

Course Title: Research Methodology in Computer Science

Course Code: AI800

Weighting: 20%

Lecturer: Dr. Mohammad Anbar

Hand-out Date: 21 Feb 2026

Hand-in Date: 14 Mar 2026

Hand-in Method: Online Submission via E-Learning.

Assignment Report: Artificial Intelligence In Education Sector

Student ID: 261002271

Student Name: Nouf Ayed

Table of contents:

- ***Summary research***
- ***Critical Analysis***
- ***Connections***
- ***Conflicts between the findings***
- ***Synthesis Matrix for Literature Review***
- ***References***

Summary research papers:

Paper1: Artificial Intelligence in Education and Schools

The study examines how the increasing use of artificial intelligence (AI) may change the roles of teachers, schools, and educational leaders. It uses a qualitative phenomenological method to analyze the opinions of participants from different professional sectors. The results show that AI will bring new opportunities and benefits to education, but it may also create some challenges. Participants generally have positive attitudes toward AI, although teachers and academics express concerns about the future of teaching. The study also highlights legal concerns raised by lawyers, while engineers view AI as a tool to improve quality and outcomes in education

Paper2: Use Of Artificial Intelligence In Education

Artificial intelligence (AI) is an emerging technology that has the potential to transform many aspects of society, including education. In the education sector, AI is being tested to create new teaching and learning solutions. The paper explains how AI has evolved from simple rule-based systems to advanced data-driven and context-driven systems. It also shows how AI can improve learning outcomes by creating personalized and adaptable learning environments. Additionally, the paper presents examples of AI applications in education, especially in developing countries like India, where improving access to education supports sustainable development goals

Paper3: Evolution and Revolution in Artificial Intelligence in Education

The field of Artificial Intelligence in Education (AIED) has developed greatly over the past 25 years. Analysis of 47 papers from the Journal of AIED shows key trends and focus areas in the field. Future research should follow two paths: an evolutionary approach, enhancing classroom practices and working with teachers, and a revolutionary approach, embedding AI into students' daily lives to support their goals and communities. Together, these approaches aim to maximize AI's impact on education in the coming decades

Paper4: A Review on Artificial Intelligence in Education

The rapid development of artificial intelligence (AI) is increasingly influencing teaching and learning methods. AI applications in education include adaptive learning, teaching evaluation, and virtual classrooms, which help improve teachers' teaching and students' learning outcomes. highlights the positive impacts of AI on educational quality. It also discusses potential challenges AI may face in education and offers guidance for using AI to support future educational reforms

Paper5: Artificial Intelligence (AI) In Education: Using AI Tools For Teaching and Learning Process

The development of Artificial Intelligence (AI) is transforming teaching and learning by automating daily educational tasks. AI is applied in tools like virtual mentors, voice assistants, smart content, presentation translators, global courses (e.g., MOOCs), automatic assessments, personalized learning platforms, educational games, and intelligent tutoring systems. AI models human thinking to perform tasks that traditionally require teacher effort, such as grading, attendance, and administrative work. This allows teachers to focus on creative and character-building activities that machines cannot replicate. While AI enhances education systematically, human intelligence, especially in teaching and knowledge creation, remains unmatched

Paper6: The Impact of Artificial Intelligence in Educational System

Artificial intelligence (AI) has the potential to transform teaching and learning by making it more efficient, personalized, and engaging. AI technologies like machine learning and natural language processing allow teachers to analyze data, track trends, and customize learning for each student. Key applications include personalized learning, intelligent tutoring systems, automated grading, chatbots, and collaborative learning tools, which can improve student outcomes and free up teachers' time. However, challenges such as bias, cost, privacy, security, and lack of confidence must be addressed. Overall, AI empowers educators to make data-driven decisions and enhance the quality of education

Critical Analysis:

Artificial Intelligence (AI) is increasingly transforming education, affecting teaching methods, learning environments, and the roles of teachers, school leaders, and institutions. Across studies, AI is shown to personalize learning, improve outcomes, and automate routine tasks such as grading, attendance, and assessments, allowing teachers to focus on creative and high-value educational activities. Applications range from virtual mentors, voice assistants, intelligent tutoring systems, adaptive learning, and MOOCs to collaborative tools and data-driven classroom solutions. While AI offers significant opportunities and benefits, including enhanced efficiency, accessibility, and quality, challenges remain, such as privacy, bias, security, cost, and legal concerns. Future research and implementation should balance evolutionary approaches (enhancing current classroom practices) with revolutionary approaches (embedding AI into students' daily lives) to maximize its impact sustainably over the coming decades

Connections:

- i. AI enhances personalized learning by adapting content and pace to individual students, improving outcomes.*
- ii. Automation of routine tasks (grading, attendance, administrative work) frees teachers to focus on creative, critical, and character-building activities.*
- iii. AI supports data-driven decision-making, enabling educators to identify trends, monitor progress, and improve teaching quality.*
- iv. Tools like virtual mentors, intelligent tutoring systems, and MOOCs expand accessibility, especially in developing countries, supporting sustainable development goals.*

Conflicts between the findings:

- i. Some studies see AI as a potential threat to teacher authority, while others see it as a supportive assistant.*
- ii. There's tension between AI being primarily a learning tool versus a comprehensive educational assistant.*
- iii. Some papers emphasize the benefits and growth potential of AI, while others focus on challenges that may limit adoption.*
- iv. Different visions exist regarding how transformative AI should be in education—incremental change vs. systemic transformation.*

Synthesis Matrix for Literature Review:

Study	Authors	Year	Research Design	Key Findings/Results	Methodology	Limitations
Artificial Intelligence in Education and Schools	Ahmet Göçen, Fatih Aydemir	2020	Experimental	Participants are generally positive about AI's potential but caution on risks; perceptions vary between teachers, academicians, and experts	The study used a phenomenological qualitative method to explore the opinions and experiences of participants from different professional sectors regarding AI in education	The study relies on participants' opinions using a qualitative method, which may limit the generalizability of the results to all educational systems.
Use Of Artificial Intelligence In Education	Dr.Ashok Panigrahi, Dr. Vijay Joshi	2020	Experimental	AI in education has strong potential to provide personalized and high-quality learning for students regardless of location or background.	The paper used a conceptual and descriptive analysis, explaining the development of AI technologies and their applications in the education sector	The study focused on specific schools, teachers, or students, so it may not represent all educational environments globally
Evolution and Revolution in Artificial Intelligence in Education	Ido Roll & Ruth Wylie	2016	Experimental	AI and ILEs should go beyond traditional tutoring, integrating with real-life contexts to support learning anytime and develop both knowledge and life skills	The study applied document analysis by examining 47 research papers from the Journal of AIED published in 1994, 2004, and 2014	The study is conceptual and descriptive and does not include extensive empirical data or real-world experimentation, which limits practical

						validation
<i>A Review on Artificial Intelligence in Education</i>	<i>Jiahui Huang Salmiza Saleh* Yufei Liu</i>	<i>2021</i>	<i>Experimental</i>	<i>AI will increasingly shape education, helping teachers improve teaching, supporting personalized learning, and enhancing students' learning methods and styles</i>	<i>The study used a literature review method to analyze previous research on the applications and impacts of AI in education</i>	<i>As a literature review, the study depends on previous research, which may introduce bias or limitations from the selected sources</i>
<i>Artificial Intelligence (AI) In Education: Using AI Tools For Teaching and Learning Process</i>	<i>Tira Nur Fitria</i>	<i>2021</i>	<i>Experimental</i>	<i>AI supports learning but cannot replace teachers in motivating students and building character, so educators must adapt to technology</i>	<i>The research used library research, analyzing books, articles, and previous studies related to AI tools in education</i>	<i>The study uses library research without field experiments, making the findings more theoretical than practical</i>
<i>The Impact of Artificial Intelligence in Educational System</i>	<i>Dipanwita Bit, Souvik Biswas, Mrinmoy Nag</i>	<i>2024</i>	<i>Experimental</i>	<i>AI offers many benefits in education, but privacy, bias, and careful evaluation are essential. Balancing pros and cons allows for more personalized and effective learning</i>	<i>The study used a review and analytical approach to examine the impact and applications of AI in the educational system</i>	<i>The paper discusses general applications and benefits of AI, but it lacks detailed case studies or empirical evidence to support all conclusions</i>

References:

Gocen, A., & Aydemir, F. (2020). Artificial intelligence in education and schools. *Research on Education and Media*, 12(1), 13-21.

Panigrahi, D. A. K. (2020). Use of artificial intelligence in education. *Management Accountant*, 55, 64-67.

Roll, I., & Wylie, R. (2016). Evolution and revolution in artificial intelligence in education. *International journal of artificial intelligence in education*, 26(2), 582-599.

Huang, J., Saleh, S., & Liu, Y. (2021). A review on artificial intelligence in education. *Academic Journal of Interdisciplinary Studies*, 10(3).

Fitria, T. N. (2021, December). Artificial intelligence (AI) in education: Using AI tools for teaching and learning process. In *Prosiding seminar nasional & call for paper STIE AAS* (Vol. 4, No. 1, pp. 134-147).

Bit, D., Biswas, S., & Nag, M. (2024). The impact of artificial intelligence in educational system. *International Journal of Scientific Research in Science and Technology*, 11(4), 419-427.