OFFICIAL PROCEEDINGS

HEC2025

The 2nd Honolulu Education Conference

March 27-29, 2025

The Airport Honolulu Hotel Meeting Center

THE 2ND HONOLULU EDUCATION CONFERENCE PROCEEDINGS

ISSN: 2436-9322

Table of Contents

THE 2ND HONOLULU EDUCATION CONFERENCE PROCEEDINGS

ISSN: 2436-9322

Section I: Executive Summary

The 2nd Honolulu Education Conference was held March 27-29, 2025 at the at the Airport Honolulu Hotel Conference Center in Honolulu, Hawaii, USA.

Section II: Overview

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 provided a unique platform to examine the lessons learned and chart a course for the future.

HEC2025 addressed 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?

The 2nd Honolulu Education Conference is being convened by INTESDA in association with the School of Public Policy at Chiang Mai University, Thailand; Los Angeles Pierce College, USA; and the Multicultural Center at Purdue University Indianapolis (IUPUI); the Center for the Foundation of Ethics at Houston Christian University; and the College of Business and Economics at the University of Wisconsin at Whitewater.

HEC2025 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. We would like to thank our readers who volunteered their personal time to review and grade abstract proposals. The proceedings have been published in electronic format. The ISSN is 2436-9322.

HEC2025 Organizers

HEC2025 was organized by INTESDA, which s a diverse community of educators, academics and nonprofit professionals founded in 2015, in part, to support the Sustainable Development Global Goals set by the United Nations. It is committed to addressing sustainable development issues through capacity building, advocacy, networking and sharing knowledge.

THE 2ND HONOLULU EDUCATION CONFERENCE PROCEEDINGS
ISSN: 2436-9322

HEC2025 Welcome Letter

Aloha Participants,

It is my honor to welcome each of you to *The 2nd Honolulu Education Conference* – HEC2025. The inception for this event began in 2021 as a discussion within the American Chamber of Commerce Japan and Rotary International Japan as to how and to what degree the COVID-19 pandemic was impacting and changing education both negatively and positively.

Initially, this event was planned only as a workshop, but as momentum and interest grew, we decided to hold it as a conference. At the time, Japan was still 'closed' due to pandemic travel restrictions, and so we decided to convene this event in Hawaii – the nearest part of the USA to Japan.

Ironically, just as the pandemic seemed to be subsiding, the Delta variant struck in late 2021, and as a result many participants were unable to receive travel permission from their home countries. Thus, the inaugural Honolulu Education Conference was held online in early January 2022.

Throughout the past three years, we continued to plan and promote this event in the hopes that it could be held in-person. As travel restrictions were lifted, we began in earnest to proceed with launching HEC2025, which we hope will continue to be held as an annual event in Honolulu to bring together educators from around the world to meet and discuss issues, research and innovative ideas in the field of education.

In fact, we are already planning to hold HEC2026 from March 12 to 14, 2026. We hope all of you will consider participating as presenters or as readers and to share this event in your network.

As for HEC2025, we are delighted to have received more than 100 presentation proposals and audience applications. We expect approximately 60 participants from the USA, Canada, Japan, South Korea, India, UAE, the UK, Thailand, Hungary, Singapore, South Africa, Poland, Malaysia, France and elsewhere to join us in-person and online over the course of this three-day conference.

Finally, I would like to add that I unfortunately will not be able to attend HEC2025 personally, as I have undergone a recent medical procedure, which does not allow me to fly. Nevertheless, I am entrusting the onsite and online coordination of HEC2025 to Mr. Michael Sasaoka, Mr. Tim Desmond and Mr. Ray Basho.

We thank you in advance for your kind understanding and participation in this important special event on education!

Mahalo,

Takayuki Yamada
Chairperson
INTESDA, Japan
HEC2025 Program Committee

THE 2ND HONOLULU EDUCATION CONFERENCE PROCEEDINGS
ISSN: 2436-9322

Schedule Overview
THE 3RD HONOLULU EDUCATION CONFERENCE (HEC2025)
27-29 MARCH 2025

DAY 1:
THURSDAY, 27 MARCH 2025
VENUE: Airport Honolulu Hotel Conference Center, Hawaii, USA

Time	Activity	Location
09:00 to 10:00	**Registration, Check-in, Poster Set Up**	**1st Floor, Maui Ballroom**
10:00 to 10:15	**Opening Remarks**	**1st Floor, Maui Ballroom**
10:30 to 11:20	**Official Opening Welcome Brunch**	**1st Floor, Maui Ballroom**
10:30 to 11:20	Poster Session 0144, 0140, 0139, 0165, 0172, 0187, 0108, 0107, 0113, 0118	**1st Floor, Maui Ballroom**
11:30 to 12:55	Oral Session A-1: 0155, 0185, 0189	**1st Floor, Maui Ballroom**
13:05 to 15:00	Oral Session B-1: 0160, 0181, 0150, 0194	**1st Floor, Maui Ballroom**
15:10 to 16:55	Oral Session C-1: 0184, 0166, 0146, 0192	**1st Floor, Maui Ballroom**
Virtual Sessions:	**(A)** 0195, 0190, 0188, 0152, 0193, 0169, 0159; **(B)** 0149, 0148, 0136, 0110	

DAY 2:

FRIDAY, 28 MARCH 2025
VENUE: Airport Honolulu Hotel Conference Center, Hawaii, USA

11:00 to 12:00 Roundtable Discussion on Education in the Post-Pandemic Era
Join us for a coffee and discussion in the Airport Honolulu Hotel Lounge

15:00 to 17:15 (HST) Virtual Session A: Plenary Session and Live Presentations
Virtual Presenters: 0195, 0190, 0188, 0152, 0193, 0169, 0159

DAY 3:
SATURDAY, 29 MARCH 2025
VENUE: Airport Honolulu Hotel Conference Center, Hawaii, USA

Virtual Session B: Pre-recorded Presentations
Virtual Presenters: 0149, 0148, 0136, 0110

ISSN: 2436-9322

Poster Session 10:30 to 11:20 1st Floor Maui Ballroom

HEC2025_0144 General Education	*Supporting Graphical Literacy in the Early Grades through interactive Read Alouds* **Karen Morrison, University of South Alabama, USA**
HEC2025_0140 Higher Education	*Christian Institution Analysis of Ghana* **Anungla Jamir, Baylor University, USA[1]**
HEC2025_0139 Higher Education	*Operational Faith Identity: Taiwan* **Hunter Kulesza, Baylor University, USA[1]**
HEC2025_0165 Special Topic: Innovations in Pedagogy	*Development of a Thermal Imaging-Based Voltmeter for Improving Electricity Education* **Tomotaka Kozuki, Hiroshima International University, Japan[1];** Yutaka Kobayashi, Hiroshima International University, Japan[2]; Takashi Terashige, Hiroshima International University, Japan[3]
HEC2025_0172 Innovations in Pedagogy	*To Grade or Not to Grade-That is the Question* **Kelly Eberhart, Saint Mary's College, USA[1]**
HEC2025_0187 Education Technology	*Modern Practicums: Crafting Engaging Learning Experiences Across Modalities* **Stacey Murray, University of Southern Indiana, USA[1]**
HEC2025_0108 STEM Education	*Elderly people: Towards Innovative Mobile Applications in the Area of Health Promotion* **Daria Wrukowska, University of Szczecin, Poland[1]**
HEC2025_0107 STEM Education	*Making the Most of the Potential of the Elderly in Implementing the Concept of Developing the Silver Economy* **Daria Wrukowska, University of Szczecin, Poland[1]**
HEC2025_0113 Language Education	*Foreign Language Teaching and Learning During COVID-19: How were the stakeholders coping?* **Michał B. Paradowski, Institute of Applied Linguistics, University of Warsaw, Poland[1]**
HEC2025_0118 Business Education	*Social Media Education in the Context of Marketing Innovations* **Martyna Kostrzewska, University of Szczecin, Poland[1]**
11:20 to 11:30	**Break**

ISSN: 2436-9322

ORAL SESSION A-1 11:30 to 12:55 1st Floor Maui Ballroom

Time	**Oral Session A-1** *Pedagogy and Policy*	**11:30 to 12:55** Moderator: William C. Frick
11:30 to 11:55	**HEC2025_0155** Special Topic: Innovations in Pedagogy *Case Study of Caregiver Perspectives as Their Children with Invisible Disabilities Navigate the K-12 System* **Tamiko Garrett, Western Michigan University, USA[1]**	
12:00 to 12:25	**HEC2025_0185** Administration, Policy and Leadership *Schooling and the Politics of Revitalization: A Tale of Two Governments in a Quest for Better Urban Education* **William C. Frick, University of Sharjah, UAE[1];** Sara Doolittle, University of Central Oklahoma, USA[2]; Mehmet Şükrü Bellibaş, University of Sharjah, UAE[3]	
12:30 to 12:55	**HEC2025_0189** Higher Education and Further Education *College Completion - What Works: Exploring Critical Factors* **Wendy Maragh Taylor, Vassar College, USA[1]**	
12:55 to 13:05	**Break**	

ORAL SESSION B-1 13:05 to 15:00 1st Floor Maui Ballroom

Time	**Oral Session B-1** *Culture, Equity and Social Justice*	**13:05 to 15:00** Moderator: Miriam White
13:05 to 13:30	**HEC2025_0160** Culture, Equity and Social Justice *Preparing Preservice Teachers for Diversity* **Miriam White, Bemidji State University, USA[1]**	
13:35 to 14:00	**HEC2025_0181** Culture, Equity and Social Justice *A Version of the Past* **Kay Hones, KeyInfo, Inc, USA[1]**	
14:05 to 14:30	**HEC2025_0150** Culture, Equity and Social Justice *Culturally Responsive Teaching Strategies* **George Ojie-Ahamiojie, University of Maryland Eastern Shore (UMES), USA[1]**	
14:35 to 15:00	**HEC2025_0194** Sustainability Practices *Too Good To Go Student Users : User Behavior and Sociological Implications* **Noemi Linares-Ramirez, St. Mary's College, USA[1]**	
15:00 to 15:10	**Break**	

ISSN: 2436-9322

ORAL SESSION C-1 15:10 to 16:55 1st Floor Hawaii Room

Time	*Innovation, Technology & Language* Moderator: Daniel J Miller
15:10 to 15:35	**HEC2025_0184** Language Education, Linguistics and ESL/EFL *Online Language Learning and Teaching in Thailand: Reflections from Multiple Lenses* **Pragasit Sitthitikul, Language Institute, Thammasat University, Thailand[1]**
15:35 to 16:00	**HEC2025_0166** Education Technology and Remote Learning *Enhancing Remote Learning Through Artificial Intelligence: A Path to Accessibility, Equity, and Personalization* **Monika Mercz, The George Washington University, USA[1]**
16:05 to 16:30	**HEC2025_0146** Special Topic: Innovations in Pedagogy *A Case Study on Implementing Growth Based Grading Practices in the Advanced ELA High School Classroom* **Daniel John Miller, Fairfax High School, USA[1]; David Leon Friedman, Fairfax High School, USA[2]**
16:35 to 17:00	**HEC2025_0192** Language Education, Linguistics and ESL/EFL *Creating Language Spaces: Challenging Barriers, Advancing Multilingualism* **Pablo C. Ramirez, CSU Dominguez Hills, USA[1]**

VIRTUAL SESSION A FRIDAY, MARCH 28, 2025 15:00 to 17:15

Time Zones	15:00 to 17:30 Hawaii Standard Time 17:00 to 19:30 Pacific Standard Time 19:00 to 21:30 Central Standard Time 10:00 to 12:30 p.m. Japan Standard Time (Saturday, 29 March)
15:00 to 15:10	**Virtual Session Moderator and Closing Remarks: Ray Basho** **Welcome Remarks by Michael Sasaoka**
15:10 to 15:30	**HEC2025_0195 Plenary Presentation I** AI in Education *Futuristic Approaches for Analyzing Artificial Intelligence (AI) and Robotics Issues in Educational Contexts* **Jo Ann Oravec, University of Wisconsin at Whitewater, USA[1]**
15:30 to 15:50	**HEC2025_0190 Plenary Presentation II** Higher Education and Further Education *Science of Peace Economics* **Robert W Reuschlein, Real Economy Institute, USA[1]**
15:50 to 16:05	**HEC2025_0188** General Education *The Great Haitus?!* **Michael Biehler, University of Alberta, Canada[1]**
16:05 to 16:20	**HEC2025_0152** Education Technology and Remote Learning *This is the Way! Harnessing the Disruptive Force of AI* **Rab Paterson, Rikkyo University's Center for Foreign Language Education and Research, Japan[1]; Kaori Hakone, Osaka Jogakuin University, Japan[2]**
16:20 to 16:35	**HEC2025_0163** Culture, Equity and Social Justice *Mentoring is Win Win* **Kay Hones, KeyInfo, Inc, USA[1]**
16:35 to 16:50	**HEC2025_0193** Higher Education and Further Education *Usage of Social Media by Higher Education Students in Tamil Nadu: A Study of Motivations, Preferences, and Impacts* **Venkatalakshmi K, Anna University, India[1];** Mozhliarasi, Anna University, India[2]
16:50 to 17:05	**HEC2025_0159** Culture, Equity and Social Justice *HEAL help Educate and Learn* **Kay Hones, KeyInfo, Inc, USA[1]**

ISSN: 2436-9322

VIRTUAL SESSION B SATURDAY, MARCH 29, 2025

Event	**SATURDAY, 29 MARCH 2025** **VENUE: Airport Honolulu Hotel Conference Center, Hawaii, USA** **Pre-recorded Presentations**
	Virtual Session B presentations will be made available to participants, when we have received the pre-recorded files.
	Virtual Session B presentations are listed below:
	HEC2025_0149 Culture, Equity and Social Justice *Educating the 'Disabled' Human Resources Development and Social Justice Issues in Ghana* **Tabita Ladzeh Akpey-Mensah, University of South Africa, South Africa[1]**
	HEC2025_0148 Arts & Humanities Education *Rethinking the Epistemological Foundations of Social Work: An Inquiry into its Artistic or Social Scientific Nature* **Mohamad Musa, Cape Breton University, Canada[1]**
	HEC2025_0136 Higher Education and Further Education *The Impacts of Mentorship on Dual Enrollment High School Students* **Dave Young, University of Washington, USA[1];** Bill Young, University of Washington, USA[2]; Lisa Young, Johns Hopkins School of Medicine, USA[3]
	HEC2025_0110 Liberal Education *Industry Undermining Inquiry: How Schools of "Independent Inquiry" Are Still Limited By Industrial-Era Child Labor Practices* **Ryan Klein, Boston College, USA[1]**

THE 2ND HONOLULU EDUCATION CONFERENCE PROCEEDINGS
ISSN: 2436-9322

HEC2025 Abstracts of Plenary Speakers

Plenary Speaker

HEC2025_0195
AI in Education

Futuristic Approaches for Analyzing Artificial Intelligence (AI) and Robotics Issues in Educational Contexts

Students are encountering artificial intelligence (AI) and robotics issues in everyday life implementations as well as in advertising "hype." This presentation will explore specific ways in which educators can use futuristic approaches in classrooms (such as scenario construction and trend analysis) to unpack an assortment of real-life technological concerns. The presentation will also explore how science fiction is influencing public perceptions of these matters. Through these futuristic methodologies, students can be better equipped to analyze and discuss some of the critical political and social impacts of these new technologies. Students may also be empowered to avoid the potential "future shock" involving the infusions of AI and robotics in workplaces, homes, and communities.
Jo Ann Oravec, University of Wisconsin at Whitewater, USA[1]

Plenary Speaker

HEC2025_0190
Higher Education and Further Education

Science of Peace Economics

The difference between Economics and Economic Engineering is the difference between a social science and a physical science. My accurate economic model has an accuracy much more characteristic of the physical world than the social world. Economists refuse to incorporate cycles like the nine year investment cycle of Clement Juglar (1858) and the 54 year cycle of Nicolai Kondratiev (1926). Engineers have the science training and systems thinking to handle physical world-like fluid systems. Two courses in particular are electrical engineering control theory and differential equations in mathematics. Here on the water planet, of course, climate change affects the economy. The natural world has nine year cycles in rains and the tides, like Juglar; and a 54 year cycle in temperature, like Kondratiev. One of my biggest challenges is connecting the economy to the natural world cycles. Then Then the next step is to connect the economy and natural cycles to the 54 year major war cycle.

Except what I said above, accuracy is held against me by many social scientists. One of my most amazing discoveries is that the rounding error of my 1921-1983 model with about 400 entries equals the accuracy of the overall model. That suggests that 100% accuracy can't be ruled out. This also suggests that the many critics of the underlying accuracy of the compilations of government data are greatly exaggerated. This accuracy is not possible unless the underlying data are accurate.

Accuracy is crucial. It refutes the notion that military research compensates for the military drag on the economy. The military drag on the economy makes it necessary to keep military levels low as possible between major wars. High military economies can cut the size of an economy in half relative to opponents over a fifty year period. Economics wins wars.
Robert W Reuschlein, Real Economy Institute, USA[1]

THE 2ND HONOLULU EDUCATION CONFERENCE PROCEEDINGS
ISSN: 2436-9322

HEC2025 Abstracts of Presenters

HEC2025_0189
Higher Education and Further Education

College Completion - What Works: Exploring Critical Factors
There is a calling into question whether higher education is living up to its promise as the great equalizer–being a force for socio-economic mobility. The benefits of a four-year college degree completion is well-documented, yet, the U.S. national average college graduation rate is alarmingly low at 51%, even while the rate of college enrollment has significantly increased over the last decades and includes a more diverse student body (Freeman et al., 2022; Magouirk et al., 2023; NCER, 2020; Tesfamariam et al., 2023)). There are gaps that contribute to the glaring lack of persistence and retention to degree attainment across higher education institutions. With a decrease in public confidence and the attacks on higher education, it's critical to look at what is working. There is sustainable work being done to foster student success towards college completion in order for students to reap the life-time benefits of earning a college degree.

The presenter will share findings from a Lumina Foundation funded study with Vassar College, "College Completion:What Works," identifying themes related to increased completion rates. The research team conducted a qualitative study using a "Positive Deviance" (Bradley et al., 2009) methodology to explore the processes of five diverse, by ownership type, student body size, and geography, institutions with significantly higher-than-expected graduation rates. The presenter will engage participants in considering potential applications at their respective institutions.
Wendy Maragh Taylor, Vassar College, USA[1]

HEC2025_0155
Special Topic: Innovations in Pedagogy

Case Study of Caregiver Perspectives as Their Children with Invisible Disabilities Navigate the K-12 System
The perspectives of caregivers navigating the K-12 school system is complex. When their children with invisible disabilities, (conditions that other people can not see) complicates the situation even more. This qualitative study examined the experiences of caregivers were having at a traditional high school in the mid west of the United States. The study was guided by the ecologies of parental engagement (EPE) framework. The phase social capital from the teachings of Pierre Bourdieu was utilized. Data was collected by the following methods: semi-structured interviews, member checking, follow-up interview, and document analysis. Four participants were selected based on the following criteria: their child was currently enrolled in the 11th or 12th grade and had been diagnosed with an invisible disability. The results of the study provided insight on caregivers experiences which are rarely analyzed. In addition, the study highlighted how implementation of collaboration between caregivers and school staff can be beneficial for a child's success and transition to employment, vocational training, or admission to higher education institutions.
Tamiko Garrett, Western Michigan University, USA[1]

HEC2025_0185
Administration, Policy and Leadership

Schooling and the Politics of Revitalization: A Tale of Two Governments in a Quest for Better Urban Education
This study examines political and interagency activity between two governments, a general purpose urban municipality and a single purpose Great City School System. A conceptual and analytical backdrop pertains to connections between schooling and community revitalization employing several political science constructs and observations about the increasing role that general purpose government plays in public schooling. A strategic, instrumental mixed methods case study is applied to a Metropolitan Area Projects (MAPS) for Kids initiative in Oklahoma City, Oklahoma (Warner, 2009). Qualitative and quantitative data render intersectional and contrasting versions of the influence of general purpose government in urban school system affairs. Findings indicate that authority and decision making may be too diffuse for general purpose government to realize comprehensive urban school renewal and that public perception of municipal government influence on its school district is more about positive impression than substantive change.

Keywords: school reform, community development, education governance, politics of education
William C. Frick, University of Sharjah, UAE[1]; Sara Doolittle, University of Central Oklahoma, USA[2]; Mehmet Şükrü Bellibaş, University of Sharjah, UAE[3]

ISSN: 2436-9322

HEC2025_0160
Culture, Equity and Social Justice

Preparing Preservice Teachers for Diversity
University programs are frequently asked to identify how they prepare teacher candidates to be culturally competent professionals. Data is examined in order to identify both what is missing or is weak within education preparation programs as well as those best practices found to be impactful in preparing preservice teachers to meet the needs of all learners in their classroom community. Criss Jami stated, “It’s not at all hard to understand a person; it’s only hard to listen without bias.” It is important to discuss the personal experiences and pre-professional development mindset of teacher candidates; it is necessary to examine how to coach future teachers how to scaffold their learning in order to extend their own personal and professional experiences on the topic of diversity.

Part of improving pre-service teaching preparation means addressing teaching practice, paying more critical attention to race in our schools. While most White teachers mean well and have no intention of being racist, pre-service teachers need to develop an understanding of how to address their reality of being White and intentionally uprooting racism from language or actions used while teaching, which is often based on microaggressions (2014). Working with pre-service teachers to identify and recognize when a microaggression has occurred and how to address the aggression to guide students and others of the message and meaning it is sending and to stop the injustice from occurring in their classroom or school environment.

This presentation addresses the approaches one midwestern university’s teacher preparation program has put into place to build a more informed and culturally aware teaching force.
Miriam White, Bemidji State University, USA[1]

HEC2025_0150
Culture, Equity and Social Justice

Culturally Responsive Teaching Strategies
This proposal explores the idea of culturally responsive teaching strategies in diverse courses and how they enhance students' learning and outcomes. According to the 2022 National Center for Education Statistics (NCES) data, educational institutions are becoming more diverse. All racial and ethnic groups have increased on campuses between 1980 and 2022 (NCES, 2022). Therefore, educators must develop teaching techniques that connect with students from multicultural backgrounds. Culturally responsive teaching strategies create an inclusive learning environment where students’ values, experiences, and cultural perspectives are respected.

This proposal presents an overview of the significance of cultural competencies and the possible challenges educators face while addressing the needs of diverse students. It will then explore culturally responsive teaching concepts that value and recognize every student's cultural identity, integrate different perspectives, views, and examples in discussions, and create a reassuring classroom that fosters inclusivity and reverence. Furthermore, different culturally responsive teaching approaches and their successes are explored. These strategies include using students' experiences and knowledge, inclusiveness and collaboration learning, incorporating relevant cultural teaching materials and understanding among students, and promoting cultural awareness that promotes student engagement and achievement.

Finally, it highlights the educator's role in implementing culturally responsive teaching strategies, the importance of self-reflection, checking biases and stereotypes, and teaching effectiveness and cultural competencies. This proposal provides a valuable perspective on adopting culturally responsive teaching strategies to enhance student's learning outcomes in a diverse learning environment. Educational institutions and educators can benefit from these strategies because they can create a learning environment that fosters student's success and engagement.
George Ojie-Ahamiojie, University of Maryland Eastern Shore (UMES), USA[1]

ISSN: 2436-9322

HEC2025_0181
Culture, Equity and Social Justice

A Version of the Past
Children's literature encompasses a rich tapestry of historical fiction, allowing young readers to explore cultural diversity across different time periods and locations. This presentation explores the world of historical fiction, categorizing it into four distinct types, providing a framework for selecting high-quality examples, and offering four engaging student projects that leverage the power of historical fiction.
diversity in different times and places.
Kay Hones, KeyInfo, Inc, USA[1]

HEC2025_0188
General Education

The Great Haitus?!
Countless "scientific" publications tell us that there has been no pause in global warming. But in 2018 Michael Mann and the IPCC admitted that there had been a 20 year "haitus". Tim Ball a Canadian climatologist stated that Mann's famous "hockey stick" graph is a fraud. He also stated that Mann should be "in the state pen, not in Penn State". Mann launched a multi-million dollar defamation law suit and after 9 years in court, he lost. Climate alarmism is bogus science!
Michael Biehler, University of Alberta, Canada[1]

HEC2025_0166
Education Technology and Remote Learning

Enhancing Remote Learning Through Artificial Intelligence: A Path to Accessibility, Equity, and Personalization
The COVID-19 pandemic has catalyzed a transformative shift in education, propelling remote learning into the mainstream. While this transition presents new opportunities for enhancing educational access, it also poses significant challenges, particularly concerning student learning outcomes. As we navigate this evolving landscape, leveraging artificial intelligence emerges as a critical strategy to enhance the accessibility, equity, and personalization of remote learning experiences.

AI technologies can facilitate personalized learning pathways, adapting educational content to meet individual student needs and thereby promoting engagement and mastery. By employing machine learning algorithms, educators can identify learning gaps and tailor interventions for diverse learner profiles. This approach ensures that all students, regardless of socioeconomic status, receive the necessary support for success. However, without proper insights and data-driven strategies, remote learning can exacerbate existing inequities, leading to poorer results for vulnerable populations.

Moreover, AI-driven analytics can inform policymakers about systemic inequities in education, highlighting areas requiring urgent intervention and resource allocation. This data-driven approach is crucial in addressing disparities and fostering a more equitable educational environment.

Nonetheless, the implementation of AI in education raises significant legal and ethical questions. Issues related to data privacy, algorithmic bias, and accountability must be thoroughly examined to safeguard students' rights and ensure equitable outcomes. As educational institutions adopt AI solutions, compliance with legal frameworks and ethical standards becomes paramount.

By sharing insights and best practices, we can collectively chart a course towards a more inclusive and effective educational landscape, ensuring that the lessons learned from the pandemic inform our approaches to future crises.
Monika Mercz, The George Washington University, USA[1]

ISSN: 2436-9322

HEC2025_0146
Special Topic: Innovations in Pedagogy

A Case Study on Implementing Growth Based Grading Practices in the Advanced ELA High School Classroom

In the aftermath of the COVID-19 pandemic and interruptions to traditional schooling across the world, many educators are grappling with the myriad learning gaps that students are presenting in their classrooms. These learning gaps present challenges for students and teachers. This case study presents the work that two educators have done over almost three years to research, implement, and refine theory related to social-emotional learning, improvement science, literacy, and standards-based grading practices in order to transform their assessment and feedback structures to diagnose and then meet those learning gaps. This case study will discuss the existing scholarship upon which we drew, the first iteration of our model as a pilot program for 2022-23, the revisions for the 2023-24 school year to the model, student outcomes and testimonials, as well as larger impacts on our school from this work. Implications involve more equitable outcomes for students, growth in social-emotional learning for students, and greater student engagement, success, and satisfaction in advanced courses.
Daniel John Miller, Fairfax High School, USA[1]; David Leon Friedman, Fairfax High School, USA[2]

HEC2025_0184
Language Education, Linguistics and ESL/EFL

Online Language Learning and Teaching in Thailand: Reflections from Multiple Lenses

In recent times, the realm of education has increasingly embraced innovation in technology. This disruption demands an immediate adjustment of all personnel relating to the education sector in order to be prepared and flexible. This study aimed to examine reflections on English-language online learning and teaching experiences among students, teachers, and experts in the field of technology education. The mixed-methods approach was used. The population was approximately 3,000 first-year undergraduates, twenty-six English teachers, and five experts. A simple random technique was used to select the participants. They included 839 first-year students enrolled in English for Communication 1, a course at a public university in the central region of Thailand. The purposive sampling technique was used to select the participants labeled as thirteen teachers and five experts. The 5-Likert scale English online learning questionnaire and semi-structured interviews were used as research instruments. The value of the alpha coefficient's reliability for the questionnaire was 0.91. The quantitative data was analyzed using percentages, mean, and standard deviations, while the semi-structured interview transcripts were analyzed using content analysis. The findings revealed that the loss of Internet signal, learning engagement, and understanding the nature of online learning present major concerns for students and teachers. Experts suggested that incorporating a diverse range of learning techniques into a suitable pedagogical approach, including creating a supportive learning environment, assessing learners' needs, and embedding meaningful learning objectives, is crucial in order to optimize students' learning outcomes.
Pragasit Sitthitikul, Language Institute, Thammasat University, Thailand[1]

ISSN: 2436-9322

HEC2025_0194
Sustainability Practices

Too Good To Go Student Users : User Behavior and Sociological Implications
The food waste movement in the U.S has achieved some major milestones in the public and private sectors, including colleges and universities. There's also been a social and cultural shift towards consumer responsibility, reflecting a broader individualization of environmental responsibility, which is often widely adopted in higher education. College students have grown more conscious regarding what they purchase and which companies they support. In this paper, we discuss the role of Too Good To Go (TGTG) in reducing food waste on college and university campuses, the types of students involved, and the sociological implications of this behavior. TGTG is a digital application in which users, often primarily students, can purchase "surprise bags" with leftover food from local restaurants and stores for a discount. This application aims to reduce food waste by preventing restaurants and stores from throwing away edible food only because it's nearing the end of the night or its expiration date. We find the users can be categorized into the following typologies.
Eco-conscious users: Motivated primarily by environmental concerns, sustainability, and reducing waste. Socially responsible consumers: Those who use the app as a form of ethical consumption and to align with broader social justice movements.

Pragmatic users: Primarily motivated by saving money and accessing affordable meals.
Convenience seekers: Interested in the ease of use and convenience of accessing food
Novelty Users: Interested in trying new foods and scoring good finds

Too Good To Go is rarely described as a tool for addressing food waste by students. Convenience and cost are often described as primary motivations by TGTG users. These motivations indicate applications like TGTG are normalizing sustainability, meaning students don't have to care about it to participate, which can result in more students engaging in sustainability practices.
Noemi Linares-Ramirez, St. Mary's College, USA[1]

HEC2025_0192
Language Education, Linguistics and ESL/EFL

Creating Language Spaces: Challenging Barriers, Advancing Multilingualism
Multilingual teachers navigate tensions of deficit strongholds favoring English and liberatory calls to undo oppressive harm while advancing justice. The researchr explores Project MEDALLA, a three-pronged approach to multilingual teacher education that fosters biliteracy and family-school relations through critical frameworks committed to sustaining students' and families' identities/ knowledges. Generative learning in Spanish cultivates ideological clarity and collective critical consciousness amongst novice and seasoned teachers, resulting in networks of transformative educators. Teachers' critical praxis advances students' and families' language and academic goals while building solidarity, dismantling hegemonic strongholds, and reimagining multilingual learning.

Participants will learn pillars of critical praxis, how to integrate them into multilingual teacher education/professional development, and applications for DL classrooms and school communities. Participants will gain tools to develop critical frameworks attuned to their local multilingual contexts.
Pablo C. Ramirez, CSU Dominguez Hills, USA[1]

ISSN: 2436-9322

HEC2025_0183
Arts & Humanities Education

Women's Folklife in Uttarakhand: Environmental Conservation, Nature and Emotion
Women's hardworking lives are a noteworthy aspect of the Uttarakhand Himalayas. Many scholars who have studied the region, like G. D. Berreman (1974), Willam Sax (1991), and Ramchandra Guha (1989), have pointed out the dominant role that women play in the agricultural sector of the region (Berreman 76; Sax 26; Guha 22). Women are the cornerstone of the state's rural economy and contribute significantly to farming, livestock raising, collecting fodder, domestic management, and providing for their families. For men, mountains are not conducive from an employment perspective, and generations of men have migrated in search of livelihood opportunity. Whereas, women have taken charge of all household, agricultural, and resource-collecting responsibilities. Women have been the true custodians of Uttarakhand's land, forests, and rural economy. In the region, a woman is commonly referred to by the colloquial name pahadan, which signifies "that her life is rooted in the mountains" and encapsulates her special connection to the natural world. This word is a cultural construct that alludes to their tenacity and social function as carers and nurturers of the environment and family. To comprehend women's pro-environmental ethos, one needs to comprehend their perception of the environment as shaped by their continuous interaction with nature. Their domestic responsibilities make them spend long hours in the forest which is a place women call their mother's home (mait) in folklore. Women's folk singing lies at the intersection of their work in the forest and emotional feelings, which makes their contribution to folklore unique and places it in a strong position within the broad spectrum of folk expressivity. The paper examines women's oral traditions reflects a sense of attachment to mountain and forest ecosystems. It expounds on the diverse ways in which women have intimate connections with nature based on their work, cultural, and emotional lives.
Ruchi Rana, University of Illinois Chicago, USA[1]

HEC2025_0179
STEM Education and Life Science

Empowering Mathematics Educators with AI: Strategies for Supporting Student Success
Mathematics education constitutes a major predictive factor in predicting students' academic success. Artificial intelligence (AI) is an emerging field that has the potential to redefine and revolutionize the landscape of mathematics education. This research essay aims to explore and investigate the impact and potential of AI on mathematics education. We will be using reports by PISA (Program of International Students Assessments) and TALIS (Teaching and Learning International Survey) as the basis for understanding the challenges faced by teachers. The paper investigates how AI-powered tools can address learning gaps and support teachers in overcoming these challenges, enhancing both pedagogy and student learning outcomes. Additionally, the research examines the advantages and limitations of AI integration in mathematics education. . Ultimately, the essay aims to highlight AI's role in revolutionizing educational practices and fostering improved learning experiences for students.
Veena Paliwal, University of West Georgia, USA[1]

HEC2025_0144
General Education

Supporting Graphical Literacy in the Early Grades through interactive Read Alouds
Graphics, such as charts and tables, are a common textbook feature across content areas and a part of standardized assessments. Learning to make sense of these graphics supports students' comprehension by providing a multilayered reading experience extending beyond words alone. Students must be taught to recognize, decipher, and apply the information within various types of graphics to fully comprehend nonfiction informational text. Interactive read alouds is one instructional strategy for effectively addressing students' graphical literacy. An interactive read aloud, which fosters two-way communication with the possibility for an exchange of information occurring at any point during the read aloud, provides opportunity for enhancing engagement and interest as students ask questions and share connections with the text through teacher guidance directed toward noticing, identifying, and interpreting any graphics.
Karen Morrison, University of South Alabama, USA[1]

ISSN: 2436-9322

HEC2025_0140
Higher Education and Further Education

Christian Institution Analysis of Ghana
Higher education is the key to the growth and development of a society or nation. With globalization and massification, Christian higher education is constantly evolving to adapt to the changing environment. As secularization becomes a global phenomenon, countries all over struggle to find the right balance between serving the needs of society while also maintaining their Christian identity. This tension is evident in Ghana, a country that is growing fast in population and demanding more access to higher education. Utilizing the Operational Faith Identity Guide developed (OFIG) by Glanzer et al., (2023), thirteen Christian institutes of higher education in Ghana have been studied in this paper to determine the vital areas that are given priority in terms of maintaining their Christian identity. In a country where Christianity is practiced by more than seventy percent of the population, the role of higher education in promoting and upholding the Christian faith and practices, especially among young people, becomes even more crucial. Through the qualitative study of data from the official websites of the institutes, a quantitative analysis has been made in this paper. Three interviews have also been conducted to shed light on the present and future hope of higher education in Ghana, depicting a redemptive arc for Christian higher education there.
Anungla Jamir, Baylor University, USA[1]

HEC2025_0139
Higher Education and Further Education
Operational Faith Identity: Taiwan
Higher Education institutions are constantly having to change and adapt to the growing world around us. To an arguably even greater extent, private higher education internationally has to continually adapt to keep up with the dominance of public education. This proves true in Taiwanese higher education, where Christian private higher education is small. As of today, there are 9 Christian higher education institutions in Taiwan. Using the Operational Faith Identity Guide developed by Glanzer et al., (2023), higher education in Taiwan was analyzed to analyze the institutional decision-making in terms of its Christian culture. It was found that two colleges scored high on this guide while the rest were quite low. This possibly details the pressures from society to secularize or the pressures financially to survive. All in all, private Christian higher education in Taiwan has a lack of Christian influence, limiting the options for the Christian Taiwanese population.
Hunter Kulesza, Baylor University, USA[1]

HEC2025_0165
Special Topic: Innovations in Pedagogy

Development of a Thermal Imaging-Based Voltmeter for Improving Electricity Education
In primary, secondary and tertiary education, components such as light bulbs, ammeters and voltmeters are used to help students understand electrical circuits. However, the circuit becomes more complex as more components are connected. This is one reason why students have difficulty with electricity. Another reason for their difficulties with electricity is that they cannot directly see currents and voltages, which makes it difficult for students to visualise electricity in their minds. In addition, 57% of primary and secondary school teachers in the survey said that they lack a deep understanding of, and confidence in, experimenting with electricity. To address these issues, water flow models have traditionally been used to help visualise currents and voltages. However, such models are unable to accurately convey the actual behaviour in the circuit.

To solve this problem, we have developed a new voltmeter that provides a visual representation of voltage drops using both numerical values and colour changes. When a current flows through a resistor, it heats up due to Joule heat. By observing the heated resistor with a thermal imaging camera, it is possible to tell by its colour whether the current is large or small. If the current or voltage is large, it is observed in red, and if the current or voltage is small, it is observed in purple. In addition, the value of the voltage is calculated from the temperature and resistance of the resistor, and then the voltage value is displayed on the screen. The measurement error of this device is around 4%, which is less than the 5-10% error of voltmeters commonly used in schools.
This new educational tool is expected to improve both teachers' and pupils' understanding of electricity.

Tomotaka Kozuki, Hiroshima International University, Japan[1]; Yutaka Kobayashi, Hiroshima International University, Japan[2]; Takashi Terashige, Hiroshima International University, Japan[3]

ISSN: 2436-9322

HEC2025_0172
Special Topic: Innovations in Pedagogy

To Grade or Not to Grade-That is the Question
During the Covid-19 pandemic, instructors and faculty in higher education were looking to explore different ways of assessing/evaluating students' work. It became evident with these ever-changing times that there was a shift in focus on individual students' needs. During this time another method of assessment resurfaced called ungrading. By examining the concept of ungrading, my research argues that an equitable student-centered environment is manifested through this type of assessment. Implications for social work educators include the development of new ways to assess students through formative assessments using the method of ungrading as well as maintaining a student-centered environment where students are in control over their own learning.

The premise of ungrading is to provide more autonomy for students and give the student the control over their learning. To this end, two key aspects of ungrading are the use of self-assessment and instructor feedback to evaluate student progress. The process of self-assessment shifts the power dynamic in the classroom from instructor to student, with the student taking charge of their own learning. Another primary component is comprehensive instructor feedback, allowing for students to feel more competent and confident in what they are learning throughout the course.

In this poster presentation, ungrading will be presented as a way for students to take control of their own learning. Considerations of how to implement ungrading as a way of assessment/evaluation will be presented. The presentation will also explore how ungrading can support Antiracism, Diversity, Equity, and Inclusion (ADEI) initiatives, as well as the benefits and challenges of ungrading.
Kelly Eberhart, Saint Mary's College, USA[1]

HEC2025_0187
Education Technology and Remote Learning

Modern Practicums: Crafting Engaging Learning Experiences Across Modalities
The evolving landscape of teacher education has embraced digital platforms to extend the reach and impact of practicums, enhancing the accessibility and versatility of preservice teacher training. This poster presentation explores the development and implementation of modern practicums conducted through digital platforms, focusing on their capacity to benefit rural communities. By integrating innovative technologies, these practicums offer comprehensive, interactive learning experiences that prepare preservice teachers for real-world classroom challenges, even in remote or under-resourced areas.

Digital practicums facilitate access to various educational tools, including interactive digital games, e-learning sites, and behavior management simulations, enabling participants to practice essential teaching skills. These platforms provide preservice teachers with immersive experiences where they can hone instructional strategies, engage with students and/or guardians, and develop classroom management techniques—all through a screen. The shift from traditional, in-person practicums to digital formats broadens the scope of teacher preparation, dismantling geographic and resource barriers that previously limited access to quality experiences.

A significant advantage of this approach is its ability to bridge educational gaps in rural communities. Digital practicums connect preservice teachers to diverse student populations and varied learning environments, fostering adaptability and cultural competence. This exposure helps them build a repertoire of instructional practices applicable in different contexts, from rural to urban settings. Moreover, these digital platforms ensure teacher preparation can continue uninterrupted during crises such as pandemics, supporting adaptable instructional models. The inclusion of artificial intelligence modules allows preservice teachers to simulate and practice parent-teacher conferences, enhancing their communication skills in realistic, controlled environments.

This poster presentation will showcase evidence-based strategies on the effectiveness of these digital platforms in preparing teachers and discuss insights into challenges and successes experienced. The findings underscore the importance of incorporating modern modalities in teacher preparation programs, emphasizing equity, innovation, and the future of teaching.
Stacey Murray, University of Southern Indiana, USA[1]

ISSN: 2436-9322

HEC2025_0108
Life Science and STEM Education

Elderly People: Towards Innovative Mobile Applications in the Area of Health Promotion
In the period of Internet expansion in all areas of human activity, the classic understanding of older ICT (information and communication technologies) users is evolving towards the emergence of new groups of health market entities which include e-patients and m-patients. The subject of consideration is the behaviour of elderly using mHealth as well as stating the specifics of their behaviour in the process of seeking, utilizing, generating information about their health. On the basis of the conducted survey, the article formulates a number of practical guidelines for ICT specialists regarding the behaviour of elderly people in the use of mobile systems. The presented applications might be a hint that should be taken into account while designing the e-health applications.
Daria Wrukowska, University of Szczecin, Poland[1]

HEC2025_0107
Life Science and STEM Education

Making the Most of the Potential of the Elderly in Implementing the Concept of Developing the Silver Economy
Problems resulting from the ageing of societies are discussed in many different areas, and are considered to be one of the stronger trends affecting economic policy. In recent decades, the intensity of this phenomenon has increased significantly, particularly in more-developed countries, which – with a simultaneous decrease in the birth rate in these countries – means that the percentage of older people in society is growing rapidly. It's the result of life extension, civilisational progress and the improvement of the quality of life. It's not the fact that the older population is increasing in numbers that's worrying, but that the share of the youngest age groups in the demographic structure of society is decreasing. According to the European Commission, the percentage of people aged 65 and over will exceed one-third of the European population by 2030, while the working age population will decrease by 15% (European Commission data). Various types of programmes and initiatives have been run in Poland for many years, promoting better use of the potential of older people not only on the labour market, but also in social work, for example, volunteering. Activities related to the education of older people, including in digital competence, are also supported. The goal of all programmes and initiatives is to create conditions for a healthy, safe, independent and dignified long life.
Daria Wrukowska, University of Szczecin, Poland[1]

ISSN: 2436-9322

HEC2025_0113
Language Education, Linguistics and ESL/EFL

Foreign Language Teaching and Learning During COVID-19: How were the stakeholders coping?
Building on MacIntyre et al. (2020), this study examines the transition to emergency remote instruction during the COVID-19 pandemic based on questionnaire responses from over 6,000 Linguistics majors and instructors as well as language learners and teachers from 118 countries. Regression and other inferential analyses of instructors' responses indicate that:

i) gender was predictive of teacher engagement, but not negative affect, psychological overload, perception of student coping, or concerns about learning outcomes;
ii) teachers coped better when they worked in higher education and used synchronous delivery;
iii) educators were more engaged in developing rather than economically developed countries;
iv) psychological overload was mediated by perception of student coping;
v) instructors' stress levels were affected by anxiety about the future, living conditions, self-acceptance, appraisal of situational impact, course optionality, and perceived effectiveness of virtual delivery;
vi) teachers felt that remote instruction depressed students' language progress by around 64% compared with in-person classes;
vii) future learning outcomes were the biggest cause for concern in beginner-level classes;
viii) the breakup of some constructs in clusters of naturally correlating variables suggests that in crisis situations these may function differently than during 'business as usual', supporting the Strong Situation Hypothesis (see e.g. Meyer et al., 2010) and in line with Resnik and Dewaele (2021).

We will also demonstrate how multilingualism operationalized as weighted proficiency in languages spoken moderated participants' coping behavior and attitudes. Although 'more polyglot' teachers found remote teaching harder than initially expected, they were less likely to make huge adjustments to their lives or instruction, and more likely to believe that they would come out unscathed. They felt their students were coping well, and their classes were longer. We will also discuss factors distinguishing language learners who are better- and worse-coping under the emergency conditions.
Michał B. Paradowski, Institute of Applied Linguistics, University of Warsaw, Poland[1]; Magdalena Jelińska, Institute of Applied Linguistics, University of Warsaw, Poland[2]; Ekaterina Sudina, Department of English, Northern Arizona University, USA[3]

HEC2025_0118
Business Education

Social Media Education in the Context of Marketing Innovations
Based on observation of the market and the need for change the process of creating marketing innovations in service companies in Szczecin, the author adopted as the aim of the article the identification of new marketing solutions for the service market by way of an evaluation of the possibility of taking advantage of social media potential and social media activities carried out by local companies. In assessing the tools characteristic of new media and the attitude of companies towards these tools, an attempt was made to identify opportunities for companies to use social media. As part of the research, a questionnaire was used that was targeted at owners and managers of local companies from Szczecin. The study was expanded to include virtual ethnography, which involved observation of a company's profile on social media. The article presents a proprietary classification of social media by social channels and their functions. The author has paid particular attention to breaking down social media not by the technology they use, but by their practical applications. Contemporary companies face a large challenge – functioning and competing in rapidly changing market conditions. Methods of building relationships with customers used to date are falling into oblivion and becoming forgotten. The products and services offered are continuously subjected to change to meet the needs of swiftly changing customer needs. The experiences of local companies prove that companies that offer products that are both innovative and meet customer expectations win against the competition. Researchers from around the world and business professionals agree that the most import role of contemporary local companies is continuous improvement of products and services.
Martyna Kostrzewska, University of Szczecin, Poland[1]

ISSN: 2436-9322

HEC2025_0163
General Education

Mentoring is Win Win
What do you have to offer as a mentor to students new to the library profession? For beginning teachers? What can you learn about yourself as a mentor? Join the Win Win conversation & share your insights on mentoring!
Kay Hones, KeyInfo, Inc, USA[1]

HEC2025_0159
Culture, Equity and Social Justice

HEAL help Educate and Learn
What is Service Learning? Student Service Learning Projects that promote healthy choices. Explore service projects including many that are free & easy for students. Service is social, economic or educational social justice instead of "charity" Students cooperate not compete, use real life problem solving, develop habits of critical thinking.

Meaningful service learning with students, emphasizing student empowerment & academic achievement that can become a tool in developing a student's lifetime commitment to service & social justice.
Kay Hones, KeyInfo, Inc, USA[1]

HEC2025_0152
Education Technology and Remote Learning

This is the Way! Harnessing the Disruptive Force of AI
The impact that the arrival of AI into academia is radically transforming education and teaching practices. Instances of technological and/or other changes radically affecting not just education but the wider society at large are not new. Socrates was against the idea of writing as he argued it would diminish people's memory power, as before this the ancient Greeks had an oral tradition. Later, some religious leaders were against the introduction of the Gutenberg Press as they argued it would make monks lazy, as before this all books were handwritten. The arrival of the internet was met with similar opposition as educators argued that students would not learn anything because most information was only a Google Search away. Now AI's entry to the scene is making similar disruptive waves. Currently, there are many different AI apps available for many different purposes, and soon some of these will even be installed as standard on smartphones, like Google's Gemini Nano for instance. This coming ubiquity of AI apps in students' devices poses many serious challenges for educators, namely how to adapt to this in their teaching workflow. Therefore, this session will discuss these issues using the presenters' personal experiences and in-depth knowledge of educational technology to help attendees understand the implications of these transformative issues. We also plan to have an open Q and A / discussion session at the end of our presentation to get not only questions but also the views and opinions of others in attendance.
Rab Paterson, Rikkyo University's Center for Foreign Language Education and Research, Japan[1]**;** Kaori Hakone, Osaka Jogakuin University, Japan[2]

HEC2025_0149
Culture, Equity and Social Justice

Educating the 'Disabled' Human Resources Development and Social Justice Issues in Ghana
Until very recently the education of disabled children have not been considered in Ghana. Culturally, disability is regarded as a curse among Ghanaians and since time immemorial no parent would send such children to school. In recent times Christianity, education, constitutional changes and international conventions are challenging the conservative culture of Ghanaians. It is a constitutional provision that education is a right and human resources development issue for every citizen and for that reason disabled children should be enrolled in schools. This paper explores the value of education of the disabled in terms of human resources development for Ghana and us a recognition of social justice. The ethnographic study used qualitative methods of interviews and observation to explore the value of educating disabled children for the socio-economic development of Ghana. The study found that changes in modern society and human rights demand the education of every child, whether abled or disabled for the country's development.
Tabita Ladzeh Akpey-Mensah, University of South Africa, South Africa[1]

ISSN: 2436-9322

HEC2025_0193
Higher Education and Further Education

Usage of Social Media by Higher Education Students in Tamil Nadu: A Study of Motivations, Preferences, and Impacts

This study explores the usage of social media among higher education students in Tamil Nadu, India. A survey of 1,200 students from various universities and colleges in the state revealed that social media platforms such as Facebook, Instagram, and WhatsApp are widely used for both academic and non-academic purposes. The study found that students use social media primarily for staying connected with friends and family, seeking information, and entertainment. However, the study also revealed that excessive social media usage can lead to decreased academic performance, increased stress, and decreased attention span. The study's findings have implications for educators, policymakers, and parents seeking to promote responsible social media usage among higher education students in Tamil Nadu.

Keywords
Social media usage, higher education students, Tamil Nadu, motivations, preferences, impacts.
Venkatalakshmi K, Anna University, India[1]

HEC2025_0169
General Education

Career Burnout Prevention

Career Burnout is one of the biggest challenges to education in 2025. Many gifted leaders experience frustration, irritability, mood swings, chronic fatigue, and insomnia. Some become cynical or pessimistic about leadership, teaching, students, colleagues, or the district. They may prefer to avoid others and lose interest in things that used to bring them joy.

Avoiding career burnout for those working in education is easier said than done. How do people stay motivated? How do working professionals juggle work, relationships and kids? We each set the tone for our coworkers and family, as we interact and move through life and knowing when you are ‘out of balance’ is half the battle. This session will offer you practical tips to help you become a ‘Balanced’ leader who can nurture your career and family, and avoid career burnout.
Kathy Espinoza, Kathy Espinoza Speaks, USA[1]

HEC2025_0148
Arts & Humanities Education

Rethinking the Epistemological Foundations of Social Work: An Inquiry into its Artistic or Social Scientific Nature

This paper delves into the enduring debate on the professional identity of social work within social science disciplines. Central to this discourse is the contention that social work might be more appropriately categorized as an art, deviating from traditional paradigms. The inquiry critically examines multifaceted approaches in practice, ethics, and professionalism, emphasizing the notable absence of mandated educational seminars—departing from related professions.

Critiques from scientific and social science spheres scrutinize social work methodologies, highlighting variations in efficacy. The inquiry extends to temporal dynamics, questioning recovery periods among clients with analogous issues. An additional dimension explores the potential influence of practitioners' experiential tenure on expediting recovery processes for clients accessing social work services, framing the contours of this scholarly debate.

Findings underscore an existential threat to social work, evident through funding cutbacks, heightened demand for mental health services, protracted waitlists, and inadequate initiatives safeguarding field practitioners. Social work positions, distinctively lacking employment security, diminish interest among prospective students, impacting education and service delivery quality, undermining the profession's standing.

Paradoxically, designating social work as an art enhances its uniqueness, setting it apart from allied professions. Criticisms by scholars challenging social work's categorization gain influence, seen in the widening schism concerning funding, empirical research, and the absence of scientific rebuttals with regards to practitioners' narratives.
Mohamad Musa, Cape Breton University, Canada[1]

ISSN: 2436-9322

HEC2025_0141
Special Topic: Innovations in Pedagogy

Learning Unleashed: The Hidden Secret - Using Mainstream Video Games as Learning Tools
Discover the immense potential that video games harbor in the realm of education. They are potent tools for fostering an unparalleled level of engagement, significantly enhancing critical thinking skills, and igniting a flame of creativity among learners. We stand on the threshold of revolutionizing traditional teaching methodologies, transforming them into an enthralling, interactive voyage of discovery. As we blend the joy of gaming with the essence of learning, we are on the cusp of redefining educational paradigms. Our endeavor is to make learning not just an obligation, but an adventure that students embark upon with enthusiasm.

Join me in this transformative journey as we merge the elements of fun and learning, creating a dynamic, interactive, and immersive educational environment. By integrating gaming into the curriculum, we aim to shatter the monotony of conventional teaching practices, making learning a captivating venture. Together, we can usher in a new epoch of interactive education that not only enhances academic achievements but also cultivates a lifelong love for learning in young minds. The fusion of education and gaming is not just a concept, but a burgeoning reality that can significantly enrich the educational experiences of students, making them more adept, imaginative, and ready to tackle the challenges of the future with an invigorated spirit and a sharpened intellect.
Justin Matheson, Saskatchewan Polytechnic, Canada[1]

HEC2025_0138
Higher Education and Further Education

The Importance of Student Access: Exploring the Relationship Between Graduation Rates, Retention Rates and Students with Disabilities
Student support services face a great pressure within higher education. This pressure is to provide appropriate and efficient accommodations to students in need. This is important to allow for equal student access and eliminate student discrimination (Rigler, 2013; Tinto, 2003b). This is also important for student retention and graduation rates (Seidman, 2005; Rigler, 2013). There is much literature available on the unfortunate relationships between college students with accommodations, reduced graduation rates and reduced retention rates (Berkner, Curraro-Alamin, McCormick & Bobbit, 1996; Murray, Goldstein, Nourse, & Edgar, 2000). However, there is a lack of understanding of the relationship between students with disabilities and graduation and retention rates (Rigler, 2013).
Key words: student access, students with disabilities, post-secondary education, graduation rates, retention rates
Samantha Dutra, Southern New Hampshire University, USA[1]

HEC2025_0110
Liberal Education

Industry Undermining Inquiry: How Schools of "Independent Inquiry" Are Still Limited By Industrial-Era Child Labor Practices
What is a student most fundamentally: a worker, or a learner? In recent decades, educational reform movements like STEM and Classical Education have claimed the latter and tried to remake schools as places of free inquiry for independent learners. "Teaching students not what to think, but how to think," has become a beloved slogan. But despite their innovative educational philosophies, these movements have not yet reckoned with the limitations imposed on them by school structures they have inherited from the Industrial Era. In this paper I trace the development of compulsory public schools as tools used by industrial companies form children into efficient and compliant laborers. I show how school structures, like grades and age-based grouping, were designed to prepare children for factory work as adults, and I articulate the philosophical anthropology these structures imply: the human being as a subservient production machine. I then show how these school structures survived the outlawing of child labor in most Western countries, and have thereby continued to shape children as workers. I then articulate the contradiction in contemporary schools which claim to train children as independent learners: their explicit philosophies value free inquiry, but their practical structures enforce meek compliance to authority, not only behaviorally, but intellectually. If such schools are to truly embody what they explicitly believe in – if they are to escape the factories of their heritage - they must re-imagine school structures in a new way.
Ryan Klein, Boston College, USA[1]

THE 2ND HONOLULU EDUCATION CONFERENCE PROCEEDINGS
ISSN: 2436-9322

HEC2025_0136
Higher Education and Further Education

The Impacts of Mentorship on Dual Enrollment High School Students

Dual enrollment programs enable high school students to take community college courses and earn both high school and college credits, saving two years of college expenses. However, many dual enrollment students lack a robust support system for the college-level coursework and environment. The authors created a mentorship program, which pairs a volunteering senior student with a junior student in a longitudinal mentoring relationship. This study assessed mentors' and mentees' long-term assessment of the program and its impacts. 39 mentors and mentees matched, and mentoring relationships lasted for a full academic quarter. Mentees later completed an anonymous online feedback survey (based on the Likert Scale), with a response rate of 56% (n = 22). It found a 28% increase in mentees' confidence in their ability to succeed in college and a 60% increase in mentors' confidence in teaching others. 91% of mentees and 100% of the mentors reported enjoying being part of the program. 86% of mentees reported that the program helped in their professional career development. Over three months, mentors and mentees met 3.7 times on average. Mentees' comfort in dual enrollment was greater with increased frequency of mentor/mentee meetings ($p<0.001$), but the number of meetings did not correlate to their college Grade Point Average (GPA) ($p=0.24$). Importantly, many dual enrollment programs have a ~10% student academic probation rate (GPA less than 2.0) each quarter; however, 0% of mentees were on academic probation. 82% of mentees reported interest in being a mentor the following year, and participants would recommend the program to others 91% of the time. These data indicate that peer mentorship is crucial for dual enrollment student success and creates a self-sustaining model for the future. Using the data and students' personal feedback, this study describes detailed methods for future organizers to build a high-impact, community-sourced mentorship program.

Dave Young, University of Washington, USA[1]; Bill Young, University of Washington, USA[2]; Lisa Young, Johns Hopkins School of Medicine, USA[3]

THE 2ND HONOLULU EDUCATION CONFERENCE PROCEEDINGS
ISSN: 2436-9322

HEC2025

FULL PAPERS

ISSN: 2436-9322

A Case Study on Implementing Growth Based Grading Practices in the Advanced ELA High School Classroom

David Friedman
Department of English
Fairfax High School

Daniel Miller
Instructional Leadership
Fairfax High School

……..

ABSTRACT

This study examines the impact of growth-based grading practices in an advanced English Language Arts (ELA) high school classroom. In response to challenges in post-pandemic education, two educator-researchers piloted a growth-based grading system emphasizing student voice, resilience, and agency. Through a mixed-method ethnographic case study, the study analyzes qualitative and quantitative data, including student surveys, interviews, and academic performance metrics. Findings suggest that growth-based grading fosters a growth mindset, student engagement, reduces anxiety, and improves teacher-student relationships. Additionally, integrating social-emotional learning (SEL) principles alongside assessment redesign enhances student ownership and long-term academic success. The study highlights the limitations of traditional grading structures and advocates for assessment models that reward progress rather than penalize past performance. Implications extend beyond ELA classrooms to broader educational policy, suggesting a need for systemic shifts to improve engagement and equitable learning outcomes.

Keywords: growth-based assessment, curriculum design, growth mindset

1 INTRODUCTION

The COVID-19 pandemic disrupted education systems worldwide, prompting schools to reassess traditional grading and assessment models (Marshall, 2022). Many educators sought to return to pre-pandemic norms, yet others saw an opportunity to innovate. This study explores a two-year pilot program in an advanced ELA classroom that implemented growth-based grading practices to enhance student engagement and performance.

Growth-based grading shifts the focus from task completion to skill mastery, from punishing mistakes to empowering them with feedback. Growth-based assessment prioritizes learning progression. This study investigates how these practices impact student agency, social-emotional development, and achievement in a high school setting.

2 LITERATURE REVIEW

Post-pandemic education faces persistent challenges, including increased absenteeism and disengagement. Malkus (2024) identifies chronic absenteeism as a growing issue, exacerbating achievement gaps. Jack and Oster (2023) note that pandemic-related learning loss continues to affect student performance, while Kolesnikova (2021) highlights the importance of engagement strategies tailored to Gen Z learners.

ISSN: 2436-9322

Dweck's (2006) research on growth mindset underscores the benefits of fostering resilience in students. Wiggins and McTighe's (2005) *Understanding by Design* framework supports backward curriculum planning, ensuring alignment between learning objectives and assessment. Marzano (2010) and Guskey (2009) advocate for standards-based grading as a means of improving assessment accuracy and student motivation.

Despite extensive research on grading and assessment, there is a gap in literature as to framing standards-based grading models explicitly through a "growth mindset" lens and application in advanced ELA classrooms. This study contributes to this discussion by examining how alternative grading structures influence student learning and engagement.

3 METHOLODOGY

This study employs a mixed-method ethnographic case study approach, analyzing qualitative and quantitative data from two academic years. Participants include students from an AP English Language and Composition course at a suburban public high school.

3.1 Participants and Context

The study involved 12 students selected to represent the broader demographic of the school's advanced ELA program and diversity of the school overall. Participants and guardians provided informed consent, and data collection adhered to ethical research standards, including anonymization of responses.

3.2 Data Collection and Analysis

Qualitative Data: Student interviews and surveys were analyzed using deductive coding, drawing on themes from existing research (Dweck 2006, Safir & Dugan, 2021). Responses were color-coded and categorized into themes such as growth mindset, SEL, and grading perceptions.

Quantitative Data: Attendance records, predicted vs. actual AP scores, and survey Likert-scale responses were examined for trends. Linear regression analysis was applied to absenteeism and performance metrics.

Bias Mitigation: Surveys were anonymous, and interviews were conducted by educators not directly involved in the grading of students.

4 RESULTS AND DISCUSSION

Findings indicate that growth-based grading significantly improved student engagement and reduced anxiety around assessment.

4.1 Student Perception of Learning and Growth

A big surprise for this team of researchers was how students discussed the process of evaluation (grading) in the AP English Language classroom versus other advanced ELA classes. When discussing grading and feedback in AP English Language, students focused on the ideas of "growth", "challenge", and "success". The structures around the rolling gradebook, consistent scoring guidelines, and feedback structures allowed for grading to

become "less judgemental…less of a stigma or weirdness about grades" according to one respondent. Consistent scoring guidelines allowed the teachers and the students to better understand and apply the language, curriculum, and goals of the course. One student in the focus group drew a clear contrast between AP English Language and other advanced ELA classes: "the AP Lang teacher would go in depth into what you need to improve…it made it easier to improve what needed to be done…in other classes they'll just give you a score and very vaguely tell you to be better." The connections that the students in the focus group were able to draw between feedback and improvement makes clear that shifts in foundational structures can lead to shifts in student mindsets in the advanced ELA classroom. Students see a chance and pathway to recover and realize the high expectations of an advanced course. In effect, one of the most "anxiety inducing" elements of schooling, according to many of our respondents, grading, is de-weaponized and transformed into a powerful collaborative and discussion tool. This pairs well with the outcomes that Yeager and Dweck (2012) see in their work around growth mindset in classrooms and the increase in student relationships. This research builds upon those ideas and posits that by redesigning apparently rigid structures with care and focus on the goal of learning and growth in the classroom, students and teachers can also build better relationships that are more productive and enriching to all.

4.2 Social-Emotional Learning and Classroom Relationships

This focus group demonstrates that growth-based design structures in the advanced ELA classroom can lead to better social emotional learning outcomes for students. Specifically, in connection to CASEL's Social Emotional Learning Framework, this group demonstrates positive outcomes with "relationship skills, social awareness, self-awareness, and self-management." (Collaborative for Academic, Social, and Emotional Learning, 2025) Growth based mindsets applied to classroom structures like grading, assessment, and feedback help to facilitate content knowledge, skill acquisition, and social emotional learning. Students become aware of their abilities, gaps, and co-create pathways to improvement with their teacher as a guide and resource. This enables them to build meaningful and impactful relationships with their peers and teachers. Thus, the classroom becomes a place for partnership and collaboration. Students in the focus group consistently commented on the power of "group work", "Socratic seminars", "discussion", "collaboration", and "student-led" learning activities. One student even commented that there was a "feeling of community…I think here…we were all in it together…it wasn't like some classes where some top ten can succeed." Another student noted that "we were all able to discuss our opinions without feeling like there was a correct answer ever…I had a larger area to explore and more freedom to express my personal interests." Numerous educational writers and theorists such as Bray and McClaskey (2016), Couros and Novak (2019), and Crowe and Kennedy (2018) have demonstrated the clear need for spaces to involve students more clearly to create engaged students who want to come to school and be successful in their learning.

These researchers argue that the creation of firm goals and the ability to achieve those goals through a rolling gradebook, actionable and caring feedback, and relationships of trust and mutual understanding, led to a clear positive shift in most students. It should be noted that one student did note that the shift in the policies around revision and resubmission in AP Language and Composition "is less like burdening the teacher…it's

ISSN: 2436-9322

allowing the teacher to help…the relationship was a lot different than any other advanced English teacher."

It's difficult to disconnect learning in English class from the idea of grading, assessment, and feedback as the one is inextricably linked to the other. DuFour and Eacker (2008) as well as Wiggins and McTighe (2007) make it clear that the process of designing instruction, giving assessments to students, and analyzing the data derived from those assessments is a key process for teachers and teacher teams to utilize. Marzano (2010) builds on this by showing the need for formative assessment to provide a route for teachers to respond to student needs before larger, more high stakes assessment. In the ELA classroom, skills around reading, writing, and oral communication are essential. The curriculum focuses less on content knowledge. Evaluating learning with consistent scoring guidelines facilitated growth and development for students and allowed for teachers to have a more efficient and streamlined practice - mitigating one of the issues seen in American schools today by Lynn, Parker, and Horowitz (2024) related to the time that teachers must do the important work of teaching. In AP Lang, one student reported that "there was so much feedback, there was constant learning." Students in the focus group clearly identified the positive impacts that they derived from the process of grading, assessment and feedback in this classroom to support overall learning.

Many students commented during their interview about another structure to facilitate learning in the AP Language classroom - the notebook. One student said, "if you look at any other classes you have a binder and you're like I failed this quiz…when you look at AP Lang you see wow I really grew this year…I'm such a better writer." Students also commented on the appreciation and desire for critical feedback about their progress in the course to improve their "self-awareness, self management, and responsible decision making." (Collaborative for Academic, Social, and Emotional Learning, 2025) One student said while discussing feedback and learning in AP Language in comparison to other advanced English classes that "[AP Lang feedback] was a lot of the how versus you just need to…I think it gave me a better understanding of there's a way that these things can go…before a teacher would give me some whatever grade…and they don't tell you how to improve…[in AP Lang] I would be told exactly how I could improve and I could take that and really focus on what he was saying…it was criticism but it was good criticism…usually [in other English classes] if I do get feedback it would be very small and obvious…[in AP Lang] it would be pinpoint…this is specific to you."

4.3 Attendance and Achievement Trends

A sharp contrast appears comparing this group of students in AP English Language and Composition to other Advanced Academics classes. Students in the focus group reported an enthusiasm to attend class to learn with their peers and teachers. The rolling gradebook structure encouraged attendance because passing was always numerically possible until the end; thus, integrating theory around skill demonstration in standards-based grading, the chronically absent student can perform. One student noted, "you could always fix it…no late penalty…you could always fix what you did wrong…it didn't make it harder…it made it easier to find a path to success…you could get that A if you wanted an A."

Another factor related to chronic absenteeism is student mental health. One student in the focus group spoke about how the shifts in the classroom, especially around grading,

ISSN: 2436-9322

led to a shift in engagement and desire to come to class and participate in comparison to other classes. She said, "I definitely felt more inclined to put more effort and participate more…I've been in classes where I was there to get the grade and go on…in AP Lang the teachers want you to do better…that helped me and lowered my pressure when it came to writing…any answer can be correct…I was less nervous…it reduced the stigma around writing." It can be seen from this focus group that finding areas to design flexibility into grading, assessment and feedback structures, such as through the yearlong rolling gradebook structure can help to mitigate reasons for chronic absenteeism for some students and provide pathways to success in advanced coursework.

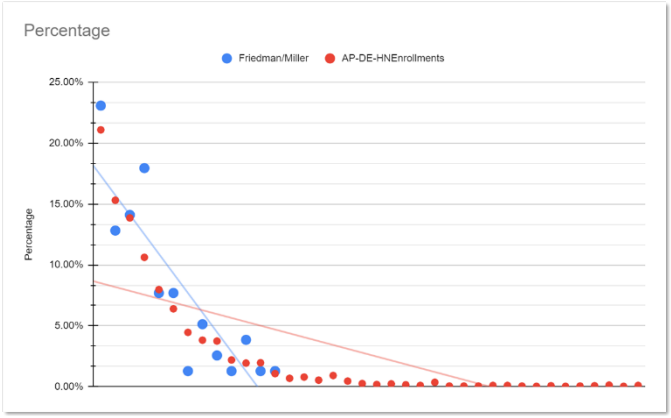


Figure 1: Comparative rates of absences.

It should also be noted that these shifts do not lessen the rigor in the classroom, in fact, these shifts may serve to reinforce and enrich the rigor of the room. Only four of the students in the focus group called AP English Language and Composition an "easy" class. The vast majority - eight out of twelve - of the focus group indicated that it was "hard" or "challenging." Students in their interviews spoke about the way in which they continued to want to keep growing or working to develop their skills in the classroom. One student's said, "Definitely, yeah…the hardest I've been pushed. It was the overall expectation of the teacher - I was pushed most in AP Lang…that was a lot of my own doing…I wanted to strive to be the best that I could…the yearning of the approval of the 1/4/1…it made me want to do everything in my power to turn in the best work possible…it wasn't him telling me to do better, but it was the aspect of the class…that was definitely the most that I've been pushed…I wasn't pushed in sophomore year." This shows that some students within the pilot grading program were able to get even more challenge and rigor from these flexible grading and assessment models than others which they faced in other advanced ELA classes through a shift to intrinsic motivation. The structures moved the ownership of course rigor to the student instead of the teacher, mitigating one of the issues faced by educators according to Lin, Parker, and Horowitz (2024). Another student, when comparing AP English Language and Composition to his Dual Enrollment English Composition class, said, "I don't know that we can resubmit in our DE class…yeah, it's not even an option…I can't really remember there being a time I would [resubmit] other than AP Lang…like on my previous classes before…[resubmission] made be a better writer. I saw what I did wrong and what I could do in the future." Also, these students in this focus group see the transference of their learning from AP English Language and

Composition to other classes. By framing the work that they are doing in the classroom not through the lens of the assessment or task but rather the skill, students are able to more easily apply learning in other places. One student remarked, "without AP Lang I would be so lost in the classes that I have now."

4.4 Challenges and Limitations

While students benefited from the model, some expressed difficulty adjusting to new grading expectations. Additionally, the study's small sample size limits generalizability. Future research should explore large-scale implementations across diverse educational settings.

5 CONCLUSION

This study demonstrates that growth-based grading fosters student engagement, enhances SEL, and mitigates absenteeism without sacrificing academic rigor. By emphasizing feedback and mastery over task completion, this model aligns assessment with meaningful learning.

5.1 Key Takeaways for Educators and Policy Makers

- Implementing rolling gradebooks can encourage continuous improvement.
- Growth-based grading enhances clarity and equity in assessment
- SEL-focused assessment fosters deeper teacher-student relationships.

Future research should examine the long-term impact of growth-based grading on post-secondary success and explore interdisciplinary applications in STEM and social sciences. As educational systems continue to evolve, assessment structures must prioritize learning over ranking, ensuring students develop skills that extend beyond the classroom.

REFERENCES

[1] Bray, B. and McClaskey, K. (2016). How to Personalize Learning. Corwin.

[2] Collaborative for Academic, Social, and Emotional Learning. (2025). *What is the CASEL framework?* CASEL. https://casel.org/fundamentals-of-sel/what-is-the-casel-framework/

[3] Couros, G. and Novak, K. (2019). *Innovate Inside the Box: Empowering Learners Through UDL and the Innovator's Mindset*. Impress.

[4] DuFour, R. and Eacker, R. (2008) Revisiting Professional Learning Communities at Work: New Insights for Improving Schools. Solution Tree Press, Bloomington.

[5] Dweck. C. (2006). Mindset: The New Psychology of Success. Ballantine Books.

[6] Guskey, T. (Ed.). (2009). Practical Solutions for Serious Problems in Standards-Based Grading. Corwin.

[7] Jack, R., & Oster, E. (2023). COVID-19, school closures, and outcomes. The Journal of Economic Perspectives, 37(4), 51–70. https://www.jstor.org/stable/27258125

[8] Kolesnikova, A. (2021). Lessons from the COVID-19 pandemic: Boosting student engagement. Russian Language Journal / Русский Язык, 71(2), 195–210. https://www.jstor.org/stable/27213082

[9] Lin, L., Parker, K., & Horowitz, J. (2024). Overview. In What's It Like To Be a Teacher in America Today? (pp. 5–12). Pew Research Center. http://www.jstor.org/stable/resrep58689.6

[10] Malkus, N. (2024). Long COVID for public schools: CHRONIC ABSENTEEISM BEFORE AND AFTER THE PANDEMIC. American Enterprise Institute. http://www.jstor.org/stable/resrep57659

[11] Marshall D. T. (2022). What changes remain? Teacher perspectives on changes made to U.S. schools during the COVID-19 pandemic. International Journal of Educational Reform, 10567879221132536. https://doi.org/10.1177/10567879221132536

[12] Marzano, R. (2010) Formative Assessment and Standards-Based Grading. Marzano Research Laboratory.

[13] Safir, S and Dugan, J. (2021). Street Data: A Next-Generation model for Equity, Pedagogy and School Transformation. Corwin.

[14] Wiggins, G. P., and McTighe, J. (2005). Understanding by Design (2nd ed.). Pearson.

[15] Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. Educational Psychologist, 47, 302–314. doi:10.1080/00461520.2012.722805

THE 2ND HONOLULU EDUCATION CONFERENCE PROCEEDINGS
ISSN: 2436-9322

Development of a Thermal Imaging-Based Voltmeter for Improving Electricity Education

Tomotaka Kozuki
Department of Medical Science and Technology Faculty of Health Sciences
Hiroshima International University

Yutaka Kobayashi
Department of Medical Science and Technology Faculty of Health Sciences
Hiroshima International University

Takashi Terashige
Department of Sociology Faculty of Health and Wellness Sciences
Hiroshima International University

ABSTRACT

In elementary and junior high school education, components such as light bulbs, ammeters and voltmeters are used to help students understand electrical circuits. However, the circuit becomes more complex as more components are connected. This is one reason why students have difficulty with electricity. Another reason for their difficulties with electricity is that they cannot directly see currents and voltages, which makes it difficult for students to visualize electricity in their minds. In addition, 57% of elementary and junior high school teachers in the survey said that they lack a deep understanding of and confidence in experimenting with electricity.

To solve this problem, we have developed a new voltmeter that provides a visual representation of voltage drops using both numerical values and color changes. When a current flows through a resistor, it heats up due to Joule heat. By observing the heated resistor with a thermal imaging camera, it is possible to tell by its color whether the current is large or small. If the current or voltage is large, it is observed in orange, and if the current or voltage is small, it is observed in purple. In addition, the value of the voltage is calculated from the temperature, and then the voltage value is displayed on the screen. The measurement error of this teaching material is 3.3% to 10%, which is similar to 5% to 10% error of voltmeters commonly used in schools. This new educational tool is expected to improve both teachers' and pupils' understanding of electricity.

Keywords: elementary and junior high school education, electricity, voltmeter, thermal imaging camera

1 INTRODUCTION

The study of electricity is initiated in elementary school and is pursued through junior high school and high school. During these levels, students are instructed in a myriad of subjects, including the path of electricity, the methods of connecting electrical conductors, objects that conduct electricity, the magnetic force created by electric current, circuits and currents, electromagnetic induction, Ohm's law, Kirchhoff's law, and numerous others. To facilitate comprehension of these concepts, experiments are conducted using equipment such as bean bulbs, ammeters, and voltmeters. The utilization of these instruments necessitates their connection to the circuit, thereby introducing complexity to the system. This has led to a notable challenge faced by elementary and junior high school students when it comes to grasping electricity-related concepts [1]. In addition, a survey of elementary and junior high school teachers revealed that 57% of them encounter challenges in the domain of electricity, suggesting a need for effective pedagogical approaches (Figure

ISSN: 2436-9322

1) [2]. This may be attributed to the reported difficulty in observing physical phenomena, particularly in the context of electricity, where the visualization of electric current and voltage is particularly challenging [1]. To solve this problem, educational initiatives have been developed to facilitate student comprehension of current and voltage concepts. These initiatives include the study of water flow models (Figure 2) and the visualization of electric currents by ions, among others [3,4]. However, such models do not provide information on current and voltage values.

In response to this phenomenon, a methodology has been developed that utilizes the observation of Joule heat generation in response to the application of voltage to a material [2]. In a parallel circuit of resistors, more current flows through the path with the smaller resistance, causing the temperature of the resistor to rise. In a series circuit of resistors, the magnitude of the resistance value directly correlates with the voltage drop and the temperature rise. By observing this phenomenon with a thermal imaging camera, it is possible to visualize the relationship between the current in each path and the voltage drop across the resistance. These methods are expected to help learners (mainly elementary and junior high school students), and instructors visualize the existence and magnitude of currents and voltages because they can intuitively compare the large and small relationships of voltage drops in currents and resistances in a circuit.

The present report details the development of a teaching material aimed at facilitating the visualization of voltage drop and the display of voltage values in a series circuit.

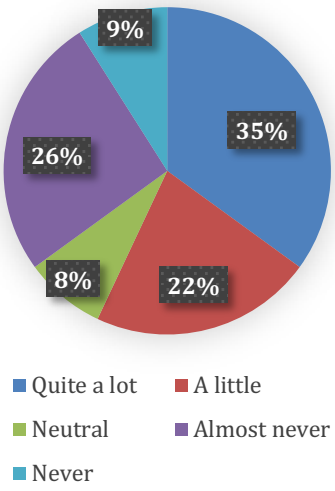


Figure 1: Survey of elementary and junior high school teachers on their difficulties with electricity.

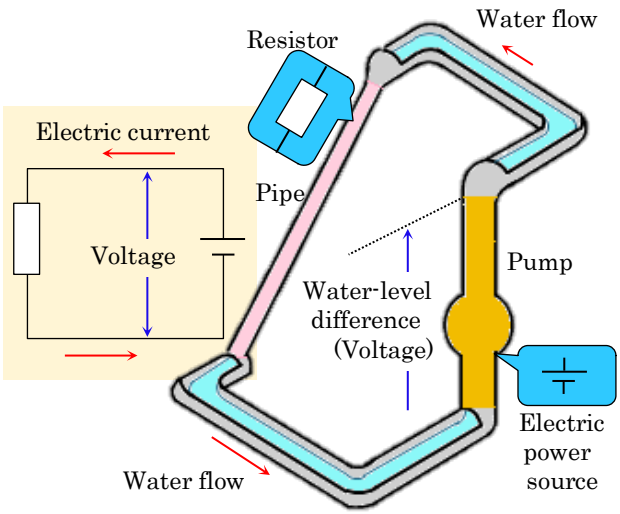


Figure 2: Water flow model.

2 METHODS AND MATERIALS

When an electric current flows through a resistor, it generates heat due to the dissipation of electrical energy. By employing a thermal imaging camera to observe the heated resistor, it becomes possible to discern the magnitude of the current based on its coloration. A large current or voltage is indicated by an orange hue, whereas a small current

ISSN: 2436-9322

or voltage is indicated by a purple hue. Furthermore, the voltage value is calculated from the temperature and resistance, and subsequently displayed on the screen.

Figures 3-5 illustrate an example circuit and breadboard for the teaching material. The breadboard is designed to facilitate the connection of resistors in series, a task that is well-suited for elementary school students. Furthermore, the resistors are composed of resin blocks and carbon film resistors. The voltmeter employed in this teaching material is the MLX90640 mini-thermal camera unit for M5Stack (Figure 6). This camera has a measurement range of -40 °C to 300 °C, with a temperature resolution of ± 1.5 °C. Notably, this camera can be procured at a relatively modest cost, making it a suitable teaching material.

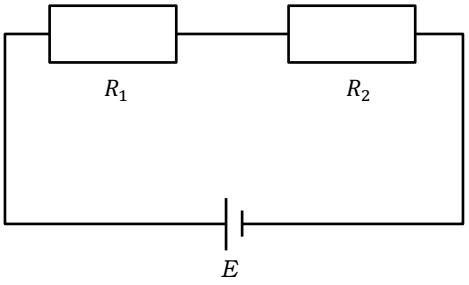


Figure 3: Equivalent circuit.

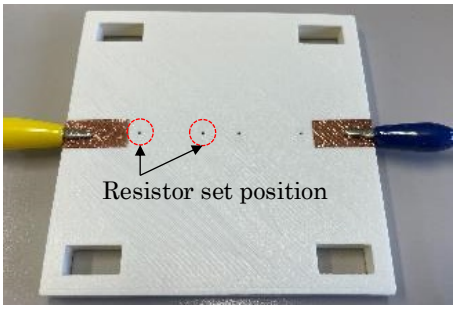


Figure 4: Breadboard for this material.

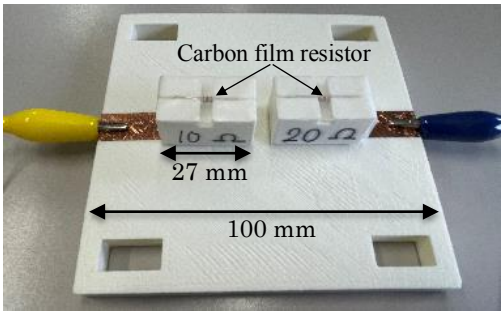


Figure 5: Circuit example of this material.

Figure 6: Voltmeter of this material.

3 RESULTS

As illustrated in Figure 7, the temperature T (°C) of each resistor is depicted as a function of the applied voltage V to resistor of 10 Ω, 20 Ω, and 30 Ω. Given that Joule heat is directly proportional to V^2/R, the temperature T of each resistor was estimated through the least-squares method, employing the following equations:

$$T_{10\Omega} = 9.49V^2 + 23, \quad (R^2 = 0.985) \quad (1)$$

$$T_{20\Omega} = 4.94V^2 + 23, \quad (R^2 = 0.9977) \quad (2)$$

$$T_{30\Omega} = 3.46V^2 + 23, \quad (R^2 = 0.9981) \quad (3)$$

In other words, the voltage drops $V_{10\Omega}$ (V), $V_{20\Omega}$ (V), and $V_{30\Omega}$ (V) at 10 Ω, 20 Ω, and 30 Ω can be calculated as follows:

ISSN: 2436-9322

$$V_{10\Omega} = \sqrt{\frac{T_{10\Omega} - 23^*}{9.49}} \quad (4)$$

$$V_{20\Omega} = \sqrt{\frac{T_{20\Omega} - 23^*}{4.94}} \quad (5)$$

$$V_{30\Omega} = \sqrt{\frac{T_{30\Omega} - 23^*}{3.46}} \quad (6)$$

*: room temperature

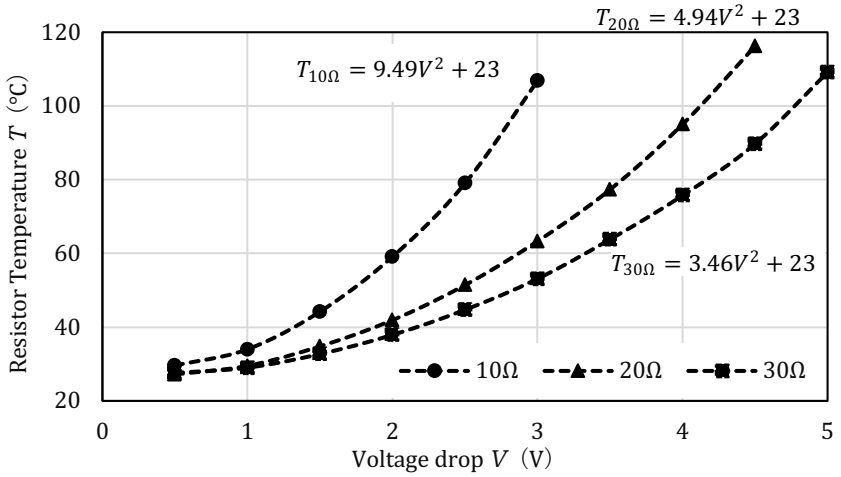


Figure 7: Voltage and temperature across the resistor.

Figure 8 shows the voltmeter indications. (a) shows the result when the resistors are equal (10 Ω) and E = 4.0 V. The two resistors were observed with the same brightness and the voltage showed 2.0 V each. (b) shows the results when 10 Ω and 30 Ω resistor are connected in series and E = 4.0 V. The 30 Ω resistor is observed brighter and the voltages showed 1.1 V and 2.9 V. (c) shows the results when 20 Ω and 30 Ω resistor are connected in series and E = 5.0 V. The 30 Ω resistor is observed brighter at voltages of 2.0 V and 2.9 V. As a result, this material can visualize the magnitude of the voltage as well as the voltage value with color changes.

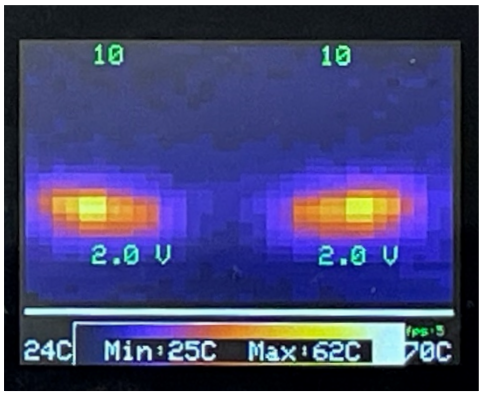
4 DISCUSSION

4.1 Errors in this teaching materials

In principle, the voltage drop of the 10Ω resistor in (b) of Figure 8 is 1.0V, and the voltage drop of the 30Ω resistor is 3.0V. However, errors of ±0.1V were observed at 1.1V and 2.9V, respectively. Furthermore, an error of -0.1V was identified in the voltage drop of the 30Ω resistor in (c). Consequently, the material's relative error will range from 3.3% to 10%. Nonetheless, it is important to note that analogy voltmeters utilized in elementary and junior high schools exhibit a margin of error that ranges from 5% to 10%. Consequently, it can be concluded that the error associated with this material is not a significant

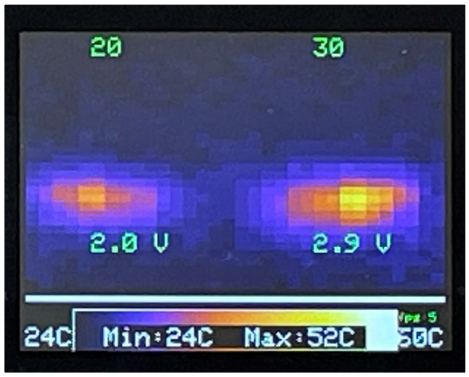
ISSN: 2436-9322

contributing factor to the educational outcomes in elementary and junior high school education.



(a) $R_1 = R_2 = 10\ \Omega$, $E = 4.0$ V

(b) $R_1 = 10\ \Omega$, $R_2 = 30\ \Omega$, $E = 4.0$ V



(c) $R_1 = 20\ \Omega$, $R_2 = 30\ \Omega$, $E = 5.0$ V

Figure 8: Voltmeter display in this teaching material

4.2 Effect of room temperature

Despite the fact that the resistor's temperature fluctuates in accordance with ambient temperature variations, this can be effectively addressed by modifying the values of the * variables in Equations (4), (5), and (6) to reflect the room temperature. Furthermore, given the utilization of a thermal imaging camera in this teaching material, the room temperature can be readily determined.

4.3 System error due to the resolution of the thermal imaging camera

The temperature resolution of the thermal imaging camera (MLX90640) used in this teaching material is ±1.5°C. Therefore, there will be individual differences in temperature readings. This will be a source of error. For example, if a voltage of 2.0V is applied to each resistor and the display is to the first decimal place, the effect of a temperature difference of ±1.5°C on the displayed value will be 0.0V at 10Ω, ±0.1V at 20Ω, and ±0.1V at 30Ω, according to equations (4) to (6). Consequently, a maximum error of 5% is to be expected.

ISSN: 2436-9322

5 CONCLUSION

This study developed a thermal imaging-based voltmeter to improve electricity education by providing both numerical and visual representations of voltage drops. By leveraging Joule heating and thermal imaging technology, this device allows students and teachers to intuitively understand voltage variations through color changes, making abstract electrical concepts more tangible.

Experimental evaluations showed that the measurement error of the device ranged between 3.3% and 10%, which is comparable to the 5-10% error range of traditional analogy voltmeters commonly used in schools. Consequently, the error of this material is regarded as falling within the acceptable range. This suggests that the developed voltmeter is a viable alternative for enhancing electricity education by offering a more interactive and intuitive learning experience.

Furthermore, the study highlights the importance of incorporating visual and interactive teaching tools in science education. By improving students' ability to conceptualize electrical phenomena, this approach has the potential to bridge the gap between theoretical knowledge and practical application.

Future work should focus on long-term classroom implementation to assess its educational impact, explore ways to improve measurement accuracy, and expand this visualization method to other areas of physics education, such as electromagnetic fields and circuit behavior analysis.

REFERENCES

[1] Sasaki.Y, (2015), “電流・電圧・抵抗の概念形成を目指した中学「電流とその利用」の指導の工夫 [A method for teaching "electric current and its uses" to develop concepts of electric current, voltage, and resistance in junior high school]”, 物理教育 [Physics Education Society of Japan], 63(3), 209-212. (in Japanese)

[2] Kozuki.T, Kobayashi.Y, Tanabe.E, Nawachi.N, Terashige.T, (2024), ”電圧降下の大きさと値が直感的にわかる教材の作製 [Development of teaching materials that intuitively understand voltage drops]”, 応用物理教育 [JAPANESE JOURNAL OF APPLIED PHYSICE EDUCATION], 48(2), 43-48. (in Japanese)

[3] Hukuyama.Y, Nishi.K, (1990), “電気回路学習のための水流モデルの作製と検討 [Creation and Study of Water Flow Models for Learning Electric Circuits]”, 物理教育 [Physics Education Society of Japan], 38(2), 88-91. (in Japanese)

[4] A.Izzah, S.Saehana, (2021), “Developing video-based learning for the application of Ohm’s law towards conductive transparent layer”, Journal of Physics: Conference Series, 1760 012043

[5] Suga.H, Tamano.K, Ide.H, (2015), 電気・電子計測 [Electrical and Electronic Measurement], 11-15, 朝倉書店 [Asakura Publishing], Tokyo. (in Japanese)

THE 2ND HONOLULU EDUCATION CONFERENCE PROCEEDINGS
ISSN: 2436-9322

This is the way! Harnessing the disruptive force of AI utilising pedagogical innovation, and utilising practical tools in education

Rab Paterson
Center for Foreign Language Education and Research

Rikkyo University

Kaori Hakone

Department of English and Interdisciplinary Studies

Osaka Jogakuin University

……..

ABSTRACT

AI's impact on academia is radically transforming education and teaching practices. Instances of technological and/or other changes radically affecting education and society at large are not new, nor is opposition to these. Socrates was against the idea of writing as he argued it would diminish people's memory. Later, Christian religious leaders were against the introduction of the Gutenberg Press. In modern times, the arrival of the internet met with similar opposition, as educators argued that students would not learn anything because information was only a web search away. Now AI's educational entry is making similar disruptive waves, and seeing similar levels of opposition, with some universities trying to restrict its use. Currently, there are many different AI apps available, and soon some of these will be installed on smartphones, like Google's Gemini Nano. So this genie is not going back into the bottle. The coming ubiquity on AI apps in students' devices, however, poses serious challenges for educators, namely, how to adapt to this in their teaching workflow and how to teach ethical usage of these apps. Therefore, this paper will discuss these issues using the authors' personal experiences and in-depth knowledge of educational technology to help educators understand the implications of this transformative issue.

Keywords: AI in Education, AI Literacy, Digital Literacy, Ethical AI Usage,

1 INTRODUCTION

When discussing the effects of and reactions to AI being used in modern education, it is worthwhile to briefly examine the history of technological change and the reactions to these changes. The Socratic method has long been touted as a good classroom teaching technique (Delić & Bećirović, 2016; Seeskin, 1987). However, Socrates and other Greek philosophers of the time were originally against something so fundamental to academic study as the adoption of writing. Their arguments against this were based on Greece at that time being a culture with a rich oral tradition, a system they did not want to see disrupted. Therefore, their position was that the introduction of writing would be terrible as it would reduce people's memory power due to relying on writing. Fortunately, their opposition eventually failed, and their position did not age very well. Furthermore, other later Greek philosophers like Aristotle and Plato took to writing with a passion (Hall, 2019).

In a similar vein, there are other historical figures on the wrong side of history when it comes to the entrance of disruptive technologies. These range from opposition to the Gutenberg

ISSN: 2436-9322

Press, mechanised farming, steam trains, electricity, and even recorded sound (Juma, 2016). In the case of the Church's opposition to printing, they later recognised the power of the printing press when Bibles started to be produced en masse on the Gutenberg Press (Wirtz, 2017), and their position of opposition changed to one of adoption (Kojali, 2023). Similar stories of opposition changing to adoption proliferate throughout history, and even in modern times (Apple classrooms of tomorrow, 1991; Brändström, 2011), as expected from the Bell Curve of Technological Diffusion (Rogers, 1995). Other authors have argued that generally, early adoption mindsets are the key to success in the modern world (Bilton, 2010; Pink, 2006)

2 THE WAY FORWARD

This paper demonstrates how carefully curated and applied teaching approaches and AI tools in education can improve student engagement and cognitive growth while saving time for instructors to focus on important human-centered learning. This approach also emphasizes ethical guidance for students, and information literacy approaches like Lateral Reading and the SIFT Method (Caulfield, 2019), while encouraging teachers to utilise modern assessment methods which prioritize student learning (Paterson & Hakone, 2024).

2.1 Teaching Critical Thinking Via Lateral Reading

As AI apps like ChatGPT can quickly generate a large volume of text for student essays, it is imperative to teach students how to evaluate the results it produces for accuracy and relevance, especially when AI hallucinations exist (Emsley, 2023; Salvagno et al., 2023). Emsley has documented the checking process used to determine the lack of accuracy and authenticity of 'sources' found by ChatGPT. This is a form of Lateral Reading, and is commonly used by fact checkers, although not so commonly used by students and academics (Wineberg & McGrew, 2017), leading to their believing in false results/fake news (Pennycook & Rand, 2019). So teaching lateral reading to students to offset the potentially erroneous 'results' that AI-generated results can produce is essential. There are other academic and linguistic benefits for students learning Lateral Reading. A full discussion of these is outwith the scope of this paper. However, researchers have covered this (Breakstone et al, 2018; McGrew et al, 2018) and arguments have been made for the inclusion of Lateral Reading into EAP courses (Paterson, 2025).

3 AI TOOLS

AI enhances the possibilities of offering more personalized learning experiences via tools such as CoralAI and NotebookLM. These transform passive activities into inquiry-based exercises and help students become more involved with the content, in turn supporting better understanding and critical thinking. Research suggests that adaptive learning methods and better access to resources can also help promote a fairer educational system (Roshanaei et al., 2023; Jiang 2024). However, the integration of AI into classrooms also brings some challenges. It is important to maintain academic ethics and honesty and to ensure that all students have fair access to resources (Francis et al., 2025; Yadav, 2024). As AI tools become more accessible, educators can use these innovative technologies to foster more independent learning. Tools like Coral AI and NotebookLM differentiate themselves by making traditional study engagements more interactive in terms of engaging students. These tools encourage students to think critically and ask questions

ISSN: 2436-9322

3.1 An Overview of AI in Teaching

NotebookLM, helps students synthesize information from complex readings, thereby enhancing their academic writing skills. Users find papers and upload documents like PDFs, Google Docs, and notes. It identifies key themes and arguments, which helps organize ideas for literature reviews or essays. Answers given by the AI are quoted and referenced. The Audio Deep Dive feature lets learners listen to the discussion and summaries of their selected documents, or even join the conversation by asking a question. So rather than replacing deep reading, NotebookLM enhances it by streamlining the reading process and encouraging more focused engagement with the material. However, although it offers a user-friendly interface, the tool can sometimes encounter difficulties in producing accurate results (Huffman & Hutson, 2024).

Coral AI expands the scope of learning by permitting deeper interactions with students' own curated materials, including slides, documents, and YouTube videos. In addition to summarization, Coral AI offers deeper content analysis via a tagging system. Learners, especially in project-based and interdisciplinary learning, can navigate complex content and interrelated concepts across different media. Students are therefore able to independently navigate and analyze content and build collaborative and critical comprehension skills. A presentation from Nagoya University (Paterson & Hakone, 2024) emphasized the importance of clear pedagogical guidance to avoid students' over-reliance on these tools.

However, with proper integration, tools like Coral AI and NotebookLM can save teachers and students time while improving students' academic experiences, as the actual value of these tools is their ability to promote student agency and higher-order thinking. Research also highlights that AI enhances teaching effectiveness, particularly when combined with teachers' positive perceptions of educational technology (Lin, 2022). When students engage in exploration and reflective inquiry, they take control of their learning. Both tools demonstrate how technology can help students manage their learning and move beyond surface-level engagement and become active, reflective, and critical learners.

4 CHALLENGES AND ETHICAL CONSIDERATIONS

While AI applications provide significant educational benefits for students' academic performance and can have improved educational equity in under-resourced settings (Zhang & Leong, 2024), this presupposes that those under-resourced schools have devices that can access the AI apps in the first place. The actual implementation of AI apps in educational establishments that have enough devices also poses other challenges that necessitate thoughtful solutions. Academic integrity, equitable access to technology, and the risk of students becoming overly reliant on AI-generated content are all critical concerns. If students lack guidance and/or linguistic skills, they may submit AI-generated work as their own, jeopardizing their learning experience and violating academic plagiarism standards, as researchers have commented on in the pre-AI age (Pecorari & Petric, 2014) and AI has the potential to exacerbate this issue.

4.1 Equity, Access, and Ethical Guidelines

AI also has the potential to promote educational equity even in elementary school settings (Moosa, 2024), however, barriers like access to reliable devices and internet connections, as well as AI literacy, must be addressed. Without proper support, students from under-resourced communities may fall behind. Institutions must invest in infrastructure and create inclusive AI

ISSN: 2436-9322

tools while offering support to learners lacking technology experience. AI should serve as a supportive scaffold that enhances student engagement rather than an easy shortcut. Here, teachers play a crucial role in demonstrating ethical AI use and integrating technology with established teaching practices to build cognitive strength. As AI becomes more common in classrooms, schools, and other educational institutions, the need to develop ethical boundaries alongside AI literacy programs will increase dramatically.

5 CONCLUSION

In conclusion, AI tools offer new ways for students to interact and learn in more cognitively efficient ways. When used effectively, these tools can transform otherwise passive tasks into active experiences that encourage critical thinking and independent discovery. Therefore, educators have an essential role in how AI is perceived and used in education. By reframing AI as a tool for inquiry rather than a barrier to learning or a crutch for cheating, educators can help students become technology-savvy knowledge creators and users. AI also has the potential to go beyond being merely a disruptive technology, as it can revitalize education, much like the pencil, printing press, and personal computer did in their eras. Therefore, with the growing adoption of AI across different areas of education, there is an institutional need to develop relevant AI policies. Policies for acceptable AI use should also include security issues related to the breach of data privacy, along with the need to reveal AI authorship, and fair evaluation practices of work created with the help of AI tools. These later topics are outwith the scope of this paper but are certainly worthy of further research.

ISSN: 2436-9322

REFERENCES

Apple classrooms of tomorrow: Philosophy and structure [and] what's happening where. (1991). https://eric.ed.gov/?id=ED340349

Bilton, N. (2010). *I live in the future & here's how it works: why your world, work, and brain are being creatively disrupted*. Crown Currency.

Brändström, C. (2011). *Using the internet in education-Strengths and weaknesses: A qualitative study of teachers' opinions on the use of the internet in planning and instruction.* https://www.diva-portal.org/smash/record.jsf?pid=diva2:438827

Breakstone, J., McGrew, S., Smith, M., Ortega, T., & Wineburg, S. (2018). Why we need a new approach to teaching digital literacy. *Phi Delta Kappan*, *99*(6), 27–32. https://journals.sagepub.com/doi/10.1177/0031721718762419

Caulfield, M. (2019). SIFT (The four moves). Hapgood. https://hapgood.us/2019/06/19/sift-the-four-moves/

Delić, H., & Bećirović, S. (2016). Socratic method as an approach to teaching. *European Researcher. Series A*, 10, 511–517.

Emsley, R. (2023). ChatGPT: These are not hallucinations – they're fabrications and falsifications. *Schizophrenia, 9*(1), 1–2. https://doi.org/10.1038/s41537-023-00379-4

Francis, N. J., Jones, S., & Smith, D. P. (2025). Generative AI in higher education: Balancing innovation and integrity. *British Journal of Biomedical Science, 81*, Article 14048. https://doi.org/10.3389/bjbs.2024.14048

Hall, E. (2019, February 20). *How Aristotle's example can help public philosophy today*. Aeon Essays. https://aeon.co/essays/how-aristotles-example-can-help-public-philosophy-today

Huffman, P., & Hutson, J. (2024). Enhancing history education with Google NotebookLM: Case study of Mary Easton Sibley's diary for multimedia content and podcast creation (Faculty Scholarship No. 683). *Lindenwood University Digital Commons.* https://digitalcommons.lindenwood.edu/faculty-research-papers/683

Jiang, Z. (2024). Research on the advancement of equity in higher education driven by artificial intelligence. *J Higher Educ Res, 5*(2), 152.

Juma, C. (2016). Innovation and its enemies: Why people resist new technologies. Oxford University Press.

Kojali, K. J. (2023). The survival of manuscripts: Resistance, adoption, and adaptation to Gutenberg's printing press in early modern Europe. *The Kennesaw Journal of Undergraduate Research*, *10*(1), 2.

Lin, H. (2022). The influence of artificial intelligence in education on teaching effectiveness: The mediating role of teachers' perceptions of educational technology. *International Journal of Emerging Technologies in Learning, 17*(24), 144–156. https://doi.org/10.3991/ijet.v17i24.36037

Moosa, P. M. (2024). Impact of AI in teaching and learning of CS in low-resourced schools.. *International Journal of Science and Research Archive, 12*(2), 1933–1939. https://doi.org/10.30574/ijsra.2024.12.2.1451

Paterson, R. (2025). Leveraging the Power of Lateral Reading: The Need for its Inclusion in EAP Style Research Reading and Writing Courses, *Rikkyo University's Center for Foreign Language Education and Research, Journal of Multilingual Pedagogy and Practice, Vol. 5* (March 2025).

Paterson, R., & Hakone, K. (2024). The artifice of teaching academic writing in an AI world: An e-portfolio approach for undergraduate students. *ToXiv*, 1–10. http://toxiv.ilas.nagoya-u.ac.jp/2024/PATERSON-HAKONE2024.pdf

Pecorari, D., & Petric, B. (2014). Plagiarism in second-language writing. *Language Teaching, 47*(3), 269–302. https://doi.org/10.1017/S0261444814000056

Pennycook, G., & Rand, D. G. (2019). Lazy, not biased: Susceptibility to partisan fake news is better explained by lack of reasoning than by motivated reasoning. *Cognition, 188*, 39-50.

Pink, D. H. (2006). A whole new mind: Why right-brainers will rule the future. Penguin.

Rogers, E. M. (1995). *Diffusion of Innovations*, Fourth Edition. Free Press.

Roshanaei, M., Olivares, H., & Lopez, R. R. (2023). Harnessing AI to foster equity in education: Opportunities, challenges, and emerging strategies. *Journal of Intelligent Learning Systems and Applications, 15*(4), 123-143.

Salvagno, M., Taccone, F. S., & Gerli, A. G. (2023). Artificial intelligence hallucinations. *Critical Care, 27*(1), 180. https://doi.org/10.1186/s13054-023-04473-y

Seeskin, K. (1987). Dialogue and discovery: A study in Socratic method. Suny Press. https://books.google.com/books?hl=en&lr=&id=FdlXp1HTccsC&oi=fnd&pg=PP11&dq=socratic+method&ots=pYwaUNZh7t&sig=o5kSMD8D8DyFSJZ7MFoCrKUoF0k

Wineburg, S., & McGrew, S. (2017). Lateral Reading: Reading Less and Learning More When Evaluating Digital Information (SSRN Scholarly Paper No. 3048994). *Social Science Research Network.* https://doi.org/10.2139/ssrn.3048994

Wirtz, B. (2017, October 17). *Today's techno-panic would have killed the printing press*. https://fee.org/articles/todays-techno-panic-would-have-killed-the-printing-press/

Yadav, S. (2024). Navigating the landscape of AI integration in education: Opportunities, challenges, and ethical considerations for harnessing the potential of artificial intelligence (AI) for teaching and learning. *BSSS Journal of Computer, XV*(I), 38–48. https://doi.org/10.51767/jc1503

Zhang, H. L., & Leong, W. Y. (2024). Transforming rural and underserved schools with AI-powered education solutions. *ASM Science Journal, 19,* 1–12. https://doi.org/10.32802/asmscj.2023.1895