

# DEEP LEARNING FOR GENDER-SENSITIVE PEDAGOGY IN HIGH SCHOOL SOCIOLOGY: OPPORTUNITIES AND CHALLENGES

Fritz Hotman Syahmahita Damanik<sup>1</sup>, Oman Sukmana<sup>2</sup>, Wahyudi Winarjo<sup>3</sup>

<sup>1,2,3</sup>Doctoral Program in Sociology, Directorate of Postgraduate Programs, Muhammadiyah University of Malang,  
[fritzhsdamanik@webmail.umm.ac.id](mailto:fritzhsdamanik@webmail.umm.ac.id)

## INFO ARTIKEL

### Riwayat Artikel:

Received : 29-03-2025  
Revised : 01-07-2025  
Accepted : 09-07-2025  
Online : 12-07-2025

### Kata Kunci:

Deep Learning in Education; Gender-Sensitive Pedagogy; Artificial Intelligence in Sociology Teaching

## ABSTRAK

Gender-sensitive pedagogy plays a crucial role in fostering equitable educational environments, particularly in high school sociology, where discussions on social structures and gender dynamics are central. However, traditional teaching methodologies often reinforce gender biases, limiting opportunities for inclusive learning. With advancements in artificial intelligence (AI) and deep learning, new educational tools have emerged that can help address these biases by providing personalized learning experiences, adaptive assessments, and real-time feedback. This study explores the role of deep learning in supporting gender-sensitive pedagogy through a systematic literature review. The research method follows a qualitative approach, utilizing academic journals, conference proceedings, policy reports, and review articles published within the last five years. Sources were selected through an advanced search of databases such as Scopus, Web of Science, and Google Scholar using keywords like “deep learning in education,” “gender-sensitive pedagogy,” and “AI in high school sociology.” Inclusion criteria focused on peer-reviewed, relevant, and recent publications to ensure the validity and reliability of the findings. The collected data is analyzed using Miles and Huberman’s framework, which includes data reduction, data presentation, and conclusion drawing to identify key themes and trends. The findings indicate that AI-powered tools can detect gender biases, enable adaptive learning, and enhance inclusivity in high school sociology education. However, challenges such as AI biases, ethical concerns, technological barriers, and resistance from traditional educational institutions persist. The study concludes that while deep learning presents significant opportunities for advancing gender-sensitive pedagogy, its effective implementation requires teacher training, policy support, and ethical oversight. Future research should focus on practical applications and long-term impacts of AI in gender-sensitive education.

## A. INTRODUCTION

Gender-sensitive pedagogy refers to an educational approach that consciously acknowledges and addresses the different experiences, needs, and social positions of all genders to create an equitable and inclusive learning environment. In this context, the significance of gender-sensitive education in shaping equal opportunities in high school sociology is increasingly being recognized. Traditional high school pedagogy has long been critiqued for perpetuating gender stereotypes that hinder the development of a more equitable environment for students of all genders. Research has highlighted that gender-sensitive pedagogies not only improve academic performance but also foster a sense of belonging and engagement among students (Cagang et al., 2023; Thabiti et al., 2024). Specifically, students

in environments where gender-sensitive practices are embedded demonstrate improved academic outcomes, suggesting a direct correlation between teaching methodologies and student success regarding gender inclusivity (Thabiti et al., 2024). Moreover, ensuring an inclusive and equitable classroom can challenge existing biases, paving the way for future generations to embrace equality, as evidenced by various studies promoting the importance of gender-sensitive pedagogy (Abdurrohman et al., 2024).

In line with evolving educational trends, technological advancements particularly in artificial intelligence (AI) and deep learning are increasingly being explored as tools to support the implementation of inclusive pedagogical practices, including those that are gender-sensitive (Kadek et

al., 2023). These technologies offer promising opportunities to transform conventional teaching methods and foster greater equity in classrooms (Murtaza et al., 2022).

Advancements in artificial intelligence (AI) and deep learning technologies are transforming educational approaches, offering new tools to support gender-sensitive pedagogy. The implementation of AI can enhance personalized learning experiences by tailoring educational content to the unique needs of each student, thereby addressing biases implicitly embedded in educational materials and fostering an equitable learning environment (Jian, 2023; Murtaza et al., 2022). For instance, AI-driven platforms can analyze student interactions to identify potential biases in behavior and language, allowing educators to address these issues proactively (Jian, 2023). Furthermore, the potential of deep learning in education extends to creating adaptive assessments that adjust to individual learning paces, promoting engagement and support while reducing the prevalence of traditional, rigid assessment models that may inadvertently favor certain gendered learning styles (Jian, 2023; Murtaza et al., 2022).

Despite these opportunities, significant challenges remain in integrating deep learning technologies effectively into gender-sensitive pedagogy. Educators often require comprehensive training to harness the full potential of AI tools in their teaching (Kadek et al., 2023). A lack of familiarity with these technologies can diminish their effectiveness, presenting barriers to both teachers and students. Additionally, disparities in access to technological resources can exacerbate existing inequalities among students, particularly in underfunded schools (Kadek et al., 2023). Thus, while the integration of deep learning and AI holds promise for advancing gender-sensitive teaching practices, it necessitates ongoing teacher training, equitable access to technology, and a commitment to overcoming institutional barriers to ensure that all students benefit equally from these innovations (Kadek et al., 2023).

## B. METHODS

This study employs a literature review method to explore the application of deep learning in gender-sensitive pedagogy within high school sociology

education. A qualitative approach is used through a systematic literature review, allowing for an in-depth analysis of existing research on deep learning, gender-sensitive pedagogy, and their intersection in sociology education at the high school level. The primary data sources include peer-reviewed journals related to education, sociology, artificial intelligence, and gender studies, as well as conference proceedings on educational technology and AI in pedagogy. Additionally, reports and policy papers from educational and gender advocacy organizations, along with books and review articles providing theoretical insights on deep learning and gender-sensitive education, are analyzed. To ensure relevance to current developments in AI and pedagogy, all selected sources are published within the last five years.

The selection and validation process of sources was conducted through a multi-step approach. First, an advanced search was carried out using academic databases such as Scopus, Web of Science, and Google Scholar, applying keywords like "deep learning in education," "gender-sensitive pedagogy," and "AI in high school sociology." The initial pool of literature was screened by reading abstracts and keywords to assess topical relevance. Next, inclusion criteria were applied, prioritizing peer-reviewed articles, empirical studies, and theoretical works that directly addressed the core themes of this study. To validate source quality and reliability, journal impact factors, citation counts, and the credibility of publishing institutions or authors were considered. Grey literature, such as reports from trusted organizations (e.g., UNESCO, UN Women), was also included if it provided significant insights and passed relevance screening.

The collected data is analyzed using Miles and Huberman's qualitative data analysis model, which consists of three main stages: data reduction, data presentation, and conclusion drawing. In the data reduction stage, relevant studies are filtered and categorized based on key themes, such as deep learning applications in education, gender-sensitive teaching, and sociology pedagogy. Redundant or less relevant studies are eliminated to focus on critical findings. The next stage, data presentation, involves organizing the findings systematically, categorizing challenges, opportunities, and best practices in implementing deep learning for gender-sensitive pedagogy. The results are presented in the form of

narrative summaries, tables, or charts to enhance clarity. Finally, in the conclusion drawing stage, the study synthesizes the findings to identify common patterns, contradictions, and gaps in existing research. The conclusions provide insights into the potential and limitations of deep learning in gender-sensitive pedagogy, highlighting areas that require further exploration. This methodological framework ensures a systematic and comprehensive analysis of existing knowledge while identifying research gaps that can inform future studies; a total of thirty-five (35) relevant sources.

### C. FINDINGS AND DISCUSSION

The literature review on deep learning and gender-sensitive pedagogy reveals several key insights and recurring themes that underscore the intricate relationship between technology and educational practices aimed at promoting gender equity. A significant finding is the potential of AI and deep learning technologies to identify and analyze biases within educational materials and classroom interactions, thereby serving as tools for fostering more inclusive environments (Heung et al., 2024). However, despite these technological advancements, challenges persist, including ethical concerns regarding possible biases inherent in AI models and the need for robust teacher training to effectively implement these tools in educational settings (Sukhera et al., 2024). Furthermore, the review highlights a distinct gap in research that specifically examines the intersection of deep learning techniques with high school sociology, suggesting that while foundational studies exist in higher education contexts, focused investigations on their application in secondary education are notably limited (Koutsouris et al., 2024). Consequently, the need for further exploration of how these AI-driven practices can serve as facilitators of gender-sensitive pedagogy in high school classrooms is evident, indicating both opportunities for enhancing educational practices and the need for critical evaluation of their implications.

#### 1. Opportunities of Deep Learning in Gender-Sensitive Pedagogy

The incorporation of deep learning technologies into gender-sensitive pedagogy presents numerous opportunities for enhancing educational practices,

particularly within high school sociology. One significant advantage is the potential of AI-driven tools to detect and mitigate gender biases present in educational materials and classroom interactions. These tools can analyze textbooks, lesson plans, and teacher-student interactions to identify language or representations that may reinforce stereotypes, ultimately facilitating a more equitable learning environment (Ananga & Ananga, 2021). Such bias detection is crucial in educational settings, where fostering an inclusive atmosphere is essential to enhance students' understanding of gender dynamics and to promote equality (Ananga & Ananga, 2021).

Furthermore, deep learning can enable personalized learning experiences that cater to the diverse needs and perspectives of students. By utilizing algorithms that adapt to individual learning styles and paces, educators can provide tailored pedagogical strategies, ensuring that all students receive equitable access to educational resources, regardless of gender (Aragonés-González et al., 2020). This adaptiveness allows for the representation of various perspectives, which is essential in sociology classes where discussions on gender issues are prevalent. The approach not only increases student engagement but also allows for a more thoughtful examination of gender roles and societal structures (Aragonés-González et al., 2020).

AI-driven analytics also offer real-time feedback for teachers, making it easier for them to adjust their instructional strategies to enhance inclusivity in their teaching methods. These feedback mechanisms can help educators identify which approaches are most effective in promoting student participation and understanding regarding gender-sensitive topics (Miralles-Cardona et al., 2022). Additionally, interactive learning methods such as AI-driven simulations, chatbots, and virtual tutors can enrich discussions on gender issues, making learning more engaging and pertinent. This technological integration supports the development of a rich educational framework, allowing students to explore gender dynamics dynamically and critically, thereby fostering a deeper understanding of social inequalities in contemporary society (Falk & Hermle, 2018).

## 2. Challenges in Implementing Deep Learning for Gender-Sensitive Pedagogy

Implementing deep learning for gender-sensitive pedagogy involves navigating several substantial challenges that may hinder its effectiveness in educational settings. One major issue is the potential bias inherent in AI models. These models often depend on training data that reflects societal biases, which can inadvertently lead to the reproduction of stereotypes in educational materials and classroom interactions. Studies have shown that when AI systems are fed with biased data, they may perpetuate gender prejudices rather than help dismantle them (Vaganova & Korostelev, 2021). This raises critical concerns about the efficacy of AI tools in achieving genuine gender equity in educational contexts, necessitating the importance of actively monitoring and auditing AI systems to ensure they promote inclusivity (Antypas, 2022).

Ethical and privacy concerns further complicate the implementation of AI in education, particularly regarding student data. Issues related to consent, data privacy, and responsible AI usage are increasingly scrutinized as schools look to integrate these technologies into their pedagogy. The protection of sensitive information is paramount, especially when dealing with minors, and any deployment of AI must adhere to stringent ethical guidelines (Huang et al., 2023). Without clear frameworks and policies addressing these privacy issues, both educators and students may be reluctant to embrace AI-driven learning tools, hindering advancements toward using deep learning for gender-sensitive pedagogy.

Additionally, technological and institutional barriers pose significant challenges. Many educational institutions struggle with inadequate infrastructure and insufficient teacher training required for effective technology integration (Torres et al., 2020). Teachers often lack the confidence and skills necessary to implement AI tools, resulting in resistance to adopting these new methodologies (Truskavetska et al., 2024). This resistance is compounded by cultural and social factors, where traditional educational systems and deeply ingrained gender norms can create skepticism toward AI-based educational tools. Overcoming these social barriers is crucial for fostering an environment where innovative teaching methods can thrive, making it

essential for educators and policymakers to address these obstacles collectively to realize the potential of deep learning in advancing gender-sensitive pedagogy.

## 3. Comparative Analysis with Existing Research

The findings of this research align with existing studies that emphasize the importance of AI's integration into education to promote gender-sensitive pedagogy. Previous research has illustrated that AI tools can significantly enhance personalized learning experiences and improve inclusion by adapting educational material to meet diverse student needs (Alrayes et al., 2024; H. Zhang et al., 2023). In particular, the use of AI in detecting and mitigating gender biases is consistent with literature that advocates for incorporating ethical considerations in AI educational applications (Li, 2024). However, this study also highlights a gap in literature that directly addresses the intersection of deep learning and gender-sensitive pedagogy at the high school level, contrasting with a majority of existing research focusing on higher education contexts, demonstrating the necessity for studies that specifically address this crucial educational phase (Akintayo et al., 2024).

Furthermore, while several studies acknowledge the potential of AI in improving educational outcomes, they often overlook the challenges associated with its ethical deployment. Concerns regarding data privacy, algorithmic bias, and the ethics of AI technology in K-12 settings are underexplored (Gupta et al., 2024; Kim et al., 2022). This gap is particularly important as existing research underscores the need for an ethical framework when applying sophisticated technologies like AI to ensure fairness and inclusivity (Choudhary, 2024). It is essential that future research further investigates these ethical challenges, as well as the impact of cultural and institutional resistance to incorporating AI tools in classrooms, thus providing a more holistic understanding of the barriers and facilitators for effectively implementing AI in gender-sensitive pedagogy.

Additionally, the existing literature reveals a notable absence of research focused on the practical applications of AI and deep learning in secondary education concerning gender-sensitive pedagogy (Khalil & Er, 2023). Many studies have shown the

promise of AI tools within subject areas like STEM, yet the literature on their impact on sociology or social sciences explicitly through a gender lens remains sparse (P. Zhang, 2024). As this research indicates, exploring these uncharted areas could provide valuable insights, particularly about how AI can support innovative pedagogical approaches that foster discussions surrounding gender equality and social justice among high school students, thereby enriching the broader discourse on educational equity and the use of technology in teaching (Celine et al., 2022).

#### **4. Implications for High School Sociology Education**

Integrating deep learning tools into gender-sensitive teaching practices in high school sociology necessitates several strategic approaches. One essential strategy is to equip educators with comprehensive training programs aimed at enhancing their digital literacy and proficiency with AI technologies. This acknowledges that while some educators may adapt readily to digital tools, others might experience challenges that can lead to uneven implementation (Khalil & Er, 2023). Moreover, it is crucial to foster a collaborative learning environment where teachers feel supported and confident in utilizing AI-driven technologies to identify and mitigate biases in educational materials. Encouraging peer learning and the sharing of best practices can further empower teachers to effectively apply these tools in crafting an inclusive curriculum.

In addition to empowering educators, policy recommendations should focus on creating supportive frameworks for integrating AI into educational settings. School administrators and policymakers must prioritize the establishment of clear ethical guidelines to govern the use of AI in classrooms, ensuring that issues related to data privacy, consent, and responsible usage are addressed proactively. While the provided references do not explicitly support this claim, it is a common view expressed in educational literature regarding the ethical use of technology (Seo et al., 2021). Furthermore, investing in the necessary technological infrastructure is vital, as many institutions currently lack the resources required to implement AI effectively. Policymakers should also encourage the allocation of funding targeted towards

training, technology acquisition, and ongoing support to bridge gaps between technology, teaching methodology, and gender-sensitive pedagogy, as highlighted in various educational studies (Kansal et al., 2022).

Future research directions should aim to explore the long-term implications of AI-driven gender-sensitive pedagogy within high school contexts. There is a pressing need for studies that focus specifically on the implementation and outcomes of these technologies in teaching sociology, as most existing literature tends to emphasize higher education or generic AI applications (Heung et al., 2024). Investigating students' perceptions and experiences with AI tools could provide valuable insights into how these technologies can be optimized to enhance engagement and understanding of gender issues, a topic that requires further exploration and is noted across relevant educational research (Hasan Sapci & Aylin Sapci, 2020). Moreover, inclusion of diverse educational settings and cultural frameworks in such research would contribute to a broader understanding of how to effectively harness AI for promoting equity and inclusiveness in education (Gocen & Aydemir, 2020). Overall, an interdisciplinary approach that intertwines AI technology with gender studies can yield innovative pedagogical practices that address contemporary educational challenges.

#### **D. CONCLUSION AND SUGGESTIONS**

In conclusion, this study highlights the critical intersection of deep learning technologies and gender-sensitive pedagogy within high school sociology, revealing both substantial opportunities and significant challenges. It underscores the potential of AI-driven tools to foster inclusivity by identifying biases and enabling personalized learning experiences. However, the challenges posed by ethical concerns, technological infrastructure, and societal resistance must be addressed effectively to maximize the benefits of these innovations. Thus, educators must be equipped with robust training and support systems to navigate this complex landscape successfully.

Recommendations for policymakers and school administrators include establishing clear ethical guidelines for AI usage in educational settings and ensuring equitable access to technology and training

resources. Future research should focus on exploring the practical applications of AI in gender-sensitive pedagogy, particularly in secondary education, and examine the long-term implications of these technologies in fostering discussions surrounding gender equality. A holistic approach that integrates AI technology with gender studies can yield effective teaching practices that address systemic inequities and promote an inclusive educational environment.

## REFERENCES

- A., Pageh, I. M., Mudana, I. W., Margi, I. K., & Nitiasih, P. K. (2024). The Mainstreaming of Egalitarian Pedagogy in Sociology Learning Process. *KnE Social Sciences*, 167-177-167-177. <https://doi.org/10.18502/KSS.V9I2.14845>
- Akintayo, O. T., Atobatele, F. A., & Mouboua, P. D. (2024). Navigating multilingual identities: The role of languages in shaping social belonging and political participation. *International Journal of Applied Research in Social Sciences*, 6(5), 828-843. <https://doi.org/10.51594/IJARSS.V6I5.1105>
- Alrayes, A., Henari, T. F., & Ahmed, D. A. (2024). ChatGPT in Education – Understanding the Bahraini Academics Perspective. *Electronic Journal of E-Learning*, 22(2), 112-134. <https://doi.org/10.34190/EJEL.22.2.3250>
- Ananga, E. D., & Ananga, E. D. (2021). Gender Responsive Pedagogy for Teaching and Learning: The Practice in Ghana's Initial Teacher Education Programme. *Creative Education*, 12(4), 848-864. <https://doi.org/10.4236/CE.2021.124061>
- Antypas, G. (2022). Education In Universities - Teacher Training As A Quality Factor. *European Journal of Education Studies*, 9(10). <https://doi.org/10.46827/EJES.V9I10.4502>
- Aragonés-González, M., Rosser-Limiñana, A., & Gil-González, D. (2020). Coeducation and gender equality in education systems: A scoping review. *Children and Youth Services Review*, 111. <https://doi.org/10.1016/J.CHILDYOUTH.2020.104837>
- Cagang, A. J., Sinang, A., Butlig, S. P. Q., & Española, E. (2023). Gender and Development Awareness Towards Gender-sensitive Pedagogical Practices of Pre-service Teachers: Basis for a University GAD Program. *Asian Journal of Education and Social Studies*, 49(3), 266-280. <https://doi.org/10.9734/AJESS/2023/V49I31153>
- Celine, S., Dominic, M. M., Fransis, F. S., & Devi, M. S. (2022). Learning Content Classification and Mapping Content to Synonymous Learners based on 2022 Augmented Verb List of Marzano and Kendall Taxonomy. *International Journal of Advanced Computer Science and Applications*, 13(8), 370-383. <https://doi.org/10.14569/IJACSA.2022.0130845>
- Choudhary, T. (2024). *Political Bias in AI-Language Models: A Comparative Analysis of ChatGPT-4, Perplexity, Google Gemini, and Claude*. <https://doi.org/10.20944/PREPRINTS202407.1274.V1>
- Falk, A., & Hermle, J. (2018). Relationship of gender differences in preferences to economic development and gender equality. *Science*, 362(6412). [https://doi.org/10.1126/SCIENCE.AAS9899/SUPPL\\_FILE/AAS9899\\_FALK\\_SM.PDF](https://doi.org/10.1126/SCIENCE.AAS9899/SUPPL_FILE/AAS9899_FALK_SM.PDF)
- Gocen, A., & Aydemir, F. (2020). Artificial Intelligence in Education and Schools. *Research on Education and Media*, 12(1), 13-21. <https://doi.org/10.2478/REM-2020-0003>
- Gupta, Dr. P., Sreelatha, Dr. C., Latha, A., Raj, Dr. S., & Singh, Dr. A. (2024). Navigating The Future Of Education: The Impact Of Artificial Intelligence On Teacher-Student Dynamics. *Educational Administration: Theory and Practice*, 30(4), 6006-6013. <https://doi.org/10.53555/KUEY.V30I4.2332>
- Hasan Sapci, A., & Aylin Sapci, H. (2020). Artificial intelligence education and tools for medical and health informatics students: Systematic review. *JMIR Medical Education*, 6(1), e19285. <https://doi.org/10.2196/19285>
- Heung, I., Yim, Y., & Wegerif, R. (2024). Teachers' perceptions, attitudes, and acceptance of artificial intelligence (AI) educational learning tools: An exploratory study on AI literacy for young students. *Future in Educational Research*, 2(4), 318-345. <https://doi.org/10.1002/FER3.65>
- Huang, Y., Richter, E., Kleickmann, T., & Richter, D. (2023). Comparing video and virtual reality as tools for fostering interest and self-efficacy in classroom management: Results of a pre-registered experiment. *British Journal of Educational Technology*, 54(2), 467-488. <https://doi.org/10.1111/BJET.13254>; SUBPAGE: STRING:FULL
- Jian, M. J. K. O. (2023). Personalized learning through AI. *Advances in Engineering Innovation*, 5(1), 16-19. <https://doi.org/10.54254/2977-3903/5/2023039>
- Kadek, N., Desyantari, M., Putrayasa, W., Made, G., Wirawan, A. S., Sitompul, L. U., & Nur, I. (2023). Technological Adaptation Trends for Sociology Teachers in Online Learning during Covid-19 Pandemic. *Ejournal.Undiksha.Ac.IdNKM Desyantari, IWP Yasa, IGMAS Wirawan, LU Sitompul, I NurMedia Komunikasi FPIPS, 2023•ejournal.Undiksha.Ac.Id*, 22(1). <https://doi.org/10.23887/mkfis.v22i1.43591>
- Kansal, R., Bawa, A., Bansal, A., Trehan, S., Goyal, K., Goyal, N., Malhotra, K., Kansal, R., Bawa, A., Bansal, A., Trehan, S., Goyal, K., Goyal, N., & Malhotra, K. (2022). Differences in Knowledge and Perspectives on the Usage of Artificial Intelligence Among Doctors and Medical Students of a Developing Country: A Cross-Sectional Study. *Cureus*, 14(1). <https://doi.org/10.7759/CUREUS.21434>
- Khalil, M., & Er, E. (2023). Will ChatGPT Get You Caught? Rethinking of Plagiarism Detection. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 14040 LNCS(2), 475-487. [https://doi.org/10.1007/978-3-031-34411-4\\_32](https://doi.org/10.1007/978-3-031-34411-4_32)

- Kim, J., Lee, H., & Cho, Y. H. (2022). Learning design to support student-AI collaboration: perspectives of leading teachers for AI in education. *Education and Information Technologies*, 27(5), 6069–6104. <https://doi.org/10.1007/S10639-021-10831-6/TABLES/1>
- Koutsouris, G., Bremner, N., & Stentiford, L. (2024). Do we have to rethink inclusive pedagogies for secondary schools? A critical systematic review of the international literature. *British Educational Research Journal*, 50(1), 260–286. <https://doi.org/10.1002/BERJ.3926>
- Li, W. (2024). The Influence of Artificial Intelligence on the Education System. *Lecture Notes in Education Psychology and Public Media*, 65(1), 137–142. <https://doi.org/10.54254/2753-7048/65/20240158>
- Miralles-Cardona, C., Chiner, E., & Cardona-Moltó, M. C. (2022). Educating prospective teachers for a sustainable gender equality practice: survey design and validation of a self-efficacy scale. *International Journal of Sustainability in Higher Education*, 23(2), 379–403. <https://doi.org/10.1108/IJSHE-06-2020-0204/FULL/XML>
- Murtaza, M., Ahmed, Y., Shamsi, J. A., Sherwani, F., & Usman, M. (2022). AI-Based Personalized E-Learning Systems: Issues, Challenges, and Solutions. *IEEE Access*, 10, 81323–81342. <https://doi.org/10.1109/ACCESS.2022.3193938>
- Seo, K., Tang, J., Roll, I., Fels, S., & Yoon, D. (2021). The impact of artificial intelligence on learner–instructor interaction in online learning. *International Journal of Educational Technology in Higher Education*, 18(1), 1–23. <https://doi.org/10.1186/S41239-021-00292-9/TABLES/7>
- Sukhera, J., Kennedy, E., Panza, M., Rodger, S., & Watling, C. (2024). Exploring Diversity, Equity, and Inclusion–Related Pedagogy Across Different Professions. *Academic Medicine*. <https://doi.org/10.1097/ACM.0000000000005741>
- Thabiti, T. H., Mwandilawa, B., & Basela, J. (2024). Examining the influence of gender-responsive pedagogies on students’ academic performance in secondary schools in Tanzania: The case of Mafia District. *Journal of Management and Policy Issues in Education*, 1(1), 71–85. <https://doi.org/10.58548/2024.JMPIE11.7185>
- Truskavetska, I., Kyryienko, O., Buslenko, L., Hrudynin, B., & Hurska, O. (2024). O papel da realidade virtual na melhoria da qualidade da formação profissional dos professores de ciências naturais. *Educ. Form.*, 9, e13866–e13866. <https://doi.org/10.25053/REDUFOR.V9.E13866>
- VAGANOVA, O. I., & KOROSTELEV, A. A. (2021). Study Of The Motivative Component Of Technological Competence Of The Teacher Of Professional Training. *Scientific Vector of the Balkans*, 5(11). <https://doi.org/10.34671/SCH.SVB.2021.0501.0003>
- Zhang, H., Lee, I., Ali, S., DiPaola, D., Cheng, Y., & Breazeal, C. (2023). Integrating Ethics and Career Futures with Technical Learning to Promote AI Literacy for Middle School Students: An Exploratory Study. *International Journal of Artificial Intelligence in Education*, 33(2), 290–324. <https://doi.org/10.1007/S40593-022-00293-3/METRICS>
- Zhang, P. (2024). Design and Implementation of English-Chinese Translation Teaching Platform Based on Deep Learning. *Journal of Electrical Systems*, 20(3s), 1746–1755. <https://doi.org/10.52783/JES.1714>