

HEC2026

THE 3RD HONOLULU EDUCATION CONFERENCE

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Organized by the International Education for Sustainable Development Alliance (INTESDA)

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INTESDA advances education for sustainable development through capacity building, advocacy and providing a channel for raising awareness and sharing knowledge.

INTESDA, The International Education for Sustainable Development Alliance, is a diverse community of educators, academics and nonprofit professionals founded in 2010, in part, to support the Sustainable Development Global Goals set by the United Nations. We are committed to addressing sustainable development issues through capacity building, advocacy, networking and sharing knowledge.

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The Honolulu Education Conference 2026

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About HEC2026

In the wake of the unprecedented disruptions caused by the COVID-19 pandemic, the global education landscape stands at a crossroads. The pandemic has reshaped the way we think about education. From the rapid transition to online learning to the profound impacts on student mental health, educators and policymakers have grappled with an array of complex issues. This conference provides a unique platform to examine the lessons learned and chart a course for the future.

HEC2026 aims to address many of the most important contemporary themes and questions. For example, what can we learn from the pandemic about the effective use of technology in education? How can we ensure that all students have equal access to quality education, regardless of their socioeconomic background? What strategies can be implemented to support mental health within educational institutions? When considering insights into innovative teaching methods that emerged during the pandemic, how can these approaches enhance the learning experience in a post-COVID world? In the analysis of policy responses at local, national, and international levels, what has worked? What hasn't worked and what can we do better to prepare for future crises?

HEC2026 Peer Review Committee and Proceedings

All submissions were graded using a double blind, peer review process. The abstract was scored using a rubric that assessed areas such as originality, clarity/organization, spelling/grammar and suitability for the event. The proceedings have been published in electronic format and shared with participants. The ISSN Number is 2436-9322.

We would like to thank our readers who volunteered their personal time to review and grade abstract proposals. Our readers included Jo Ann Oravec, PhD, University of Wisconsin, USA; Bob Reuschlein, EdD, Real Economy Institute, USA; William Kittredge, PhD, School of Public Policy, Chiang Mai University, Thailand; Ivan Ledesma, DBA, University of the Philippines, Republic of the Philippines; Dini N Fadillah, MEd, University of Indonesia, Indonesia; Donald Cook, MEd, University of Nagasaki, Japan; and, Harry Carley, MEd Tech, Matsuyama University, Japan.

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HEC2026 Presenter Abstracts by Thematic Area

Administration, Policy and Leadership

201, 215, 219, 222, 227, 231

201 Administration, Policy and Leadership

A Shared Vision of MTSS

The disruptions of the past few years have made one thing clear: building strong, responsive systems in schools takes more than a good plan—it takes shared vision and shared ownership. This interactive workshop will guide participants through a hands-on process for developing and communicating a vision for a Multi-Tiered System of Supports (MTSS) that centers equity, collaboration, and continuous improvement.

Together, we'll explore how to move from individual ideas to collective action by engaging key stakeholders—families, educators, and community members—in authentic dialogue. Participants will reflect on their own “why” for MTSS and learn practical strategies for crafting a vision statement, communicating it clearly, and building buy-in across a school or district. We'll also consider how preconceived notions, diverse perspectives, and communication styles can influence this process—for better or worse.

This session speaks directly to the conference's focus on collaborative learning and lessons from the pandemic, especially in relation to mental health and inclusive practice. When we bring people together to co-create a shared vision, we build systems that are stronger, more sustainable, and better able to support all students.

Julie Schmal, The University of Texas at Austin, USA¹; Jennifer Schnakenberg, The University of Texas at Austin, USA²

215 Administration, Policy and Leadership

Culture Is Not an Accident: Leading Schools Where Educators and Students Thrive in a Post-COVID World

The pandemic reshaped education in ways we are still reckoning with: student disengagement, teacher burnout, and rising mental health concerns are challenges every school is facing. While curriculum and technology matter, they alone cannot solve these issues. The real game-changer is culture—and culture is never created by accident.

This session offers a practical framework for school leaders and educators to intentionally design the culture their schools need most in this new era. Drawing from real-world leadership experiences and the principles outlined in the book *Seen. Heard. Valued.*, participants will explore the LEAD framework:

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- Live Your Values – lead with clarity and authenticity.
- Embrace Your Narrative – harness the power of personal and collective stories to drive belonging.
- Align Your Actions – ensure that daily practices and policies reflect your values.
- Do the Work – create accountability and consistency that sustain change.
- Through engaging stories and actionable strategies, this session will highlight how leaders can:
 - Rebuild trust and morale among staff who feel stretched thin.
 - Strengthen student connection and belonging as the foundation for academic success.
 - Shift from compliance-driven approaches to cultures of authentic engagement.

Participants will leave with concrete tools they can immediately apply to strengthen school culture, retain great teachers, and re-engage students. More importantly, they will walk away with hope and clarity: a reminder that even in the wake of disruption, leaders have the power to create schools where every educator and student can thrive.

Jayne Braida, Chariton Community School District, USA¹

219 Administration, Policy and Leadership

Building Systems that Actually Work: Bridging Compliance and Compassion in Special Education Leadership

Special education leaders walk a constant tightrope between compliance and compassion. One misstep can lead to consequences ranging from burnout to litigation. This session offers a roadmap for transforming compliance-heavy environments into cultures of care and collaboration.

Drawing from real experiences advocating for accessible systems within public and charter schools, I share strategies for aligning legal obligations with human-centered leadership. Topics include designing equitable policies, creating psychological safety for educators, and integrating Universal Design for Learning (UDL) into administrative decision-making.

Participants will engage in scenario-based discussions to identify where compliance practices unintentionally harm both staff and students, exploring how to replace them with systems that empower. By the end, attendees will walk away with tangible leadership tools for cultivating environments where accountability and empathy coexist, and where the spirit of IDEA and ADA truly lives in everyday practice.

Timothy J. Grebeck, KIPP DC Public Schools, USA¹

222 Administration, Policy and Leadership

No Distractions, Just schoolin': Single-Sex Institution As an Approach for Juvenile Justice System Secondary School-aged Black and Brown Male Students

The United States is the leading first-world nation that incarcerates more people in prison or jail than the UK, Russia, Australia, and other recognized first-world nations. To reduce the school to prison pipeline on the secondary school level, there are several approaches to implement like reducing the educational achievement gap. However, secondary schools are experiencing chronic absenteeism, education achievement gaps, and low high school completion rates specifically for marginalized male students which are linked to criminal behavior, resulting in adjudication and incarceration. Remedies for recidivism for this academic sub- group will require an assortment of approaches, one of which is single-sex institutional design commingled with a strength-based mentoring approach under the auspices of a transformational leadership style. This study will examine interviews from educational administrative leaders and secondary sourcing, such as the Bureau of Justice Statistics and the Department of Juvenile Services, and others that indicate recidivism efforts are best utilized differentiated by age and institutional designation to substantiate change in justice-involved or impacted male students.

Holly Fisher-Hickman, Bowie State University, USA¹

227 Administration, Policy and Leadership

Relationship Education at the State Level: Lessons from Utah's 20-Year Statewide Initiative

Over the past two decades, Utah has administered one of the most comprehensive statewide relationship education systems in the United States. This case study examines the development, evolution, and outcomes of Utah's coordinated efforts to strengthen couple, marital, and family relationships through the work of the Utah Marriage Commission and the Healthy Relationships Utah initiative. Together, these entities have advanced a statewide framework for promoting healthy relationship skills across diverse populations, including couples, youth, stepfamilies, and at-risk groups. This presentation highlights how Utah built a sustainable model by integrating research-informed curricula, strategic partnerships, community outreach, and state-level coordination. It also explores how cultural, demographic, and policy characteristics unique to Utah shaped both the opportunities and challenges associated with statewide implementation. Drawing from 20 years of program development, evaluation findings, and community engagement, this case study identifies core lessons that can inform similar efforts in other states or regions.

Key insights include the importance of bipartisan and interagency support, the role of universities in delivering accessible community-based programming, and the value of long-term infrastructure in scaling and sustaining relationship education. Additionally, the case examines how statewide programming can be adapted to changing family structures, shifting cultural expectations, and evolving policy landscapes. Our lessons learned underscore that strengthening individual and family well-being requires not only evidence-based curricula but also stable partnerships, clear leadership, and sustained public investment.

By presenting Utah as a case example, this session provides practical guidance for policymakers, educators, and community leaders seeking to enhance relationship education within their own contexts. This case study aims to contribute to a broader international conversation about how education systems can foster healthier relationships and stronger families.

Brian Higginbotham, Utah State University, USA¹

231 Administration, Policy and Leadership

Potential Impact of Hybrid Project Management Approaches In Higher Education Institutions

The COVID-19 pandemic changed the way the world operates across all industries. Higher education did not escape the impact. It exposed institutions' usually rigid policies and operating models. It called for agility from systems that historically have been very traditional. Institutions that were able to pivot in the midst of disruption and uncertainty did not remain shuttered. They were better positioned to sustain operations and learning during the pandemic. Higher education institutions (HEIs) would stand to gain from the lessons of this disruptive period and permanently adopt aspects of agile project management practices over the long term.

Many HEIs became adaptable by force. In this post-COVID time, it is important to embrace agile project management principles to keep the adaptability muscle strong, should future crises arise. However, some traditional approaches are still needed in the sector, so a combination of the two, hybrid project management, is a more reasonable option. It is more likely that HEIs that employ hybrid project management methodologies to policy, leadership and administration will be more responsive to emerging trends, and thereby more sustainable and digitally ready. HEIs will also be more resilient, especially in the face of big-shock events such as natural disasters or widespread health crises.

This exploratory paper will use a qualitative approach, including document analysis and observations, to examine how hybrid project management approaches can encourage collaborative learning across functional areas to improve curriculum development, policy, leadership and administration within HEIs. This paper aims to contribute a perspective on fostering a more flexible, robust and innovation-oriented learning environment in higher education.

Dayna Smith, The University of the West Indies, Jamaica¹

Artificial Intelligence (AI) in Education
237

237 Artificial Intelligence (AI) in Education

Comparing ChatGPT-Assisted and Human Marking of Student Assignments: A Mixed-Methods Evaluation of Reliability and Feedback Quality

Assessment is a foundational element in education because it determines learners' progress and achievement, and generative artificial intelligence (AI) is rapidly becoming central to contemporary practice. Given their increasing importance, exploring how generative AI and assessment intersect can offer valuable insights for educators. One promising application of generative AI is assisting instructors with assignment marking, but empirical evidence is needed to understand how AI-generated scores and feedback compare with traditional human assessment.

This study investigates the use of ChatGPT to evaluate student assignments at the tertiary level and compares those results with evaluations conducted by a qualified human marker using the same analytic rubric. Employing a comparative mixed-methods design, the research integrates quantitative reliability analysis with qualitative evaluation of feedback quality to systematically examine alignment and divergence between the two marking conditions.

Ten anonymised assignments from an associate-level course were independently marked by ChatGPT guided by a structured prompt and by a human assessor, both using an identical rubric to ensure consistency of criteria. Quantitative analysis focuses on inter-rater agreement using the Intraclass Correlation Coefficient (ICC) to assess the extent to which AI-generated and human scores concur across rubric criteria. Qualitative analysis involves thematic comparison of narrative feedback to evaluate depth, alignment to criteria, and pedagogical usefulness.

Expected outcomes include evidence of the strength of agreement between AI and human marking, identification of scoring patterns across criteria, and insights into the nature of feedback provided by ChatGPT. Results aim to inform discussions on the reliability, practical value, and ethical implications of integrating generative AI into educational assessment practices.

Soyinett Whyte, The University of the West Indies, Jamaica¹

Business Education
241

241 Business Education

Scaling Access to Global Entrepreneurship Education Through Digital Ecosystems

In an era where entrepreneurship drives global economic development, access to high-quality business education remains unequal and fragmented, especially for creators, freelancers, immigrants, and women in emerging digital sectors. This presentation explores how digital ecosystems can bridge this gap by turning individual expertise into scalable educational products that empower others economically and professionally.

Drawing from over \$2 million in revenue generated through online course launches and education-based digital campaigns, this session presents a practical, system-driven framework for building accessible entrepreneurship education at scale. From content creators to consultants and niche experts, we examine how individuals without access to VC funding or academic platforms can build global educational impact through organic digital growth, funnel design, and culturally relevant content.

The talk also highlights the intersection of education, inclusion, and innovation: showing how non-traditional entrepreneurs (including immigrants and women-led teams) are using digital tools to build curriculum, monetize their knowledge, and contribute to local and international economies. Case studies will include cross-border product launches, multilingual content strategies, and platform-based education that integrates marketing psychology, community-building, and behavioral design.

The goal is to reimagine education as a decentralized, practical, and monetizable tool for empowerment and to propose new models for bringing global entrepreneurship education to underserved populations using accessible digital infrastructures.

This session is especially relevant to educators, development practitioners, and entrepreneurship program leaders seeking actionable ways to expand access to business education and economic participation through 21st-century tools.

Yelyzaveta Medviedieva, University of Illinois Urbana-Champaign, USA¹

Culture, Equity and Social Justice
214, 217, 229, 238, 239

214 Culture, Equity and Social Justice

Development of a VR Sysetem for Learning Tsou Indigenous Culture and Local Environments

The Danayigu Valley, located at the southern end of Alishan, Taiwan, is home to the Shanmei Tribe, a community renowned for its rich natural environment and exemplary ecological conservation practices. In the past, the valley's ecosystem suffered from severe damage due to overfishing and pollution. However, through sustained efforts, the Shanmei Tribe has implemented restoration programs for the Formosan landlocked salmon, while also promoting eco-tourism and Indigenous cultural education. By organizing ecological tours, traditional festivals, and hands-on workshops, the Tsou people invite visitors to engage with their cultural heritage and the valley's natural beauty, establishing Danayigu as a significant ecological tourism destination. Virtual reality (VR) creates an immersive three-dimensional environment through computer interfaces and head-mounted displays, enabling users to interact within simulated spaces. This immersive and interactive experience allows learners to feel as though they are situated in real-world contexts, enriched with imagination and creativity. Drones, or unmanned aerial vehicles (UAVs), complete flight missions via remote control or automated systems without requiring direct pilot operation. This study integrates VR and drone technologies to combine Indigenous culture with natural science education in elementary schools. By incorporating drone aerial photography and VR simulation, ecological observation and cultural experience routes were designed. Learners not only observe fish habitats, waterfalls, and bamboo forest ecosystems, but also explore traditional Tsou settlements, rituals, and practices of sustainable resource use. The virtual teaching materials and instructional activities developed in this study aim to strengthen Indigenous students' sense of identity, enhance learning motivation and attitudes, improve practical skills, and deepen scientific understanding. Experimental results demonstrate the potential of VR and drone technologies to enrich learning outcomes, foster environmental and cultural awareness, and reduce educational barriers for Indigenous students in remote or socioeconomically disadvantaged regions.

Wei Yi He, National Tsing Hua University, Institute of Learning Sciences and Technologies, Taiwan¹; Chia-Yu Chiu, National Tsing Hua University, Taiwan²; Tsu-Jen Ding, National Tsing Hua University, Taiwan³; Wernhuar Tarng, National Tsing Hua University, Taiwan⁴

217 Culture, Equity and Social Justice

Lessons in Advocacy from a Neurodivergent Educator: Reframing Inclusion as Collaboration, Not Compliance

Too often, “inclusion” in schools is treated like a checklist; an obligation to be met rather than a shared mission to be lived. This session invites participants to rethink inclusion through the lens of collaboration, advocacy, and lived experience. As a neurodivergent educator and author, I explore what happens when compliance-driven systems collide with human needs; and how educators can reclaim inclusion as a creative, community-centered process.

Participants will engage in short reflection exercises and case studies drawn from real-world scenarios, including challenges faced by both special education teachers and general educators in maintaining equitable access post-COVID. Together, we’ll uncover practical strategies to build partnerships that center trust, shared responsibility, and authentic student voice.

Attendees will leave with an actionable framework for shifting from “obligation” to “ownership” in inclusive practices - one that sustains educators and empowers students alike.

Timothy J. Grebeck, KIPP DC Public Schools, USA¹

229 Culture, Equity and Social Justice

The standardized testing dilemma: what US universities should consider as they debate re-implementing SAT and ACT requirements

Standardized tests like the SAT and ACT served as cornerstone requirements for admission to most universities across the United States. These assessments provided a common metric by which admissions officers could evaluate students from vastly different backgrounds. However, the COVID-19 pandemic in 2020 catalyzed a dramatic shift in admissions practices. Citing health concerns and unequal access to testing centers, many American universities adopted test-optional policies, fundamentally transforming the college application landscape. While this change was initially implemented as a temporary pandemic response, many institutions have since chosen to extend or permanently adopt these policies. We argue that this trend in educational policy ought to be reconsidered on the grounds that it paradoxically has the potential to undermine the very equity it purports to advance. The fundamental problem with test-optional admissions lies in what remains when standardized tests are removed from consideration. When standardized testing requirements are eliminated, admissions decisions rely more heavily on factors that are substantially more susceptible to wealth-based manipulation: grade point averages can be inflated through elite private schools with known grade inflation; extracurricular profiles can be enhanced through costly club sports, summer programs, and strategically orchestrated leadership opportunities; and application essays can be refined through professional college consultants who effectively co-author polished narratives. Each of these components, which now carry greater weight in test-optional environments, is more readily influenced by financial resources than standardized test performance itself.

Traditional standardized tests that the US has required in past years, like the SAT and ACT, however, can be difficult to access by international students. What’s more, the hiring of expensive tutors can drive an even greater wedge between students of different socio-economic backgrounds. Our goal is to revisit the SAT question and explore the nuance of re-implementing or not re-implementing these exams.

Erin Bauer, University of Notre Dame, USA¹; Jane Miller, University of Notre Dame, USA²

238 Culture, Equity and Social Justice

Formalization and Labor Market Adjustment after Brazil's Domestic Worker Reform

In 2013, Brazil amended its constitution through the PEC das Domésticas, a two-stage reform designed to expand labor protections and encourage the formalization of domestic work. This majority-female sector has historically faced segmented and unequal labor conditions. Despite extensive discussion, questions remain about how the reform affected different employment arrangements, racial groups, and gendered labor dynamics. Existing literature often treats domestic workers as a uniform category, overlooking how race, gender, and employment type shape access to rights and protections. Drawing on racialized reproductive labor theory and Brazilian household survey data, this study examines the pathways through which a reform initially targeting only monthly paid workers may have reshaped domestic labor patterns over time. It analyzes formal employment, measured by possession of a signed work card or social security contributions, alongside the distribution of monthly-paid and daily-paid workers, tracing how legal changes interact with employer practices, compliance costs, and entrenched structural inequalities. These dynamics illuminate the potential for the reform to produce uneven outcomes, including shifts toward informal daily paid work, and highlight how structural barriers mediate access to protections and opportunities. Situating these patterns within broader debates on gender, race, and labor informality reveals the persistence of differentiated experiences within ostensibly uniform labor markets.

Maria Clara Pedroza Santos, University of New Mexico, USA¹

239 Culture, Equity and Social Justice

The Failure of the United Nations in Jammu & Kashmir

This research examines the shortcomings of the United Nations in resolving the long-standing Kashmir conflict between India and Pakistan, arguing that its state-centered and top-down approach has failed to address the lived realities of Kashmiris. It traces how Kashmir evolved from a culturally and religiously diverse region into an international dispute shaped by colonial legacies, partition, and competing national interests. The study highlights how early political alienation and denial of self-determination laid the foundation for decades of instability and violence.

The analysis focuses on the UN's involvement after the 1948 war, particularly through the United Nations Commission for India and Pakistan (UNCIP) and Resolution 47, which proposed demilitarization and a plebiscite. While these measures appeared neutral and legally grounded, they prioritized negotiations between India and Pakistan while excluding Kashmiri voices. The UN assumed that peace could be achieved through bilateral cooperation and military withdrawal, overlooking local political identities, human rights abuses, and the persistence of violence in the region. Using realist and liberal institutionalist perspectives, the paper shows how power politics, territorial control, and national interests limited the effectiveness of UN mediation. Pakistan lacked incentives to withdraw troops first, while India had little motivation to risk its territorial authority through a plebiscite. At the same time, the UN lacked enforcement mechanisms and credible guarantees for reciprocal compliance, making its resolutions largely symbolic.

The research argues that by failing to engage local actors and accommodate Kashmir's social and religious diversity, the UN marginalized Kashmiri agency and reduced the conflict to a dispute between two states. It calls for future international interventions to move beyond top-down diplomacy and adopt inclusive, bottom-up frameworks centered on Kashmiri lives, rights, and political aspirations.

Zaina Riaz Naru, University of New Mexico, USA¹

Curriculum, Research and Development

220, 228, 230

220 Curriculum, Research and Collaboration

Touching History

Teaching with Primary Sources

Focus integrating primary sources into instruction and using media to build 21st century skills. Hands on participation including each small group with a primary source (realia, letter, map, photo, postcard) to examine & discuss & complete appropriate analyzing sheet. Groups present their primary source & findings. Discuss presentations & review types of primary sources. integrating primary sources into instruction and using media to enrich 21st century skills.

Kay Hones, KeyInfo, Inc, USA¹

228 Curriculum, Research and Collaboration

Bringing Student and Teacher Perspectives into Inclusive Sex Education Curricula

Across secondary classrooms, students frequently describe sex education as uneven in coverage and limited in inclusive, practice-oriented learning. Existing curricula often emphasize anatomy and risk while giving less attention to the communication skills and forms of inclusivity students identify as important. Prior work suggests that student voice has the potential to reshape curriculum and pedagogy most meaningfully when engaged as an authentic partnership rather than solely as an assessment tool. Future work will explore how to engage with students and teachers to identify inclusion gaps and persistent misconceptions within secondary sex education units. This presentation invites discussion around two different methodological approaches as sources of insight: one leveraging anonymous student reflections, and the other interviewing sexual health education teachers.

In practice, anonymous writing in the form of journals, question boxes, and open-response prompts can function as formative evidence that surfaces student misunderstandings. Anonymity may provide students with opportunities to express uncertainties, questions, and perspectives that might otherwise remain unspoken. The challenge with long-form responses is analyzing the sheer breadth of information they generate. Human-in-the-loop topic modeling is presented as a possible interpretive approach that combines computational clustering of student language patterns with researcher-guided qualitative judgment. Rather than fully automating analysis, this approach positions the researcher as an active interpreter who iteratively refines themes in response to student-generated data.

Teachers provide a complementary perspective shaped by classroom experience. Interviews with sexual health educators may offer insight into how inclusion is currently interpreted, where tensions or uncertainties arise in practice, and how educators respond to student questions that fall outside formal curriculum structures. Taken together, these approaches aim to open a discussion about how student and teacher perspectives can be brought into dialogue to inform more inclusive, responsive sex education.

Julia Ruth, University of British Columbia, Canada¹

230 Curriculum, Research and Collaboration

Bridging global views: A Comparative Analysis of the curricular inclusion of Sustainable Development Education in Home Economics Globally

Education for Sustainable Development has become an increasingly important focus within contemporary education. This research delivers a comparative investigation into the implementation of sustainability education in the Home Economics classrooms worldwide. It provides an in-depth analysis of the curricular inclusion of sustainability education, followed by an examination of how these approaches are enacted within Home Economics education across the diverse educational contexts. This research aims to compare global perspectives on the implementation of Education for Sustainable Development within the home economics classroom.

Research begins with an analysis of curricular approaches on the island of Ireland before exploring international perspectives. Global frames of reference are compared and analysed. Although positive outcomes emerge, there are significant gaps within the research where little is known about the effectiveness of Sustainability Education within Home Economics education. Literature and research in the area of Sustainability Education has developed significantly but there is still much work to be done in alleviating the gaps in knowledge. Further research in curricular reform and continuous professional development of teachers will work towards an international equilibrium where Sustainability Education is implemented effectively in all home economics classrooms internationally. In addition, national and international flagship groups such as the International Federation for Home Economics should set the standard for all home economists and curriculum designers of which to base their work.

Eimear Coyle, University of Wisconsin Milwaukee, USA¹

Education Technology and Remote Learning
198, 208, 213, 218, 221

198 Education Technology and Remote Learning

Reimagining Collaborative Learning in Teacher Preparation: Blending Digital Tools with Pedagogical Purpose

In the wake of the COVID-19 pandemic, teacher education programs faced a crucial opportunity to rethink how future educators are prepared for collaboration in increasingly digital and hybrid learning environments. This discussion paper explores an ongoing curriculum redesign in teacher preparation programs that aims to embed collaborative digital pedagogy into core coursework in educational technology classes and throughout the curriculum. Drawing on practitioner experience, current literature, and reflective student feedback, the presentation highlights strategies for utilizing digital tools such as collaborative whiteboards, shared planning spaces, and asynchronous peer feedback forums to create engaging, equitable, and purposeful collaborative learning experiences for pre-service teachers. The redesign emphasizes maintaining human connection, encouraging inclusive group dynamics, and promoting authentic engagement in virtual and hybrid settings.

Rather than presenting finalized research results, this session aims to facilitate open dialogue around sustainable practices and institutional shifts necessary for preparing teacher candidates to thrive in post-pandemic classrooms. Discussion will center on how collaborative experiences during teacher preparation influence how candidates later design collaborative opportunities for their K–12 students, particularly in digitally mediated environments. This session aligns with the conference theme of Collaborative Learning and responds to urgent post-pandemic questions: How can innovative digital teaching methods developed during COVID-19 strengthen learning long-term? What role does collaboration play in addressing learners' social and emotional needs in hybrid classrooms? Participants will be invited to share their experiences, examine lessons learned from the pandemic, and explore how teacher education can evolve to meet the demands of the changing digital and hybrid teaching environments.

William Green, Youngstown State University, USA¹

208 Education Technology and Remote Learning

Role of Artificial Intelligence-Based tools in Problem-Based Learning for Undergraduate Students: Exploring Its Applications and Implications

Background: The integration of artificial intelligence (AI) tools in medical education represents a significant paradigm shift toward digital literacy and technology-enhanced learning methodologies. While AI tools offer promising applications in PBL, their impact on students' learning outcomes, critical thinking skills, and educational experiences remains insufficiently explored.

Aims & Objective: This study aims to investigate the integration of AI-based tools in PBL for undergraduate medical students at Northern Border University, Saudi Arabia, focusing on perceptions, attitudes, practices, benefits, barriers, and educational impact.

Material & Methods: A cross-sectional prospective study was conducted with 350 medical students. The intervention involved comparative PBL sessions across nine organ-system modules, with traditional PBL sessions and AI-enhanced PBL sessions. Data collection employed pre-validated questionnaires analyzing student perceptions, attitudes, and practices, alongside qualitative analysis of

reflective journals documenting learning experiences.

Results and discussions: 350 medical students participated in comparative PBL sessions across nine organ-system modules. AI-enhanced PBL sessions demonstrated improved student engagement, enhanced critical thinking development, and increased digital literacy skills compared to traditional methods. Students reported positive attitudes toward AI integration while identifying challenges in information credibility assessment and technological barriers.

Results indicate that AI-enhanced PBL sessions effectively develop critical thinking skills while maintaining the collaborative nature of traditional PBL methodologies. Students demonstrated enhanced problem-solving capabilities when utilizing AI tools as educational adjuncts. The comparative design revealed that while traditional PBL remains valuable, AI integration offers additional dimensions of learning that prepare students for technology-enhanced healthcare environments.

Conclusion: The study demonstrates that AI-enhanced PBL maintains educational effectiveness while preparing students for modern healthcare practice. Successful implementation requires structured approaches to information credibility assessment and prompting competencies development. This integration represents a crucial step toward preparing digitally literate physicians capable of leveraging technology for improved patient care and continuous professional development in evolving healthcare landscapes.

Anshoo Agarwal, Northern Border University, Saudi Arabia¹

213 Education Technology and Remote Learning

Integrating VR360 and Drone Technologies for Learning Amis Indigenous Culture and Local Environments

Virtual reality (VR) creates immersive environments that allow users to interact with digital content, fostering a sense of presence and engagement comparable to real-world experiences. VR360 technology, combined with affordable head-mounted displays such as Google Cardboard, enhances accessibility and provides an intuitive learning experience. Drones, also known as unmanned aerial vehicles (UAVs), are operated through remote control systems and have diverse applications in civilian, commercial, and scientific domains. Taiwan's Indigenous cultures emphasize environmental conservation, and integrating this knowledge into education supports both biodiversity and cultural preservation. The Amis people, who primarily reside along Taiwan's eastern coast and central mountain regions, face educational challenges due to geographic isolation and socioeconomic disadvantage. This study integrates VR360 and drone technologies to develop a VR learning system for elementary science education that incorporates Amis culture and local environments. A teaching experiment was conducted to evaluate its impact on learning effectiveness and student responses. Results show that students using the VR system outperformed the control group in cultural and scientific knowledge, experienced reduced cognitive load, and reported greater learning motivation. These findings highlight the potential of VR and drone technologies to improve learning outcomes, promote environmental and cultural awareness, and reduce educational barriers for Indigenous students in remote or socioeconomically disadvantaged communities.

Chia-Yu Chiu, National Tsing Hua University, Institute of Learning Sciences and Technologies, Taiwan¹; Wei Yi He, National Tsing Hua University, Taiwan²; Tsu-Jen Ding, National Tsing Hua University, Taiwan³; Wernhuar Tarnq, National Tsing Hua University, Taiwan⁴

218 Education Technology and Remote Learning

Accessible by Design: How AI and Adaptive Tools Can Reduce Teacher Burnout and Support Student Independence

Artificial intelligence isn't just changing how we teach - it's changing who we have the capacity to reach. This interactive session examines the role of AI and adaptive technologies in supporting both teacher well-being and student independence, particularly for learners with disabilities.

Drawing from classroom experience and ongoing professional development in AI integration, I demonstrate how accessible tools can reduce redundant paperwork, streamline IEP compliance, and make differentiated instruction easier to sustain. Attendees will explore practical examples of AI tools that enhance executive functioning, organization, and accessibility for students with ADHD, Autism, and learning differences.

Rather than viewing AI as a replacement for teachers, this session reframes it as a collaborator - one that lightens cognitive load, strengthens student autonomy, and restores time for genuine connection and creativity. Participants will leave with ready-to-implement strategies and an "ethical AI checklist" to guide their use of these technologies in the classroom.

Timothy J. Grebeck, KIPP DC Public Schools, USA¹

221 Education Technology and Remote Learning

Digital Inclusion in Primary Education: Comparative Insights from Mauritius and Singapore

In the era of rapid digital transformation, inclusive education increasingly depends on equitable access to technology and digital resources for all learners. This paper presents a comparative analysis of ICT integration in inclusive education in Mauritius and Singapore, two contrasting yet complementary educational contexts. The study aims to identify the strategies, barriers, and best practices that contribute to building digitally inclusive learning environments.

The methodology is primarily documentary and comparative, drawing on government policies, educational frameworks, and academic literature - including key studies by Mauritian and Singaporean scholars. A thematic content analysis is applied to explore dimensions such as infrastructure, teacher digital competence, assistive technologies, and policy implementation.

Preliminary findings indicate that Singapore's mature ICT ecosystem enables strong institutional support and accessibility for learners with special educational needs, whereas Mauritius, though in an earlier developmental stage, demonstrates growing commitment to digital inclusion through national initiatives and partnerships. The comparison highlights how context-sensitive approaches can enhance equity and digital empowerment in education.

The study contributes to global discussions on inclusive education by showing that digital inclusion is not a one-size-fits-all process but an adaptive model shaped by local capacity, policy vision, and social priorities. These insights may guide educators and policymakers in designing inclusive digital learning systems across diverse socio-economic settings.

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General Education, Higher Education, Further Education
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212 General Education

Design and Implementation of Collaborative Learning Activities for Simulating Spreads of Misinformation on Social Media During Disasters

In Japan, the compulsory high school subject Informatics I requires students to develop the ability to conduct simulations for specific purposes and to consider solutions to problems based on the results. This study designed and implemented collaborative learning activities in which high school students simulated the diffusion of false information on social networking services (SNS) and explored possible countermeasures.

In recent years, cases of rumor diffusion via SNS during disasters have been reported worldwide. At the same time, many young people, including high school students, use SNS on a daily basis. Therefore, it is important for students to explore countermeasures against rumor diffusion. However, rumor diffusion is a complex phenomenon in which multiple factors interact. To address this complexity, a sequential learning process is required: analyzing the factors of rumor diffusion in past disasters, examining possible rumors that could spread in future disasters, and exploring countermeasures based on the results of diffusion simulations.

Accordingly, this study designed collaborative learning activities structured around three pillars: (1) analyzing diffusion factors using real data from the Great East Japan Earthquake, (2) examining possible rumors in the context of a potential the next Nankai Trough earthquake, and (3) exploring countermeasures based on the results of rumor diffusion simulations.

The activities were implemented with 201 second-year students (five classes) at a Japanese high school, followed by a post-lesson questionnaire. As a result, 91.5% of students responded positively regarding their ability to utilize the simulation-based materials. In addition, students reported they learned about the elements that can be used to predict rumor diffusion on SNS and proposed specific countermeasures that SNS companies should take.

The findings suggest that the collaborative learning activities designed in this study are effective in enabling high school students to conduct rumor diffusion simulations and to explore countermeasures based on the results.

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225 Higher Education and Further Education

College Stress as a Mediator Between Basic Psychological Needs and Achievement-related Behaviors

Self-determination theory (SDT) posits when students' basic psychological needs (BPN)—autonomy, competence, and relatedness—are not met, they they experience poorer psychological well-being (Dimitris et al., 2014) and lower academic success (Schenkenfelder et al., 2020). However, limited research has examined how BPN relates to student well-being and achievement-related behaviors within an SDT framework. The current research addresses this gap by examining how students' BPN affects their college stress and achievement-related behaviors, while exploring the underlying mechanisms among these variables. Specifically, we asked: (1) Does BPN predict students' achievement-related behaviors? (2) Does college stress predict students' achievement-related behaviors? (3) Does college stress mediate the relationship between BPN and achievement-related behaviors? Following SDT, we assume that BPN negatively relates to college stress, which, in turn, negatively predicts healthy learning behavior (effort and persistence), and positively predicts maladaptive learning behavior (procrastination). A total of 495 students from an urban university completed a self-report survey. An SEM mediation analysis was conducted to assess the mediating role of typical college stress in linking students' BPN to their achievement-related behavior. The model data fit was satisfactory with $\chi^2(193, n=495) = 613.49, p < .001$, RMSEA = .07 with CI [.06 to .07], CFI = .95, TLI = .94, and SRMR = .04. The results showed that BPN negatively related to students' college stress ($\beta = -.16, p < .01$) and academic procrastination ($\beta = -.23, p < .001$), and positively related to persistence ($\beta = .33, p < .001$), and effort ($\beta = .47, p < .001$). Students' college stress positively predicted procrastination ($\beta = .53, p < .001$), and negatively predicted persistence ($\beta = -.36, p < .01$). In addition, the indirect effects of students' college stress in linking BPN and procrastination ($\beta = -.08, p < .01$), persistence ($\beta = .06, p < .01$) were significant.

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206 Language Education, Linguistics and ESL/EFL

"It gave me the confidence to speak": Understanding the impact of sociocultural activities hosted by university language learning centers

In recent years, research on informal language learning has expanded significantly (Dressman & Sadler, 2020), highlighting its role in increasing learner motivation, confidence, and real-world communicative competence (Montrul, 2019, Myhre & Fiskum, 2021, Polat & Kim, 2014, Arndt, 2019). However, very few studies (Reva, 2012; Cabrera Arias, 2022) have examined institutionally organized informal activities within university language centers that are designed to complement formal instruction. This qualitative study investigates Cocurricular and Extracurricular Activities (CECA) within two Quebec university language learning centers. Using a phenomenological approach, ecological framework, and reflective thematic analysis, the research explores students' value perception of CECAs as well as the role that CECAs play within the programs investigated. The findings reveal that CECAs are highly valued by participants, providing a unique opportunity to enhance confidence and competence, particularly in "real-life" language use and cultural competence, and emphasizes the importance of facilitators who are credited for creating a supportive, low-pressure environment for students. Despite their recognized benefits, administrators highlight challenges such as resource limitations and lack of visibility within academic institutions. Overall, this study underscores the potential of CECAs to bridge the gap between formal classroom instruction and real-world language use.

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Medical Education, STEM and STEAM
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223 STEM and STEAM Education

Embedding Technology Innovation and Entrepreneurship in Engineering Education using Mobile Apps Design and Development with Figma

Engineering graduates increasingly need not only technical proficiency but also the creativity, innovation, and entrepreneurial mindset required to translate ideas into real-world impact. This paper presents an experiential framework for embedding technology innovation and entrepreneurship within undergraduate engineering education through a mobile-app design and development module using Figma as a rapid prototyping tool. Implemented within a first-year Engineering Skills & Ethics course at Qatar University, the initiative transforms the traditional design project into a mini-startup experience where multidisciplinary student teams identify a societal or sustainability-driven problem, ideate a technology-based solution, and develop a clickable mobile-app MVP (minimum viable product) alongside a Lean Canvas and basic business model. The pedagogical approach integrates design thinking, user-centered engineering, and entrepreneurial learning within a structured seven-week process: problem discovery, ideation, user-journey mapping, app interface design, prototyping, validation, and final investor-style pitching. Students assume startup roles (CEO, CTO, CBO, CSO) and use Figma to visualize functionality, usability, and market value before technical implementation. Assessment combines technical design quality, innovation potential, teamwork, and ethical impact, aligned with ABET learning outcomes. Results from course implementation indicate significant improvements in students' engagement, confidence in digital design tools, and understanding of how engineering design links to entrepreneurship and societal value creation. The paper details the instructional design, assessment rubrics, sample student projects, and lessons learned on integrating innovation ecosystems into early engineering curricula. This model demonstrates how mobile-app design with Figma can serve as an accessible gateway for embedding innovation and entrepreneurial competencies in engineering education.

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235 Medical Education

Resident's Perspectives on Restricted Registration "Moonlighting" in a Toronto Community Hospital

Introduction: "Restricted Registration" (RR), or "moonlighting," is a College of Physicians and Surgeons of Ontario certificate permitting provision of clinical services for remuneration outside of residents' training programs. Despite some international literature, there are few Canadian studies on moonlighting. Since 2021, the North York General (NYG) Hospital Departments of Psychiatry and Internal Medicine have established successful RR Resident (RRR) programs, with over 30 residents. Responsibilities include inpatient rounds, and inpatient and Emergency Department (ED) consultations, under staff supervision. The objective of this study was to explore RRR's development in transition-to-practice competencies.

Methods: 12 RRRs, who voluntarily responded to recruitment from all past/present NYGH RRRs were interviewed using a semi-structured guide. Interview transcripts were analyzed using thematic analysis and constant comparison. Two transcripts were coded independently, compared and refined, followed by coding of the remaining transcripts. These codes were then grouped to identify themes.

Results: All 12 respondents were interviewed; a minimum of 10 were required to achieve data saturation. The two major themes identified were ‘going solo’ and ‘contextual factors.’ Under ‘Going solo,’ residents identified increased comfort acting as a staff physician and confidence in clinical decision making, and improved communication, billing skills, and autonomous practice. Factors contributing to stress were identified, with positive outcomes outweighing these. Opportunities for improved teamwork, communication, networking and career advice were identified, as well as practice differences between community and academic hospitals. ‘Contextual factors’ themes included financial reasons as a significant motivating factor, differences in compensation compared to other RRR sites, inconsistency between staff in orientation and communication, and logistical on-site challenges.

Conclusion: Our exploration of RRR perspectives offers an insight of benefits and challenges to residents, and institutions considering similar programs, relevant nationally and internationally. Future studies could examine the impact of RRR programs on clinical care from staff and patient/family perspectives.

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Teaching, Comparative Literature and Culture

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335 Comparative Literature and Culture

Who's Afraid of Virginia Woolf in Times of Pandemic and War

Israel has experienced significant turmoil in the last five years, including the pandemic, successive elections, controversial legal changes, and the continuous war in Gaza following the fatal October 7th attack. This reality of massive casualties, inner conflicts, and international condemnation presents major challenges to teaching the humanities, particularly literature. It raises fundamental questions: Can and should literature be taught amidst continuous disaster? What is its role, and how must its pedagogy adapt to this time of crisis and uncertainty? How can it accommodate the diverse student body – government supporters and opponents, soldiers and conscientious objectors, religious and secular, Arabs and Jews?

These issues will be addressed in this talk by focusing on the experience of teaching Virginia Woolf's "Mrs. Dalloway" in a course on "Cities and Books." First, it will present the methods for this online course capitalizing on the possibilities of the post-pandemic and AI era: interactive Zoom meetings, a detailed teaching guide with timelines and interactive maps, and collaborative close reading on various platforms. Second, it will address the novel's content, showing how, despite the temporal and cultural distance between 1923 London and 2025 Israel, the encounter with Woolf's novel offered students from varied backgrounds a critical framework to tackle painful issues that could not be addressed in direct dialogue: illness and recovery, war, occupation, post-trauma, and the possibility of embracing another person's perspective. Finally, the talk will demonstrate how the novel's formal traits – its challenge to traditional linear reading and its kaleidoscope of perspectives, which embody the Modernist crisis – help Israeli students face their own reality of uncertainty, fragmentation, and unbridgeable conflicts.

Ayala Amir, Bar Ilan, Israel¹

338 Comparative Literature and Culture

Samoan and Māori Cultures and Identities in Albert Wendt's Robocop in Long Bay and Witi Ihimaera's We'll Always Have Paris

This paper presents a comparative analysis of selected works by the Samoan writer Albert Wendt and the Māori author Witi Ihimaera, with particular attention to their representations of Indigenous identity formation within diasporic and postcolonial contexts. It examines the ways in which Samoan and Māori identities are articulated at the intersection of cultural continuity, displacement, and the pervasive influence of global media, advanced technologies, and popular culture. Drawing on Bill Ashcroft's concept of the "transnation," the paper argues that both authors conceptualize Indigenous identities as dynamic, hybrid, and continuously renegotiated through processes of cultural translation. The analysis highlights how Wendt and Ihimaera engage simultaneously with local Indigenous traditions and transnational modernities, thereby offering critical insights into the evolving configurations of Samoan and Māori identities in the contemporary world.

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339 Teaching and Learning

Teaching observation of art to health professional students before, during and after the COVID pandemic to enhance their cultural and gender awareness and clinical empathy

The COVID-19 pandemic magnified racial and gender disparities in the medical setting in America. This underscores the importance for clinicians to practice cultural and gender competency, which may reduce healthcare inequities perpetuated by structural and personal racism and sexism. We assessed whether a medical humanities elective involving observation of fine art for premedical (post-baccalaureate) and first- and second-year preclinical medical students could enhance their cultural and gender awareness. Over three cohort years of the elective (two years before and one year during the pandemic), we assessed students' written responses to artworks for culture and gender references. We also surveyed students when they were in clinical rotations or practice regarding the perceived impact of the elective on their clinical skills. Medical and premedical students recognise, note, and interpret a variety of details regarding the culture and gender of people depicted in the artworks. Of the 93 student responses to the art pieces that we analyzed (three years of the elective; five to six sessions per year; 2-8 students per session), 66% (62) of their responses noted culture and 73% (68) noted gender details. In the retrospective survey, most students agreed or strongly agreed that the art observation elective improved their awareness of their patients' cultures and gender and their empathy towards their patients. This study suggests that electives involving art observation may enhance medical and premedical students' cultural and gender awareness and competency in the doctor-patient relationship. We also discuss how the health professional student composition, delivery, and therefore, potential impact of the elective on these students' cultural and gender recognition changed before, during and after the pandemic. In the long term, increased cultural and gender competency by clinicians could mitigate ongoing healthcare inequities due to structural and personal biases that were significantly magnified in the COVID-19 pandemic but persist today.

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FULL PAPERS

**No Distractions, Just schoolin': Single-Sex Institution
As an Approach for Juvenile Justice System Secondary School-
aged Black and Brown Male Students**

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ABSTRACT

The United States is the leading first-world nation that incarcerates more people in prison or jail than the UK, Russia, Australia, and other recognized first-world nations. To reduce the school-to-prison pipeline at the secondary school level, several approaches can be implemented, such as reducing the educational achievement gap. However, secondary schools are experiencing chronic absenteeism, educational achievement gaps, and low high school completion rates specifically for marginalized male students, which are linked to criminal behavior, resulting in adjudication and incarceration. Remedies for recidivism for this academic subgroup will require an assortment of approaches, one of which is single-sex institutional design commingled with a strength-based mentoring approach under the auspices of a transformational leadership style. This study will examine interviews from educational administrative leaders and secondary sources, such as the Bureau of Justice Statistics and the Department of Juvenile Services, and others that indicate recidivism efforts are best utilized differentiated by age and institutional designation to substantiate change in justice-involved or impacted male students.

The United States is the leading first-world nation that incarcerates more people in prison or jail than any other first-world nation (Murphy, 2020, p.2). According to the Office of Juvenile Justice and Delinquency Prevention (OJJDP) statistical fast facts, “Youth in the United States were adjudicated in approximately 245 of every 1000 cases referred to the courts in 2022” (OJJDP, 2025).). Continuing, the OJJDP asserts that, “Black (African-American), Hispanic, and Native American youth are overrepresented in the juvenile justice system; more often Black or Hispanic youth were less likely to be placed in diversion programs, but more likely to be detained or waived into the adult (penal) court system” (Facts about youth crime, OJJDP, 2025).

Understanding the contemporary juvenile justice landscape, an overview of its origin is essential. In the post-Civil War era, the economically upwardly mobile Progressives attempted to assimilate and acculturate newly arrived Eastern and Southeastern European immigrants, the urbanized African Americans, and industrialized cities into an “American paradigm” (Feld, 1999, p.4), The Progressives’ notion about children and their vulnerability, resulted in the establishment of the juvenile justice court system (Feld, 1999). Celinska and Cheboubi (2022), the United States, specifically Chicago, Illinois, began its juvenile justice court system in 1899 (Celinska and Cheboubi, 2022, p. 42).

Significant is the discussion of how Black and Brown youth are criminalized, which results in overrepresentation in the juvenile justice system and its folding of youth into adult courts. The beginning, as it were ...is the acknowledgment, examination, and the effect of what Khalil Gibran Muhammad (2022) states, “The historical institutions of the Native reservations and African American slavery were the most durable legacies of a number of ideas and ideologies that helped forge the punitive foundations of American society” (Muhammad, 2022, p. 109). Historically speaking, the Princeton scholar, Eddie S. Glaude (2024), states:

We cannot be concerned solely with the future as if the past is not present in our current living...any struggle for the world as it could be must be imagined close to the ground in the world as it is and as it came to be¹ (Glaude, 2024, p. 12).

Perkins (2020) initially states that the erasure of indigenous and African-descended people’s traditions and values “permitted” the Euro-American in power to “mandate what constituted criminal behavior” (Perkins, 2020, p. 3). Continuing, Perkins further asserts that, “Euro-Americans fabricated a history that depicted the indigenous populations as the real aggressors...the codes that once governed the indigenous population were no longer valid” (Perkins, 2020). Perkins posits that to sustain “chaos, dependency, and despair, the destruction and forced involuntary dispersion of people that was stripped away from their [homeland] as enslaved Africans “disrupted the African traditional culture that served as the foundation for the socialization of their youth” (Perkins, 2020). Race is a social construction, where the distinction between white and African, and the need for labor intensified, racial and legal elements were warranted to the point of codifying the status of Africans, and creating laws to degrade the status of Africans, establishing them as a permanent underclass as a matter of law due to skin complexion (Wilson, 2018, p. 5). By 1664, the Maryland colony enacted a statute declaring, “All Negroes or other slaves already within the province and all Negroes and other slaves to be hereafter imported into the province, shall serve *durante vita* [hard labor for life]” (Wilson, 2018, p.6). Additionally, between 1680 and 1682, the first slave codes were implemented (Wilson, 2018). Laws constructing chattel slavery were the foundation of the social construct of race. Distinction was not based solely on skin color but rather resulted in Black and white racial designations in terms of rights, access to material resources, and power (Wilson, 2018).

The criminalization of Black and Brown people is the foundation of Euro-American and the systematic, intrinsic structure in the United States that perceives, constructs, and utilizes laws or codes that overwhelmingly attribute lawlessness to Black and Brown male youth.” (Muhammad, 2022). Utilizing the theorization of Berger, Muhammad (2022) asserts that, “Racism, especially anti-Black racism, has been the primary modality through which this pairing of colonization and confinement has transpired in the United States” (Muhammad, 2022, p. 109). Muhammad (2022), quoting historian Dan Berger, who coined the term “captive nation,” postulates that, “There is no American history in which European-descended people did not use racialized forms of punishment, war, or containment against indigenous tribes, immigrants, or enslaved people of African descent” (Muhammad, 2022, p. 109). Hence, age and race intersect meting out stringent criminal results towards Black and Brown youth, since they are not perceived as children, or those entitled to the use of mitigating factors. The establishment of the juvenile court system to handle youth and criminal activity, calling Black and Brown youth delinquents in the 1890s, which is also

¹ Eddie S. Glaude, 2024. *We are the Leaders We Have Been Looking for*. First Harvard University Press.

known as the “nadir” (Muhammad, 2022) systemically intertwined age and race in the juvenile court system. Historically, the nadir, a term coined by historian Rayford Logan, as one of the worst historical times for African-descended people (Muhammad, 2022). The nadir period encapsulated the horrifying effects of racism perpetrated against Black folks, such as increased violence [mob massacres, lynching, Ku Klux Klan, and similar organizations and individual vigilantism], and the ratification and implementation of the legal doctrine, “separate, but equal,” doctrine, which legally sanctioned racial discrimination. The ubiquitous use of race extended into limiting constitutional rights, such as the right to vote by implementing systematic disenfranchisement of Black men across the United States, and the widespread practice of Jim Crow—code of law, unspoken and legal deemed “to keep Blacks in their place” (Muhammad, 2022; Murphy, K., 2020, p.1). The historical era that entailed Jim Crow, although horrific in most cases for the African American and other marginalized communities from the latter part of the nineteenth century to the federal ending of segregation, education was a key component to upward mobility, economic stability, and political leverage. Segregation as a legally sanctioned social, economic, and political reality for African Americans did not preclude them from establishing independent schools. There were over a hundred boarding (residential) schools within the African American community, some of which were single-sex institutions (Sanford, 2022, p. 12).

Erasure of African male youth socialization and indigenous rites of passages, rendering Black and Brown males as criminals has its foundation in law. The historical prevalence of white supremacy and its structural base in American institutions, such as the educational system, warrants legal definition. Erika Wilson (2018) posits that the American law played a vital role in constructing white supremacy (Wilson, 2018, p. 2). Wilson recounts that the legal scholar, Professor Frances Lee Ansley, coined the legal term white supremacy to mean:

A political, economic, and cultural system in which whites overwhelmingly control power and material resources, and in which white dominance and non-white subordination exist across a broad array of institutions and social settings (centered in policies, practices, and ideologies) (Wilson, 2018, p. 3).

Moreover, Wilson (2018) posits that the definition of white supremacy is demonstrated in three pillars, the first is the construction of law that initially codified race as a concept and created racial hierarchy (Wilson, 2018, p.4). Second, it is implementing a race-conscious system of laws governing the distribution of resources that favors whites over everyone else. Lastly, overt race-conscious laws eventually dismantled the law, shifted to “color blind” and later “post-racial” without affirmatively dismantling the effects of the previous race-conscious system of resource distribution (Wilson, 2018).

Moreover, this American historical context, and socially constructed racism, directly relates to the school-to-prison pipeline. Establishing that violence and racism in the form of anti-Black racism, as well as the attribution of criminalization of other marginalized communities, Hani Morgan (2021) postulates that several factors contribute to the overrepresentation of marginalized students in the school-to-prison pipeline (Morgan, 2021, p.1). Goldman and Rodriguez (2022) posit that the school-to-prison pipeline is fundamentally a school-to-prison nexus that “Refers to the web of policies, practices, and ideologies that symbiotically link schooling and prison regimes in ways that distinctly impact Black and nonwhite youth and compound other forms of structural inequality (Goldman and Rodriguez, 2022, p. 270; Battjes, K., and Kaplan, L., 2023, p.189). A former state secretary

of education, Robinson (2023) cites another researcher in defining school-to-prison pipeline, or rather “child-to-prison” pipeline, “As the intersection of K-12 public educational system and law enforcement, and the trend of referring students directly to law enforcement (sometimes called school resource officers) for committing offenses at school or creating conditions that increase the probability of students eventually becoming incarcerated, such as suspending or expelling them” (Robinson, 2023, p. 52). Moreover, the school-to-prison nexus (or pipeline) impacts African-descended students who are severely punitively disciplined, using approaches such as in-school suspension, traditional (multiple-day) suspension, and ultimately expulsion (Morgan, 2021, p.1; Robinson, 2023, p. 53, citing a study in the Charlotte-Mecklenburg School district). Mark Jones, et al. (2023) cite US Department of Education Civil Rights Data Collection statistics, stating that, “Black boys are suspended and expelled three times their enrollment (US Department of Education, 2022). Black boys represent 7.7% of enrolled students, but comparatively are 20.1% for in-school suspension, 24.9% of out-of-school suspensions, and 25.9% of expulsions (US Department of Education).

In noting policies that aim to provide discipline, structure and order in the school systems, there are some theoretical frameworks that scholars have theorized and compelled school districts, resulting in school administrators implementing the practice. Noting the theoretical frameworks that are embedded in the school-to-prison nexus, Novak (2019) discusses deterrence theory, which primarily asserts that the individual will be deterred from engaging in delinquent or criminal behavior if the consequences assigned are swift, severe, and certain (Novak, 2019, p.1166). Consequences for all of the parties involved are to be immediate and strict, and if those actions are not followed, then it is thought that the behavior is not deterred (Novak, 2019,). It [deterrence theory] is assumed that deterrence works on individuals and societal levels (Novak, 2019). The use of deterrence theory demonstrates that, “Exclusionary disciplinary strategies including school suspension, mandated suspension, and school policies of zero-tolerance are under the umbrella of deterrence theory (Novak, 2019; Jones et al., 2023, p 380). The theorist for the deterrence theory was (Nagin, 1998) as mentioned by Novak (2019). Another theoretical framework is the integrated theoretical perspective and asserts that these theories undergird school disciplinary practices (Novak, 2019, p. 1166). In comparison, the integrated theoretical perspective asserts that school suspension may increase delinquent behavior due to a “Limitation or lack of social learning, general strain, and social control theories to provide an explanation for the delinquent behavior” (Novak, 2019, p. 1167; Jones et al., 2023, p.381). The contention is that if the youth does not possess a bond to the institution, forfeits early social learning or training, or succumb to general strain, i.e., peer pressure, or other social tendencies that equate to poor connectedness to institutional values and rules, then delinquent behavior will present itself (Novak, 2019; Jones et al., 2023). The scholars that developed the integrated theoretical perspective were (Elliott, Ageton, and Canter, 1979) as discussed in Novak (2019).

The varied factors that result in the school-to-prison pipeline derive from multiple interdependent educational systems, such as higher rates of suspension for Black students, evidentiary bias demonstrated by school personnel in their response to Black students, and school populations with a higher concentration of Black students, resulting in the implementation of more punitive approaches to discipline (Morgan, 2021, p. 2). According to the National Center for Educational Statistics (NCES), “Black students experience out-of-school suspensions at higher rates than any other group” (Morgan, 2021; Jones et al., 2023, p.380; Coleman, S., 2024, p.2). These factors, then, are attributed to underlying issues, such as unsupervised time outside of the structured school system, instigating increased opportunities to become involved in crime (even though, statistically, youth crime is down

77% from 1995 to 2023 (Annie E. Casey Foundation, 2021). Another resultant is higher propensity of arrest, followed by loss of instructional time, which can create academic gap knowledge (Morgan, 2021, p.2). Lastly, non-completion of high school may be consequential to possible future adult incarceration (Morgan, 2021). The above-mentioned school discipline outcomes, there are other underlying issues, such as a lack of teacher preparation (advanced academic training) and support, which may expose biases and institutional discrimination due to the elevated concentration of poverty-stricken students, (Morgan, 2021). In addition, the limitation of culturally responsive teaching (Min, M. and Nelson, R, 2024, p.336) and pedagogical theories may cause discrimination and a non-suitable discipline policy for various student demographic (Morgan, 2021). Equally important is the lack of culturally competent leadership training for school leaders or principals, administrators (both school building and central office), teachers, and school staff members (Morgan, 2021, p.3). Implicit bias may emerge due to anti-Black and pro-white biases, consequently leading to racial disparities (Morgan, 2021). It is noted that Black teachers who are less anti-Black and pro-white demonstrate less bias than white teachers (Morgan, 2021). The American educational system has 40% of students of color (Min, M. and Nelson, R., 2024, p. 334)., whereas elementary and secondary teachers of color constitute less than 20% of the teaching force (Morgan, 2021).

In underscoring the contributing factors for Black and Brown male youth within the school-to-prison pipeline, or using the term school-to-prison nexus (Goldman and Rodriguez, 2022), there is an international convention on children's rights that espouses several measures, one of which is that the last resort for juveniles should be punitive detention. Overwhelmingly, the use of social services or law enforcement referral results in arrest records for adolescents of color and can impede personal, social, and economic growth, as evidenced by the empirical data on school-to-prison-pipeline effects, workforce employability, mobility, and economic growth for youth of color. Robert Laird (2021) indicates that in "1989, the United Nations ratified the Convention on the Rights of the Child (CRC), and it was adopted with "global support" by almost all of the world's countries (Laird, 2021, p. 573).² The significance of this measure is found in Article 37(b) of the CRC, which purports broad guidelines³ for the incarceration and detention of juvenile offenders and provides that the "arrest, detention or imprisonment of a child...shall be used only as a measure of last resort and for the shortest appropriate period of time (Laird, 2021).

Reducing recidivism within the juvenile justice system is a perpetual imperative to establish pertinent and practical strategies in ensuring that the juvenile court system is not beleaguered with juveniles that, in other instances, could have been provided alternative, restorative, and practical strategies to eliminate the need for such actions, such as juvenile adjudication and detention. It is with this mindset, that several school leaders were interviewed to ascertain practical, doable, and high impacting policies and practices that ensure that Black and Brown male youth are served in a manner that utilizes a holistic approach, which upends the academic gap, increases social commitment to the school environment, strengthens teacher-student engagement, achieves school completion, and

² Laird (2021) cites, Cynthia Price Cohen, *The Role of the United States in Drafting of the Convention on the Rights of the Child*, 20 Emory International L. REV. 185, 185 (2006). After South Sudan adopted the measure in 2015, the United States has not adopted it.

³ Sarah Mehta, *There's Only One Country That Hasn't Ratified the Convention on Children's Rights*: US, ACLU (November 20, 2015, 1:30PM), <https://www.aclu.org/blog-human-rights/treaty-ratification-/there's-only-one-country-hasn't-ratified-convention-children's> [<https://perma.cc/Z7N6-RZD>]; see also G.A. Res. 44/25, Convention on the Rights of the Child (November 20, 1989); *supra* note 1, at ¶37(b).

ultimately is a recidivism reduction strategy and policy. Several school leaders assert that single-sex institutions, either residential (boarding) or day school offerings, are the answer.

METHODOLOGY

The qualitative quasi-experimental design (semi-structured questions) and secondary archival research were utilized for this study. Various journal articles were reviewed that investigated the relationship between severe discipline measures and the high probability of students becoming impacted in the lived experience of being justice-involved either after secondary school and or in the adult penal system. School leaders in large metropolitan urban cities and high-performing schools were interviewed over a span of a few months, after employing diverse methods using reliable social media platforms in garnering awareness about the subject matter and ascertaining qualified leaders with criteria, such as experience, educational philosophy, practice, and professional experience. Likewise, it was a process to select and determine who would be interested and available to be a participant. Ultimately, the selected participants were active in the field of serving Black and Brown male students in exclusively single-sex institutions. There were six interviews completed over a span of a few months. Most of the interviewees were based on the East Coast, while the others were located in the Midwest. The interviewees are an urban education professor, an outgoing board member of an educational program serving Black and Brown male secondary students, two educational administrators, and a residential dean in a boys' dormitory. Of the six interviewed, two were alumni of a boarding (residential) educational program with homogeneous student membership and a high percentage of serving faculty members who were people of color with advanced degrees. All of the interviewed educators and school leaders attained at least a bachelor's degree. Four of the interviewed men hold terminal degrees, such as a doctorate and a juris doctorate. The interviewed school leaders were African American men, ranging in age from the early thirties to the mid-sixties, and had been in the field of education for at least 10 years.

FINDINGS

School leaders interviewed exclusively espoused single-sex institutions for Black and Brown boys, and how this type of schooling can greatly benefit young males of color and or marginalized students and reduce recidivism for those who are justice-involved or impacted students (Hickman, personal interviews, 2025 and 2026). Several aspects of single-sex institutions decrease recidivism and promote educational achievement, decrease the drop-out rate, and increase high school completion. Overwhelmingly, the interviewed school leaders agreed that, "The single-sex institutions create an atmosphere that enables students to be physically, socially, and emotionally safe due to the culturally responsive teaching, pedagogy, and school programs, such as teacher-student mentorship" (D. Lacewell, December 4, 2025; E. Avent, December 18, 2025; E. Willis, January 4, 2026; R. Glass, February 4, 2026; Hill, 2022, p. 81). One of the first nuances that the school leaders mentioned was the importance of the "homeroom," and how it shaped the structure and tone for the students' day. (D. Lacewell, December 4, 2025; E. Avent, December 18, 2025; E. Willis, January 4, 2026; R. Glass, February 4, 2026).

The utilization of the traditional “homeroom” as an educational mission time to augment the students’ social-emotional learning (Jones et al., 2023, p. 381; Hirsh-Raphaelli, R., et al, 2025, p.1), building or enhancing students’ ability to comprehend, express, and control emotional aspects of their lives in ways that instill or build on the foundational familial values for positive developmental outcomes (Jones, 2023). School-based interventions facilitate the learning of self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Jones, 2023). One of the school leaders mentioned that “homeroom” was the time for student-teacher engagement and the use of culturally responsive pedagogy, such as employing “Rites of Passage” segments with the students at the beginning of the school day (D. Lacewell, December 4, 2025; E. Avent, December 18, 2025). “Homeroom” offered time for school leaders and teachers to express high academic and social expectations of the students (E. Avent, December 18, 2025). “The assembly or 'homeroom' with facilitators (separate from teaching faculty) provides leadership skills to the students, who are able to hone natural leadership skills in the setting the tone for the academic day (E. Avent, December 18, 2025; Hirsh-Raphaelli, et al., 2025, p.2). Likewise, Hirsh-Raphaelli, et al. (2025) introduce the importance of utilizing the theoretical framework of self-determination theory (SDT), which has three basic psychological needs--- autonomy, relatedness, and competence (Hirsh-Raphaelli, et al, 2025, p.1). Additionally, homeroom teachers, “Recognize their pivotal role in their students’ lives and understand the potential impact they have on student well-being and thriving” (Hirsh-Raphaelli, et al., 2025, p.2). Single-sex institutions build a “brotherhood” amongst students that results in peer-to-peer mentoring and social monitoring regarding behavior, social relationships, and interactions with school leadership and educators, as well as between the different classes (lower classmen versus upper classmen (R. Glass, February 4, 2026; E. Avent, December 18, 2025). Part of the brotherhood is the creation of a level of comfort amongst the students (Douglas, L, et al, 2019, Abstract) to combat areas of struggle, such as reading (E. Avent, December 18, 2025; E. Willis, January 4, 2026). In the effort of building meaningful relationships between adult men and male students, some practitioners mentioned the development and implementation of a male (pseudo-father-figure) role, especially if the student demographic includes members of female single-headed households. The pseudo-father role builds and enhances the teacher-student relationship by learning aspects about the student, their family and social interactions (A. Crichlow, January 2, 2026; Coleman, S., 2024, p.102). School personnel, including residential deans, counselors, faculty, social workers, guidance counselors, and college transition team members, as well as mentors/facilitators are utilized to build and sustain relationships within the school community (A. Crichlow, January 2, 2026).

Utilize research-based evidence and teacher-supportive professional development workshops to enrich the learning environment for the students and expand professional experience in pedagogy for educators and school leaders (E. Avent, January 2, 2026). Noting that academic achievement correlated with other interdependent school systems of operation, professional development workshops, building a collective vision for the school year, and the expectations of students within the school community further details the nuances of African American single-sex institutions (E. Avent, January 2, 2026;). The question of teacher-student quality relationship also entailed the demographic make-up of the teaching and administrative faculty at single-sex institutions, the more racially and culturally balanced, the better the differentiated instruction coupled with culturally responsive and restorative principles and practices implemented, the better mentorship, both organically and formally are created and sustained (R. Glass, February 4, 2026; E. Willis, January 4, 2026; E. Avent, January 2, 2026).

Adult male mentorship results in higher academic achievement and social well-being, such as teaching and showing how to be a man who is spiritually, emotionally, culturally, and socially (etiquette) balanced, and who knows and understands racial heritage and history (A. Crichlow, January 2, 2026). Another aspect of male mentorship results in academic achievement. For example, a well-known Midwest single-sex institution since 2007 boasts of 100% college acceptance rate and school completion to various colleges and universities, ranging from the elite, Ivy League, historically Black Colleges and Universities (HBCUs), and predominantly white institutions (PWIs) (D. Lacewell, December 4, 2025). Using the framework of social-emotional learning (Coleman, S, 2024, p.14 and 48) with an African-centered and African diaspora focus, the teaching of heritage is paramount in instilling self-awareness and “sense of self” that facilitators, guides, or mentors provide to the students (E. Avent, January 2, 2026; E. Willis, January 4, 2026; Jones et al., 2023, p. 383). Maintaining the social-emotional learning is the focus of sustaining smaller classroom size to ensure “no students falling through the cracks (educational system)” (E. Avent, January 2, 2026). Intentionality with students was paramount in ensuring academic achievement by highlighting strengths and building on the limitations of the student, so overall achievement is intentional, specific, and meaningful to the student (R. Glass, February 4, 2026; Finn, J., 2019, p.128).

According to E. Willis, an urban education professor, “The emphasis on Black-led independent and private schools affords the following vestiges that set it apart from other single-sex institutions, such as bond perspective and social connectedness, create and maintain school environment that demonstrates, believes, and adheres to equity and equality in schools, as well as knows and understands the history of how Black and Brown male youth are situated in society. Additionally, these schools’ practices are rooted in lived experiences and social reality comingled with social bond theory and cultural pedagogy and execute the practice of treating the students as humans, first, then their racial heritage. Likewise, E. Willis mentioned that “Boys look for safety, citing Richard Milner (2018; 2024) and the importance of teachers ‘going above and beyond for students to show support and build relationships, such as attending a student’s personal history event like a baptism, athletic event, etc.” (E. Willis, January 4, 2026). Asserting that there are areas in the educational arena that need to change to eliminate recidivism, there are general recommendations imparted by researchers and the interviewed school leaders, such as cultural training during teacher preparatory programs, professional development, and intentionally hiring practices that promotes culturally diverse teaching and administrative personnel (Morgan, 2021, p.4; Jones et al., 2023, p. 386; E. Avent, January 2, 2026; E. Willis, January 4, 2026). Other recommendations involved stronger bonds with the students and families, better modes of communication and open communication styles, resulting in better engagement, promote positive school outcomes, school-wide positive behavior interventions and supports for the students and staff members, and the adaptation of culturally responsive pedagogy and professional development training in existing programs, such as Strong Start, and or develop more African-centered focus social-emotional learning strategies and practices. (Jones et al., 2023, p. 386).

Intentionality, culturally responsive pedagogy, racially balanced faculty and school administrators, along with specific programming, diverse hiring and vetting practices that build longevity and relationship with students, is paramount in the action of reducing recidivism and promoting positive school outcomes, such as school completion and decreased drop-out rates that create a higher increase of criminal involvement and or adult

incarceration. Historically, single-sex institutions was/were a standard educational practice and establishment that augmented and complimented the value of education within the African American community from the colonial Free African Schools (Williams, M., 2024, p.12) to the resurgence of Free African Schools in the 1960s or commonly known as Freedom Schools (after the Southern Manifesto (Wright, H, 2025, p. 8), which in part, shut down public schooling for students in key Southern states, such as Farmville, Virginia, which shut down the public school system for five years rather than integrate (Turner, J., 2021)

Ultimately, the reduction of recidivism derives from the perspective that school leaders and major stakeholders of the educational system that Black and Brown and or marginalized students are human beings and building, sustaining, and improving on relationships within and outside of the educational sphere, where behavior is not always penalized, but understood, and re-fashioned to suit the educational environment that is intentional in building and sustaining a positive place for all of its students.

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Design and Implementation of Collaborative Learning Activities for Simulating Spreads of Misinformation on Social Media During Disasters

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ABSTRACT

The spread of misinformation on social networking services (SNS) during disasters has become a serious problem worldwide. This study designed and implemented a collaborative learning activity in which high school students conducted simulations of misinformation diffusion on SNS during disasters and explored countermeasures based on the results. The results of a post-activity questionnaire suggest that the designed collaborative learning activity was effective in enabling students to simulate misinformation diffusion on SNS and to explore countermeasures based on the simulation outcomes.

Keywords: Simulating Spreads, Misinformation, Social Media, Disasters

INTRODUCTION

In recent years, cases of misinformation spreading on SNS during disasters have been reported worldwide. At the same time, many young people, including high school students, use SNS on a daily basis. Therefore, it is important for high school students to explore countermeasures against the spread of misinformation. However, the diffusion of misinformation is a complex phenomenon influenced by multiple interacting factors. Thus, a learning process is required in which students analyze factors behind misinformation diffusion in past disasters, consider possible misinformation in future disasters, and explore countermeasures based on simulation results.

In this study, we designed and implemented a collaborative learning activity in which high school students simulate misinformation diffusion on SNS during disasters and explore countermeasures based on the results. Specifically, the activity consisted of three components:

- Analysis of misinformation diffusion during the Great East Japan Earthquake
- Examination of possible misinformation during a major earthquake expected to occur along the Nankai Trough off the southern coast of Japan
- Exploration of countermeasures based on simulation results

The activity was implemented with 201 second-year students (five classes) at a Japanese high school (“H” High School). According to the post-activity questionnaire, 80.2% of students responded positively regarding their understanding of the SIR model for predicting misinformation diffusion, and 91.5% responded positively regarding their ability to simulate the model using a computer. Additionally, students expressed reflections on their own information-sharing behavior on SNS and proposed concrete countermeasures that SNS platform providers should take. These results suggest that the designed collaborative learning activity is effective for enabling high school students to simulate misinformation diffusion and explore countermeasures.

This paper is structured as follows: Section 2 describes the SIR-based misinformation diffusion model for high school students; Section 3 presents the classroom practice; Section 4 reports the questionnaire results; and Section 5 concludes the study.

MODELING INFORMATION DIFFUSION ON SNS

One mathematical model describing the spread of infectious diseases is the Kermack–McKendrick SIR model [1]. In this model, the population is divided into three states: Susceptible, Infectious, and Recovered. Let the populations of each state at time t be denoted by $S(t)$, $I(t)$, and $R(t)$. Let “ β ” denote the infection rate and “ γ ” the recovery rate. The model is represented by differential equations (1) through (3).

$$\frac{dS(t)}{dt} = -\beta S(t)I(t) \quad (1)$$

$$\frac{dI(t)}{dt} = \beta S(t)I(t) - \gamma I(t) \quad (2)$$

$$\frac{dR(t)}{dt} = \gamma I(t) \quad (3)$$

From the model, the number of new infections is proportional to both $S(t)$ and $I(t)$, while the number of recoveries is proportional to $I(t)$. Extensions of the SIR model to information diffusion on SNS have been studied (e.g., [2–4]). However, since differential equations are not a required topic in Japanese high school mathematics, it is difficult for students to understand and simulate such models. Therefore, the SIR model is reformulated as shown in (4) through (6) using recurrence relations, which are part of the high school curriculum [5].

$$S_{n+1} - S_n = -\alpha \times S_n \times I_n \quad (4)$$

$$I_{n+1} - I_n = (\alpha \times S_n \times I_n) - (\beta \times I_n) \quad (5)$$

$$R_{n+1} - R_n = \beta \times I_n \quad (6)$$

Based on this, we propose an SNS misinformation diffusion model for high school students. The states are defined as:

- S (Non-spreaders) : Users who have not spread misinformation but may do so

- I (Spreaders) : Users who are spreading misinformation
- R (Non-spreaders after correction) : Users who will not spread misinformation

State transitions are limited to $S \rightarrow I$ and $I \rightarrow R$, and the total population remains constant. The transition probabilities are defined as diffusion rate “a” is probability of $S \rightarrow I$ and correction rate “b” is probability of $I \rightarrow R$. The number of individuals in each state is expressed using recurrence relations. In this case, we will express the number of people in groups S, I, and R using the recurrence relations (7) through (9) below. In recurrence relations (7) through (9), “n” represents a unit of time; in this study, we define it as the number of days.

$$S_{n+1} - S_n = -a \times S_n \times I_n \quad (7)$$

$$I_{n+1} - I_n = (a \times S_n \times I_n) - (b \times I_n) \quad (8)$$

$$R_{n+1} - R_n = b \times I_n \quad (9)$$

CLASSROOM PRACTICE

Overview

The lessons were conducted over four sessions with 201 second-year students (16 to 17 years old) at “H” High School in Japan. The content of each session is described below.

Analysis of Misinformation during the Great East Japan Earthquake

Students analyzed factors influencing the spread and containment of misinformation on SNS. This study examined a hoax that spread on Twitter during the 2011 Great East Japan Earthquake—claiming that “harmful substances from the Cosmo Oil explosion had attached themselves to clouds and would fall with the rain”—and analyzed the chronological data^[2] of the hoax tweets and the corrective tweets.

Students analyzed diffusion and containment factors from three perspectives: content, temporal trends, and user motivations. For example, students suggested that misinformation spread due to fear and altruistic intentions without verification, and that rapid dissemination of corrections led to containment.

Simulation Using the SIR Model

Students conducted simulations on Google Colab. They updated users’ state transitions on a daily basis. They then compared the peak day, peak value, and convergence day under different values of the diffusion rate a and the correction rate b . The simulation originally outputs the trajectories of susceptible S , infected I , and recovered R . To clarify the focus of comparison, only the graph of infected users I , which directly represents the spread of misinformation, was visualized.

For example, when $a = 0.05$ and $b = 0.1$, the peak occurred on day 2, the peak value was 989, and convergence was reached on day 50. Students explored different parameter settings and analyzed how diffusion and correction rates affect peak day, peak value, and convergence.

Examination of Possible Misinformation

Students examined possible misinformation in a future Nankai Trough Earthquake. Misinformation was categorized using:

- Three characteristics : action-inducing, negative, anxiety-inducing[6]
- Six temporal categories : cause, recurrence, primary damage, secondary damage, countermeasures, daily life[7]

Students selected one of 18 combinations and generated specific misinformation examples as shown in Figure 1. They then created diffusion and containment scenarios based on simulation results, considering spreaders, motivations, and containment factors.

	disaster occurrence		damage occurrence		response	recovery
	disaster causes	disaster recurrence	primary damage	secondary damage	disaster countermeasures	life in the affected area
action-inducing						
negative						
anxiety-inducing						

ex. Train service suspension due to a landslide

Figure 1: Matrix for Evaluating the Content of Misinformation

Exploration of Countermeasures

Students explored countermeasures to suppress the spread of misinformation and to accelerate its convergence on SNS in the context of a potential Nankai Trough Earthquake, based on the results of the SIR model simulations. They first identified combinations of the diffusion rate and the correction rate that would reduce the peak number of spreaders and shorten the time required for convergence. They then examined practical measures necessary to achieve these outcomes.

To structure their analysis, students considered three types of stakeholders: general users, mass media, and governmental organizations or companies, and examined countermeasures from the perspectives of both diffusion suppression and convergence promotion. For example, for general users, students suggested refraining from sharing unverified information and promptly issuing corrections when misinformation had been spread. For mass media, they proposed reporting characteristics of unverifiable information observed in past disasters and continuously disseminating accurate information. For governmental organizations and companies, they suggested providing educational content to improve information literacy, along with rapid fact-checking and proactive dissemination of accurate information through official channels(Table 1).

Table 1 Measures by Stakeholder

Stakeholders	Suppression of Diffusion (Reducing the Spreading Rate <i>a</i>)	Accelerating Convergence (Increase the Debunking Rate <i>b</i>)
General User: <i>Evacuees</i>	<i>Do not share unverified information</i>	<i>If you realize you have shared misinformation, correct it</i>
Mass Media: <i>TV</i>	<i>Share examples and characteristics of difficult-to-verify information during past disasters</i>	<i>Continue sharing accurate information from authorities and businesses</i>
Administrative Agencies, Enterprises: <i>Local government</i>	<i>Promoting information-sharing literacy during disasters</i>	<i>Promote Fact-Checking and Proactive Information Sharing</i>

POST-ACTIVITY QUESTIONNAIRE

A post-activity questionnaire was conducted using Google Forms, yielding 152 valid responses (response rate: 75.6%). Regarding understanding of the mathematical model for predicting misinformation diffusion, 80.2% of students provided positive responses, while 19.7% reported some level of difficulty, mainly due to challenges with recurrence relations and parameter interpretation. Regarding the ability to perform simulations, 91.5% of students responded positively, although some reported difficulties in adjusting the diffusion and correction rates. Qualitative responses indicated that students found it meaningful to model real-world phenomena and to examine them through simulation. Some students reported reconsidering their own information-sharing behavior on SNS, while others proposed concrete countermeasures for SNS platform providers. In addition, several students suggested improvements to the simulation model.

At the same time, some responses pointed out limitations of the model, such as the need to consider additional state transitions and contextual factors influencing misinformation spread. These findings suggest both the educational effectiveness of the activity and the need for further refinement of the model.

CONCLUSION

In this study, we designed and implemented a collaborative learning activity in which high school students simulate misinformation diffusion on SNS and explore countermeasures based on the results. The activity consisted of three components: analyzing misinformation diffusion during the Great East Japan Earthquake, examining potential misinformation in a future Nankai Trough Earthquake, and exploring countermeasures based on simulation outcomes. The post-activity questionnaire showed that 80.2% of students reported understanding the SIR model and 91.5% reported being able to perform simulations. Students also reflected on their own information-sharing behavior and proposed countermeasures for SNS platforms. These results suggest that the designed activity is effective in promoting both understanding of misinformation diffusion and exploration of countermeasures.

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Accessible by Design: How AI and Adaptive Tools Can Reduce Teacher Burnout and Support Student Independence

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ABSTRACT

Artificial intelligence is reshaping not only how educators teach but how many students they can effectively reach. This practice-based study examines how AI and adaptive tools supported teacher well-being and strengthened student independence across KIPP DC's middle grades. Anonymous educator reflections, interactions with a custom UDL-aligned AI tool, and aggregate ANet achievement trends were analyzed to explore shifts in workload, instructional access, and student autonomy. Teachers reported that AI reduced redundant planning tasks, streamlined IEP-driven responsibilities, and made differentiated instruction easier to sustain. Students, especially those with disabilities, benefited from clearer scaffolds, leveled supports, and tools that helped them approach grade-level content with greater confidence. The findings suggest that AI can serve as a collaborative partner that reduces cognitive load, expands accessibility, and restores time for meaningful teaching and connection.

Keywords: AI in education, accessibility, teacher well-being, UDL

1 INTRODUCTION

Teachers today face responsibilities that stretch far beyond instruction. They must differentiate for diverse learners, meet compliance timelines, address increasing academic and behavioral needs, and sustain the relationships that anchor students to school. These demands are especially heavy in settings with large numbers of students with disabilities, multilingual learners, or students requiring individualized support. As workloads rise, time—not effort—is the limiting factor, leaving less room for creativity and the restorative practices that keep educators grounded.

Artificial intelligence (AI) and adaptive technologies have emerged as potential supports. Research highlights their ability to automate repetitive tasks, streamline documentation, and accelerate planning processes. Yet many educators remain cautious, particularly in special education, where privacy, accuracy, and equitable access must be considered.

At many urban schools across the world, these questions carry urgency, particularly in predominantly low-income student populations. Persistent opportunity gaps require instructional approaches anchored in accessibility and relationships. The 2024–2025 school year included intentional efforts to introduce AI tools that could reduce teacher workload while expanding access for students who rely on clear scaffolds and consistent routines.

This study examines how these tools were used in everyday practice, drawing on educator reflections, interactions with a custom UDL-aligned AI tool, and aggregate ANet performance trends. The aim is to understand how AI might function as an accessibility partner, reducing cognitive load for teachers while strengthening independence for students with disabilities. Ultimately, the study explores what becomes possible when technology enhances the human elements of teaching, rather than replacing these elements.

2 LITERATURE REVIEW

Research on artificial intelligence in education has expanded rapidly, particularly since the COVID-19 pandemic accelerated digital learning. Studies show that AI can reduce administrative load, support instructional planning, and streamline tasks that often consume teacher time (Holmes

et al., 2019; Luckin et al., 2016). These findings align with research linking burnout to workload, role overload, and limited time for meaningful student interaction (Skaalvik & Skaalvik, 2017).

AI is especially relevant in special education, where individualized supports and documentation are essential. Adaptive tools such as text-to-speech, guided organizers, and multimodal content have been shown to reduce cognitive barriers and promote student agency (Zhang & Wang, 2020). These tools expand, rather than diminish, the role of skilled educators.

However, scholars warn that AI systems can reinforce inequities when they ignore cultural context or reflect biased data (Benjamin, 2019; Williamson & Eynon, 2020). This is particularly important for urban schools serving predominantly low-income and Black students, where equitable access and culturally responsive design must guide implementation.

A persistent gap in the literature concerns student independence. While many studies address efficiency and differentiation, fewer examine whether AI scaffolds help students begin and sustain work with less adult prompting. Similarly, limited research explores how AI-supported planning affects teacher well-being in real-world school environments.

3 METHOD

This practice-based study explored how educators in KIPP DC's middle grades used artificial intelligence (AI) and adaptive tools during the 2024–2025 school year, focusing on teacher workload, instructional planning, and student independence. Three sources of information were analyzed: educator reflections, interactions with a UDL-aligned AI tool, and aggregate ANet benchmark data.

3.1 Participants

Participants were general education teachers, special educators, and instructional coaches across an urban charter school in eastern Washington, D.C. These educators work in a setting serving predominantly Black students from low socioeconomic backgrounds, with substantial proportions of students with disabilities. Participation was voluntary, and no identifying information was collected. Only the grade band selected on the anonymous survey was retained.

3.2 Data Collection

Educator input was gathered through informal reflections during professional development, coaching, and planning, alongside an anonymous Google Form that asked about AI familiarity, frequency of use, tool helpfulness, perceived stress reduction, and challenges. Respondents who selected “never” exited after the initial section.

A third data source came from a custom-built AI tool that generated concise, UDL-aligned instructional strategies across the UDL principles. Suggestions were tailored to grade band and teacher experience level. Internal logs indicated that the tool met its success criteria in eight of nine test conversations, with one conversation unscored due to a technical error.

3.3 Achievement Data

To contextualize shifts in student independence, the study reviewed aggregate ANet data from the 2024–2025 and 2025–2026 school years. ANet measures mastery of priority reading and math skills using four performance brackets. Only system-level aggregates were analyzed.

4 RESULTS

4.1 Outcome 1: Reducing Burnout Through Automation

Educator feedback highlighted the impact of AI on reducing planning time and administrative load. Teachers described how AI supports the tasks that typically consume hours: rewriting materials,

generating scaffolds, and producing data trackers. This relief was particularly meaningful for teachers responsible for accommodations and adapted assignments.

The custom-built UDL tool was frequently cited as helpful. Teachers could upload a lesson plan and receive grade-appropriate, actionable recommendations across the UDL principles. The tool adapted to the teacher's experience level, offering support without overwhelming newer educators. Internal prototype logs confirmed reliability, and teacher reflections reinforced this: *"THIS IS AMAZING!!!!!! Just tried it out with [an ELA Curriculum] lesson... Bravo friend!"*

Survey responses echoed these impressions. Teachers identified AI as helpful for generating accommodation ideas, simplifying progress monitoring, and producing leveled materials. Many reported that AI shortened the time between planning and instruction and freed up "mental space" during demanding weeks.

Rather than diminishing teacher roles, AI allowed educators to redirect time toward small-group instruction, planning discussions, and student check-ins. These findings suggest that accessibility-aligned AI tools can meaningfully reduce teacher workload while preserving time for human connection.

4.2 Outcome 2: Promoting Student Independence

Educators also observed shifts in students' ability to manage tasks independently. Students used AI-generated scaffolds, such as leveled explanations, organizers, and step-by-step guidance, to begin work more confidently and sustain effort with less adult support.

These reflections aligned with ANet performance trends. Across 2024–2025 and 2025–2026, the proportion of students in the lowest bracket decreased significantly in both subjects (Math: 73% → 35%; ELA: 72% → 38%). More students moved into the On Ramp and Access bands, signaling stronger readiness for grade-level work.

Patterns were similar for students with disabilities. Educators attributed these shifts to clearer scaffolding and consistent supports. AI tools offered myriad structured entry points that helped students approach complex material more independently.

While causation cannot be established, the alignment between teacher observations and achievement patterns suggests that well-designed accessibility supports can strengthen student autonomy.

5 DISCUSSION

The results suggest that AI can reduce barriers that often prevent teachers from doing their best work. When applied intentionally, automation allows educators to redirect time toward instruction and relationship-building, echoing findings from earlier research (Holmes et al., 2019; Luckin et al., 2016).

For teachers managing diverse learner needs and heavy compliance expectations, the ability to adapt materials quickly was especially valuable. AI-generated scaffolds and UDL-aligned strategies supported personalization without adding complexity. These findings align with studies showing the benefits of multimodal supports for students with disabilities (Zhang & Wang, 2020).

ANet trends provide additional context: clearer scaffolds and stronger entry points appeared to increase students' willingness to attempt grade-level tasks independently. This aligns with research showing that accessible design improves engagement and persistence for neurodivergent learners (Zawacki-Richter et al., 2019).

The equity implications are significant. In historically underrepresented ed-tech research, accessibility-aligned AI tools must be implemented with cultural awareness and transparency. Teachers noted concerns about privacy, inconsistent policies, and unfamiliarity with AI. These concerns highlight the need for guidance, professional learning, and ethical implementation.

Overall, the convergence of reflections and achievement trends suggests that AI can function as a collaborative partner, one that reduces cognitive load, expands accessibility, and strengthens student autonomy when aligned with UDL principles.

6 CONCLUSION

This study suggests that AI and adaptive tools can meaningfully support accessibility and teacher sustainability. Across KIPP DC's middle grades, AI-supported scaffolds and UDL-aligned strategies helped teachers reduce planning time and navigate administrative demands. Clearer supports allowed students to approach grade-level work with greater independence. While causation cannot be claimed, the alignment between reflections, tool performance, and achievement trends is promising.

To ensure responsible, equitable implementation, the following recommendations emerge:

1. **Anchor AI in UDL principles.** Prioritize tools that generate flexible pathways and multimodal supports.
2. **Provide targeted professional development.** Training should address features, ethics, privacy, and practical classroom use.
3. **Set clear expectations for responsible AI use.** Policies must outline permissible use and data protections.
4. **Monitor impact continuously.** Combine teacher feedback and aggregate data to refine implementation.

When implemented with care, AI can strengthen the human elements of teaching by giving educators the time, clarity, and flexibility needed to support every student.

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