwestern U.S by focusing on institutional practices used to (re)present the programs, the perspective of study abroad practitioners, and the relationship between the two. Data sources include program materials (brochures, websites, and pre-departure orientation slides) for the twelve programs in the Italian portfolio, along with semi-structured interviews conducted with 10 practitioners employed at the institution. Inductive thematic analysis reveals that program materials promote romanticized and reassuring representations of Italy, which contrast with practitioners’ focus on academic outcomes and decolonization goals.

This tension between the student-facing and the administrative perspectives questions the educational goals and the logistical implementation of pre-departure interventions. This aligns with broader criticism of study abroad as a one-sided process that prioritizes enrollment numbers in self-development, Grand-Tour-like experiences over educational goals and benefits to host communities. While the generalization power of qualitative case studies is limited, these findings call for a broader discussion of pre-departure policies for study abroad programs – in Italy and globally – to ensure that practitioners are equipped with the necessary tools to implement the pre-departure phase, that students receive information tailored to their background and goals, and that the needs of on-site partners are addressed even before students leave the U.S.

# The Operations and Effectiveness of School Hiring Committees

Haeryun Kim

Using school-site hiring committees can improve hiring decisions when screening and selecting applicants by incorporating additional expertise and mitigating biases that might affect individual screeners. However, research on how school hiring committees operate is nearly non-existent. Consequently, we do not know much about which characteristics committee members value and whether candidates with these characteristics have greater hiring probabilities. Additionally, the extent to which committee members agree amongst themselves about candidate quality could matter for the committee’s effectiveness (Martinkova & Goldhaber, 2015).

Based on this motivation, I ask the following research questions.

1. To what extent do hiring committee members agree about the relative rankings of teacher candidates?

2. How are final rankings of candidates related to their strengths and weaknesses as evaluated by the hiring committee?

3. How are the final rankings of candidates related to their hiring probabilities?

I use data from school hiring committees from one medium-sized school district in central Illinois and analyze three data sources: ballots indicating hiring committee members’ rankings of all candidates, handwritten notes from each committee member describing candidates’ strengths and weaknesses, and information on which candidates are ultimately hired. The data sources were collected from candidate searches between 2022 and 2024, including 122 applicants for 30 positions.

My preliminary results suggest the following findings. First, the hiring committees have a high degree of agreement about which candidates are preferable to others (Kendall’s W > .66). This is especially evident in agreement about which single candidate is best. Second, based on the text analysis results, hiring committees seem to prioritize candidates’ certain attitudes toward education (e.g., “professional development,” “zone”) or specific teaching priorities (e.g., “social-emotional learning,” “differentiation”), which are associated with higher candidate ranks. Lastly, candidates who are eventually hired are viewed substantially more favorably by their committees than candidates who are not hired. Ultimately, over half of positions are filled by the committee’s top choice.

To my knowledge, this is the first study to use authentic data from school hiring committees to quantitatively examine the school hiring process, extending previous work, often based on surveys or interviews of school leaders, and deepening our understanding of critical but understudied aspects of school staff hiring practice.

Finally, this study’s collaboration with a local Illinois school district in an era of the high need for qualified school staff aligns with the conference’s theme of integrating local perspectives to create collaborative spaces in education.

# The Relationship Between Exploration Patterns and Science Interest Development in Game-Based Learning Environments

Hyeongjo Kim

Engaging adolescents in science and motivating them to consider STEM careers is increasingly prioritized, particularly through methods that trigger interest. Game-based learning has proven effective in cultivating interest by providing immersive and interactive environments that encourage exploration and inquiry. In these settings, exploration encompasses activities such as information seeking, acquisition, and meaning-making within the game environment. Exploration is critical for fostering interest development as it supports knowledge acquisition. However, the relationship between exploration patterns and interest development remains underexplored. This study investigates the relationship between students’ science interest and their exploration patterns in game-based learning environments, focusing on how initial interest influences exploration and how these patterns affect post-interest levels. Framed within the context of inquiry-based learning, this research positions exploration as a key mechanism for promoting engagement and learning.

The study addresses one primary research question and three sub-questions: How do students' exploration patterns in game-based learning interact with science interests? Sub-questions include: (1) What exploration patterns emerge in game-based learning environments? (2) How do these patterns differ based on students’ initial science interest? (3) How are exploration patterns related to students’ interest development?

This study employs a quantitative approach, utilizing clustering analysis of exploration patterns alongside pre- and post-survey measurements of science interest. Data are collected from a game-based learning environment where students participate in open-world science simulations. To capture exploration patterns, data on students’ science tool use, observations, and position tracking are analyzed. Exploration patterns are categorized using a data-driven clustering approach, informed by a theoretical framework to ensure validity and mitigate risks such as "K-hacking." Surveys measuring science interest are used to examine the interrelationships between exploration behaviors and interest development.

[Anticipated] findings are expected to identify diverse exploration patterns, each linked to varying levels of knowledge acquisition and interest development. Structured, balanced exploration may result in greater knowledge gains and increases in science interest compared to unstructured patterns. These findings offer valuable insights for designing game-based learning environments that accommodate diverse learning styles, fostering both engagement and sustained science interest.

# The Woven Copresence of Students in Transformative Science Teachers' Reflections and Stories

Alejandra Frausto Aceves

Most studies of teacher learning are situated in professional learning spaces. An understudied aspect is the focus of this study: how are student stories taken up and shared by teachers as part of professional learning? Specifically, I employ discourse analysis to interpret micro-level interactions among a collective of teachers in professional conversations about classroom assessment. By examining teachers’ recounting students’ utterances, I seek to understand how absent predecessors contribute to science teachers’ knowledge about learning. The unit of analysis was an extended dialogue from a co-planning institute that was transcribed and coded for direct and indirect voices and stories of students. I build on ideas from Goodwin (2018) to consider the co-presence of students, including through the substrates brought forth or expanded by the teachers. Applying Meretoja’s (2018) work on perspective taking in storytelling, I analyzed if and how science teachers took up perspective-taking as they told stories of effective science classroom assessments. As part of my analysis, I considered 1) rationale for why the utterance was a direct or (and) indirect reference to student voices and 2) reasoning for why (or when) stories with (or about) students could be expansive or enclosing of pedagogical or assessment possibilities.

My findings showed that teachers shared both examples of stories with and stories about students. Stories with students utilized student quotes, recalled common student utterances, or included the teacher as an actor in the story, whether directly “speaking” to students or carrying out a task. Stories about students explained or explored student experiences in ways that did not include student quotes or utterances, and instead focused on general descriptions of what students did. By contributing a theory of co-presence that notices student voices in teacher stories, this paper adds complexity to how the field understands co-design as a form of solidarity (Philip et al, 2022). Thinking and reflecting about the stories that teachers tell about and with students raises a series of questions for curriculum designers and teachers to consider: Who or what are we imagining when we take a perspective? Which students do we learn from? Whose ideas and utterances do we hold close and whose do we reject? And how might that impact our ability to imagine, understand, and learn with them? These sorts of questions preclude designing for ‘typical,’ ‘ideal,’ or ‘diverse’ students and push towards teachers co-designing for their actual students.

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# To support supervisors, maybe I don't need another meeting (Maya) Enhancing Service Coordination in Early Intervention: The Impact of Supportive Supervisor Practices

Kelly Fulton-Armer

The Individuals with Disabilities Education Act (IDEA, 2004) governs the Early Intervention (EI) system for families of children aged birth to three with or at risk for developmental delays and disabilities. Within this system, families have a key point of contact who manages all of their evaluations and services, the service coordinator (SC). When a family is identified for EI in Illinois, an SC from their Child and Family Connections (CFC) area contacts them to set up an initial evaluation. This evaluation identifies if the child is eligible under IDEA Part C for services and screens the child to determine the types of services they may need (20 U.S.C. § 303.13). Service coordinators in Illinois are overseen by a Child and Family Connections (CFC) supervisor. The SC is responsible for managing the intake process, but little is known about the CFC supervisor’s role in training and overseeing their SCs. This is alarming given the exorbitant responsibility that falls on an SCs shoulders. SCs are responsible for educating families on their rights, arranging assessments, identifying resources, developing Individualized family service planss, communicating with providers and families, overseeing the implementation of services, monitoring service outcomes, and supporting transition planning (Fulton et al., 2024; Nolan et al., 2005; Romer & Umbreit, 1998). The purpose of this qualitative study was to offer an in-depth look at the role of CFC supervisors as they support SCs. Seven CFC supervisors from around the state were interviewed. Supervisors characterized their role around SC support and having countless responsibilities. They discussed the traits, motivators, and communication skills that impact their effectiveness. They also explained how their decision-making was impacted by their training, supports, and problem-solving experiences. Implications for research and practice will be discussed.

# Unprompted Sparks: Empowering Collaboration in 21st-Century CSCL Environments

Robin Jephthah Rajarathinam

In 21st-century computer-supported collaborative learning (CSCL) environments, understanding how students proactively shape group interactions is essential for fostering equitable, inclusive, and effective collaboration. This study introduces and refines the concept of collaborative initiative, defined as unprompted, voluntary contributions intended to enhance peer engagement and problem-solving processes. While prior research recognizes that taking initiative can be important for group work, it often overlooks the spontaneous, dialogic, and exploratory nature of these contributions.

This study aims to identify and categorize types of collaborative initiative that students demonstrate during collaborative problem-solving (CPS) tasks. Specifically, it asks: What are the different types of collaborative initiatives exhibited by students during CPS in CSCL environments? Twelve university students, paired into six dyads, participated in a series of tasks using the [blinded] simulation—an immersive augmented reality environment designed to teach concepts of planetary motion. Audio transcripts from their interactions were qualitatively analyzed using an iterative coding process grounded in CPS and mixed-initiative literature.

The analysis revealed a refined model of collaborative initiative encompassing six sub-facets. These were categorized into two domains—task-related initiatives (e.g., proposing strategies, sharing divergent ideas) and dialogue-based initiatives (e.g., inviting contributions, seeking clarification). These sub-facets highlight how students proactively shape the trajectory of group inquiry and maintain engagement.

By illuminating the nuanced ways students take the lead without external prompting, the findings underscore the importance of fostering opportunities for students to propose, question, experiment, and include one another’s perspectives. Such behaviors can enhance mutual understanding, inclusivity, and the quality of joint problem-solving. Educators and designers of CSCL environments can use these insights to create instruction and technologies that encourage students to bring forward their ideas, adapt their strategies, and solicit peer input, thereby supporting more inclusive forms of participation.

This research directly aligns with the conference theme by showing how unprompted, collaborative initiatives can advance more inclusive learning experiences. Empowering all students to proactively contribute can help ensure that the benefits of CSCL—collective reasoning, shared knowledge construction, and mutual respect—are accessible to a diverse range of learners, thus designing a more inclusive educational future.

# Why do early childhood teachers leave the field?

Lucie Cyliax

Teacher attrition poses a significant problem for early childhood education (ECE) settings, which include schools and daycares serving students birth through age 8. With nearly 7.3 million children in childcare (Coffey, 2020) ECE teacher attrition has the potential to cause major disruptions for working parents and the economy as a whole. Additionally, attrition contributes to low program quality, poor student outcomes, and increased stress on remaining staff (Hale-Jinks et al., 2006; Totenhagen et al., 2015). Thus, improving early childhood teacher retention would benefit both young children and working parents. Researchers usually look at ECE teacher attrition by identifying setting factors or examining individual perspectives towards attrition. However, these perspectives depoliticize ECE attrition by ignoring the social divisions and hierarchies which organize labor according to gender and race, overlooking potential drivers of attrition (Weeks, 2020). Since 96.7% of ECE teachers are female (Coffey, 2020), researchers should consider ways in which ECE workplaces enact gender norms and expectations, and how these factors might influence teachers’ decisions to leave the field.

In line with this reasoning, I am conducting a qualitative study using a Marxist feminist theoretical framework to answer the following questions: What goals do female and nonbinary ECE teachers have when leaving the profession? Additionally, what (if any) shifts in performance of identity occur for early childhood educators who leave their teaching positions in ECE settings? To answer these questions, I interviewed four former female or nonbinary ECE teachers from preschool/daycare or K-2 elementary settings in the US. Participants were either white or Black. I recorded, transcribed, and de-identified the interviews before using several rounds of inductive coding to determine themes. While coding is still under way, I plan to cross-check preliminary findings with participants for validity. The interviews suggest that teachers may leave the field to protect their time and energy, to assert epistemological beliefs, or to pursue other professional goals. Some teachers express a shift in their ability to stand up for themselves. Once I finalize the study, I anticipate that the findings could point to a need for further study on the relationship between work attrition and resistance to normative expectations in the workplace. If ECE teacher attrition is a form of resistance, policy-makers and activists might use it as a catalyst for building labor solidarities and addressing workplace conditions on a political level. This could improve work conditions for ECE teachers, possibly increasing retention.