ARTIFICIAL INTELLIGENCE IN THE CLASSROOM

Opportunities, Tools and Ethical Challenges

Seminar by Team 1 (Green Team HR)

INTRODUCTION

Articial intelligence In Education is the use of technologies such as:

- Machine Learning
- Natural Language Processing
- Intelligent Tutoring Systems

Scope of Use:

- Primary and Secondary Education
- Higher Education
- Corporate Training

Why it Matters:

AI is reshaping teaching and learning through tools such as:

- Automated grading
- AI-powered tutoring
- Learning analytic

PURPOSE OF OUR REVIEW

Aim: To explore both the **benefits** and **challenges** of AI in education settings.

Tools: Chatbots, tutoring systems, plagiarism detection, AI assessments,

Benefits: Personalized learning, instant feedback, teacher workload reduction,

Limitations and Ethics:

- Bias and discrimination
- Student privacy
- Impact on classroom interactions and student-teacher relationships

WHY USE AI IN EDUCATION

Key Drivers

- Supports remote and distance learning
- Enhances access and equality
- Provides personalised learning paths
- Automates repetitive tasks

Evidence-Based Review

Out discussion is grounded in 7 recent studies, covering:

- Latest tools and applications
- Systematic reviews
- Ethical concerns
- Development trends in AI in Education

AI TOOLS FOR STUDENTS

AI in Education Helps students learn, practice and get feedback

TOOLS

Intelligent Tutoring Systems	→ Tailored Guidance
AI- Assisted Apps	→ Quick Solutions
Immersive Environments & Simulation.	→ Games for Engagement
Chatbots	→ 24/7 support, freeing teacher time.

AI TOOLS FOR STUDENTS

Examples in Action

Intelligent Tutoring Systems

- Analyses progress, adapts exercises
- Builds confidence in subjects

AI- Assisted Apps

- *PhotoMath*: Step by step math help from an image
- *SayHi:* Instant translation for language learning

Immersive Environments & Simulation

- Aviation, Neuroscience, Programming
- Supporting safe skill-building

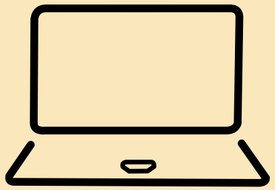
Chatbots

- Georgia Tech's virtual TA
- Instant feedback outside of classroom hours

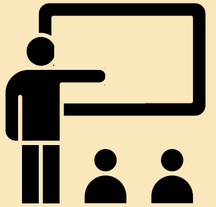
AI TOOLS FOR STUDENTS

Key Takeaways

AI tools are reshaping the student experience.



Students are already adopting AI independently



Classroom integration to maximise benefits and limit misuse & overreliance

AI TOOLS FOR TEACHERS

Overview

Goal:

- Improves outcomes for students → Lowering workload on teachers

Current state:

- Already being adopted into classrooms, some forms are already commonplace
- More research is being done on more speculative applications

AI TOOLS FOR TEACHERS

Current uses & Tools

- **Plagiarism checking** → Scan student work for plagiarized content, already Widely used in academia but adapting overtime.
  → Turnitin, Plagiarism Checker X, Grammarly
- **Smart Curation of Learning Materials** → Scanning online for relevant teaching materials.
  → X5GON (research), Teacher Advisor, Clever Owl
- **AI for grading** → Grading student assignments/tests automatically, already widely used but AI will expand its reach.
  → e-Rater

AI TOOLS FOR TEACHERS

Speculative uses & Tools

- **classroom monitoring** → Controversial practice of monitoring students in various forms, such as monitoring concentration. → BrainCo,
- **AI teaching assistants** → Very speculative, AI powered assistants for teachers, although the exact kind of tasks they would do is up in the air, the Idea is they assist teachers day-to-day work in the classroom → Graide
- **AI powered admissions** → Also controversial, AI used to assess student applications, to limit human bias in selections, although this is not without flaws. → GRADE

BENEFITS

ENHANCING STUDENT LEARNING WITH AI

Personalised and Adaptive Learning

- AI tutoring systems adapt to individual learning styles and knowledge gaps
- Interactive content improves engagement over static and traditional methods
- Distance and continuous learning

Equal Opportunity and Inclusion

- Brides learning disparities across backgrounds
- Identifies and supports at-risk students early
- Facilitates remediation and custom learning pathways

Equal Opportunity and Inclusion

- Encourages active learning and creativity
- Immediate feedback boosts motivation and performance
- Example-based tools such as NavEx and Adapt tailor teaching to each student

BENEFITS

REDUCING WORKLOAD AND IMPROVED TEACHING

Automated Assessment Systems

- Reduced teacher workload
- For example grading -> precision, consistency, and reduces bias
- Can be used in large-scale platforms

Teaching Insights and Metrics

- Provides dashboards of class performance
- Identify students needing help early
- Enable more informed, data-driven teaching decisions

Anywhere, Anytime Learning

- Instance feedback available at school or home
- Enhances accessibility and continuity of education

BENEFITS

AI-DRIVEN TUTORING AND COLLABORATION TOOLS

Tutoring Techniques Enhanced by AI

- Simulation-based: Visualises code execution, logic flows
- Dialogue-based: Encourages explanation and critical thinking
- Program analysis-based: Strengthens debugging and reasoning
- Feedback-based: Diagnoses deep errors, not just surface mistakes
- Collaboration-based: Promotes balanced participation in group tasks.

Design Consideration

- Avoid promoting trial-and-error learning
- Build intuitive learning experiences to support deep learning

ETHICS, MISUSE AND LIMITATIONS

Privacy violations

- Collection of personal data
- Consent without understanding
- Personalised learning requires very personal data, teachers cannot share student’s information without risking being fired

Surveillance and Autonomy

- Reduce students’ willingness to share ideas and participation in class
- Limits making own choices
- Blur boundary between teaching responsibility and intrusive monitoring

ETHICS, MISUSE AND LIMITATIONS

Bias and discrimination

- AI systems carry existing social biases
- Racial bias in facial recognition
- Biased grading algorithms
- Not enought AI models accommodate to people with disabilities

Cost and Adaptation

- Expensive
- Wealthier schools have access, while schools on budget will be left behind
- Teachers and students will need to be trained to adopt AI in the classroom

ETHICS, MISUSE AND LIMITATIONS

BIASED RESEARCH & QUICK FIXES

Biased or Limited Research

- Many studies done by tool developers
- Small sample sizes or short-term testing
- Few look at long term effects (attention, memory, brain development)

AI as a Quick Fix

- Used to cover deeper issues (e.g. teacher shortages, underfunding)
- Often introduced by people whose interests don’t align with the need

ETHICS, MISUSE AND LIMITATIONS

MARKING PROBLEMS & AI COLONIALISM

Limitations as a Marking Tool

- AI struggles with nuance and creative responses
- Can reward predictable answers, discouraging critical thinking
- If not reviewed by a human, may miss signs of struggling students

AI Colonialism

- Tools built in the Global North, used elsewhere
- Often not adapted to local languages, cultures, or teaching practices

ETHICS, MISUSE AND LIMITATIONS

COMMERCIALIZATION & TRANSPARENCY

Commercialization of Education

- Companies focus on profit, not learning
- Student data may be used for business intelligence
- Tools are often black boxed - no visibility into how they work
- Lack of transparency can limit innovation and standardize learning

CONCLUSION

1. Final Thoughts

2. The Path Forward

3. Questions?

THANK YOU