Research Report: Impact of Generative AI on Education

Introduction

This report explores key research questions on **Impact of Generative AI on Education**, generated by Gemini Pro and answered using real-time web data via the Tavily API. It follows the ReAct (Reasoning + Acting) pattern: planning using an LLM and acting via web search.

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1. How does the integration of generative AI tools (e.g., ChatGPT, DALL-E 2) affect student learning outcomes across different subject areas and learning styles? (Focuses on impact on learning and considers varied contexts)

Summary:

- *(Summary needs to be filled manually or generated in future)*

Sources:

- **Opinion Paper: "So what if ChatGPT wrote it?" Multidisciplinary ...** > The remainder of this section showcases the 43 contributions, presented mostly in their original and unabridged form. This approach may result in some unevenness and overlapping narrative but preserves the individual perspectives of each expert as they highlight important aspects of the impact and c...

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2. What are the ethical implications of using generative AI in educational assessment, particularly regarding plagiarism detection and the development of authentic assessment strategies? (Focuses on ethical considerations and assessment methods)

Summary:

- *(Summary needs to be filled manually or generated in future)*

Sources:

- **The ethical implications of using generative chatbots in higher ...**

    risk of over-reliance on AI for educational purposes. Plagiarism continues to emerge as a critical ethical concern, with AI-generated content threatening academic integrity. The article advocates for comprehensive measures to address these ethical issues, including clear policies, advanced plagiaris...

- **Generative Artificial Intelligence and Education: A Brief Ethical ...**

    When instructors evaluate student coursework for academic credit, they have a basic duty to assess the work for plagiarism. To carry out this duty, many institutions equip instructors with plagiarism detectors, which, until the dawn of freely available generative AI, were essentially straightforward...

- **Generative AI in Education: Impact, Ethics, and Use Cases - Litslink**

    In short, generative AI in education makes learning more personal, improves teaching methods, and provides support that scales. As these technologies keep getting better, they'll make education more effective, engaging, and accessible to all students. However, we should also consider the ethics of u...

3. To what extent does the use of generative AI in education exacerbate or mitigate existing inequalities in access to educational resources and opportunities among students from different socioeconomic backgrounds? (Focuses on equity and access issues)

Summary:

- *(Summary needs to be filled manually or generated in future)*

Sources:

- **The impact of generative artificial intelligence on socioeconomic ...** > Generative artificial intelligence (AI) has the potential to both exacerbate and ameliorate existing socioeconomic inequalities. In this article, we provide a state-of-the-art interdisciplinary overview of the potential impacts of generative AI on (mis)information and three information-intensive dom...

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4. How are teacher roles and professional development needs changing in response to the increasing availability and integration of generative AI tools in classrooms? (Focuses on teacher training and adaptation)

Summary:

- *(Summary needs to be filled manually or generated in future)*

Sources:

- **Exploring the teacher's role amid rising generative AI**

  Generative AI (GenAI) is changing education by reshaping teacher roles and pedagogical methods. This study examines its impact on classroom...

- **Artificial intelligence in teaching and teacher professional ...**

RQ1 focuses on publication trends to provide a
temporal and contextual overview of the field,
identifying periods of growth and shifts in focus.
This analysis is crucial for understanding the
evolution of interest in AI for teaching and teacher
professional development, particularly in light of
rece...

- **Effective Professional Development on AI - Edutopia**

    Technology will continue to evolve, and the tools we
    use will change and be increasingly powered by
    AI. There are a variety of PD options available.
    Here are some ideas for how educators can stay up to
    speed on AI and other emerging tech. [...] [![Image
    1: ChatGPT and generative AI, Tech Integration...

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5. What are the long-term impacts of using generative AI for personalized learning on students' critical thinking skills, creativity, and problem-solving abilities? (Focuses on long-term effects on higher-order thinking skills)

Summary:

- *(Summary needs to be filled manually or generated in future)*

Sources:

- **The Impact of Artificial Intelligence (AI) on Students' Academic ...**

    1. Krause, S., Panchal, B. H., & Ubhe, N. (2024).
       The evolution of learning: Assessing the
       transformative impact of generative AI on higher
       education. arXiv, arXiv:2404.10551. [[Google
       Scholar](https://scholar.google.com/
       scholar_lookup?title=The+evolution+of+learning:
       +Assessing+the+transformative...

- **The effects of over-reliance on AI dialogue systems on students ...**

    - Eapen, T. (2023). Augmenting creativity using
      generative ai: The method of trisociation.
      Available at SSRN 4603145. https://doi.org/
      10.2139/ssrn.4603145...

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6. How can educational institutions effectively implement policies and guidelines to ensure responsible and ethical use of generative AI by both students and educators, addressing concerns about bias, misinformation, and misuse? (Focuses on policy and governance aspects)

Summary:

- *(Summary needs to be filled manually or generated in future)*

Sources:

- **Generative AI in Education: Impact, Ethics, and Use Cases - Litslink**

    To address these concerns, educational institutions must draw a clear line in the sand. They should set strict guidelines for AI use, and educators should drill into students the importance of original work. By fostering a culture of integrity, schools can maintain the value of educational achieveme...

- **A comprehensive AI policy education framework for university ...**

    To address academic misconduct, universities must develop clear guidelines and strategies for detecting and preventing the misuse of generative AI. Teachers emphasize the importance of creating university-wide policies on how to test students suspected of using AI to complete tasks in which AI use i...

- **Ethical Considerations For AI Use In Education - Enrollify**

    Key points discussed include addressing biases in AI systems, ensuring transparency and accountability in AI decision-making, and equipping educators with proper training. By implementing ethical AI practices, educational institutions can create tailored, equitable learning experiences while upholdi...

Conclusion

This concludes the research findings. The agent leveraged Gemini Pro for planning and Tavily for real-time web information retrieval.