

Part 1: Exploring New Horizons: Generative Artificial Intelligence and Teacher Education

JASON TRUMBLE

University of Central Arkansas, USA

jtrumble@uca.edu

ELIZABETH LANGRAN

Marymount University, USA

elangran@marymount.edu

PUNYA MISHRA

Arizona State University, USA

Punya.Mishra@ASU.edu

REBECCA BLANKENSHIP

Florida A&M University, USA

rebecca.blankenship@famuc.edu

WILLIAM LYNCH

Drexel University, USA

bill.lynch@drexel.edu

RASHMI KHAZANCHI

Open University of the Netherlands, Netherlands

rashmi.khazanchi@ou.nl

PANKAJ KHAZANCHI

Liberty University/ Cobb County School District, USA

pkhazanchi@liberty.edu

Abstract: This panel consists of authors who contributed to the AACE's recently-published book, *Exploring New Horizons: Generative Artificial Intelligence and Teacher Education*. Edited by Michael Searson, Elizabeth Langran, and Jason Trumble, these chapters explore a variety of areas within the emerging field of generative AI and teacher education, including leveraging AI to create inclusive educational environments, proposing new frameworks, using AI to support data literacy development, and asking educators to think critically about AI's broad societal impacts.

Keywords: Generative AI, GenAI, ChatGPT, Artificial Intelligence, AI, Teacher Education

Introduction

Exploring New Horizons: Generative Artificial Intelligence and Teacher Education, edited by Michael Searson, Elizabeth Langran, and Jason Trumble, was published this spring by AACE. This edited volume offers an exploration of the intersection of generative AI with education, focusing on pedagogical and ethical frameworks, its integration in education coursework, and the challenges it introduces to teacher education. It emphasizes critical awareness of AI's societal impacts, advocating for a humanistic and ethically mindful approach to technology in

education. By integrating theory, research, and practical examples, the chapter authors examine how GenAI can improve teaching and learning as well as teacher education research.

With contributions from international authors, the book covers topics such as TPACK, ethical guidelines for GenAI, use in special education, and the broader societal effects of GenAI on teacher education. Additionally, it presents case studies and research on AI tools like ChatGPT, suggesting ways to incorporate GenAI that enhance outcomes for preservice teachers. The book calls for careful consideration of this technology, encouraging stakeholders to shape a future where education and artificial intelligence are integrated effectively, ethically, and equitably. This ebook is available online in the AACE *LearnTechLib* database.

Session Description

Jason Trumble and Elizabeth Langran, as editors of this book, will serve as moderators as the authors of four chapters share the main points from their writing. Following brief presentations from each chapter, the moderators will engage the audience and the panelists in a discussion about how the field of teacher education can meet the challenges of generative AI. Below are the descriptions of each of the chapters that will be presented at this session.

The (Neil) Postman Always Rings Twice: 5 Questions on AI and Education (Punya Mishra)

GenAI technologies are rapidly reshaping our world, including the world of education. The dominant focus of much of the discourse around Gen AI and education has been either on plagiarism or on how educators could use these tools to be more efficient in their practices. In contrast, we frame this chapter around a broader set of themes to argue that educators must think critically about AI's broad societal impacts, not just direct applications in classrooms. We build on 5 key ideas about technological change presented by Neil Postman. They are: (1) We always pay a price for technology; (2) When it comes to technology, there are always winners and losers; (3) Embedded in every technology, there are one or more powerful ideas—and biases; (4) Technological change is not additive, it is ecological; (5) Technologies are fictions. We then apply these ideas to the emerging world of Gen AI, questioning what this new technology will do and undo, as well as who will benefit from it and who will be harmed. In addition, we consider the biases inherent in this new technology and how this technological shift will transform societies. Finally, we argue that Gen AI technologies are human creations, and that we have agency to question and to redesign them towards humanistic goals. We believe these ideas offer insights into how educators and students can develop critical awareness of AI's influences and thus support their ethical and responsible use in education.

Pedagogical Models and Generative AI Fluency: A Three-Tiered Empirical Framework Approach (Rebecca Blankenship)

In considering the introduction of generative AI programs into traditional teaching and learning modalities, it is important to consider the intersection of theory and practice. In an era where emerging technologies profoundly influence teaching practices and learning spaces, educators find themselves at the crossroads of being innovative while at the same time maintaining instructional integrity. As traditional human-to-human classrooms are reimagined to include digital learning spaces, it is imperative to harmonize instructional spaces with a proven empirical framework or frameworks to scaffold successful implementation. Accordingly, in this chapter, the author explores the hermeneutical interplay between TPACK through the empirical lenses of the Johari Window and Hall, et al. Levels of Use (LoUs). Central to this exploration is the type of scaffolding and LoUs needed to facilitate learners navigating the complex terrain of generative AI learning modalities and spaces. Here, the awareness of the digital self and its proximity to the AI modality is essential for actualizing teaching and learning outcomes. Using a layered approach, the author curates an ensemble of theoretical frameworks to proffer a three-tiered scaffolded approach to inform best pedagogic practices in the evolving landscape of AI-enabled education. The Technological Pedagogical and Content Knowledge (TPACK) Framework, an established pedagogic framework, is the foundational scaffold for a comprehensive integration of technology, pedagogy, and content in AI-powered teaching

modalities. In tandem with this, the Johari Self-Perception Window presents a lens through which the nuances of individual cognitive perceptions and hermeneutic cyclical interpretations merge, creating a synergistic interplay between learners, educators, and the AI-mediated learning environment. The Levels of Use (LoU) framework completes the third tier by capturing digital literacy and technical growth as educators and learners navigate the intricacies of AI-powered modalities.

Assessment and Instructional Decision Making: How AI Can Support Data Literacy Development for Preservice Teachers (William Lynch)

Artificial Intelligence (AI) is expected to impact education in many ways, and teacher educators need to begin preparing preservice teachers (PSTs) for its use now. One thing today’s educators are expected to do effectively is use data to make instructional decisions (Schelling & Rubenstein, 2021). AI can support teachers as they work to improve student outcomes in our assessment-heavy educational climate. This chapter will illustrate AI’s potential to enhance the critical data-driven decision-making abilities of PSTs, who are likely to collaborate with AI throughout their entire careers. The chapter includes examples of how generative AI can model small-scale learning analytics and data analysis for educators, along with descriptions of how generative AI can be employed to craft both simulated and authentic assessment tasks.

Generative AI to Improve Special Education Teacher Preparation for Inclusive Classrooms (Rashmi Khazanchi and Pankaj Khazanchi)

Emerging technologies, such as artificial intelligence (AI), machine learning, and data mining, have ushered in disruptive Generative AI, revolutionizing various domains, including education. The advent of AI-based chatbots like ChatGPT has led to the widespread adoption of Generative AI tools in educational settings. These tools enable the creation of new content, including text, images, and videos, potentially transforming teaching and learning processes. This book chapter highlights the benefits of using Generative AI tools to generate accessible learning materials to enhance the teaching and learning processes. This book chapter aims to explore the application of Generative AI in creating an inclusive educational environment, overcoming barriers, and promoting equitable learning opportunities, with a particular focus on the preparation of special education teachers for inclusive classrooms. This book chapter also discusses ethical concerns in using Generative AI tools in the preparation of special education teachers.

Table 1

Session Outline

Time	Description
5 minutes	Introductions and overview of the book
25 minutes	Panelist presentations: overview of each chapter
20 minutes	Audience questions and discussions
10 minutes	Closing remarks from the panel