

Artificial Intelligence Applications in Education: A Review of Selected AI Tools

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Abstract

Artificial Intelligence (AI) is rapidly becoming an important technology in education. A variety of AI-based software applications are now available to support students, teachers, researchers, and educational institutions. This paper reviews ten selected AI applications: ChatGPT, Google Gemini, Microsoft Copilot, Claude, NotebookLM, Khanmigo, Quizlet, Grammarly, Canva AI, and Perplexity AI. The paper describes the major features, functioning, and educational uses of each application. These tools can assist with learning, writing, research, lesson preparation, study materials, assessment preparation, presentations, and academic content creation. The study provides a concise overview of commonly used AI applications and their role in modern educational activities.

Keywords: Artificial Intelligence, Education, Generative AI, AI Tools, ChatGPT, Gemini, Copilot, Claude, Educational Technology

1. Introduction

Artificial Intelligence (AI) refers to computer-based technologies capable of performing tasks that normally require human intelligence, such as understanding language, generating content, recognizing patterns, solving problems, and providing recommendations. Recent developments in generative AI have resulted in software applications that can interact with users through natural language and generate text, images, questions, summaries, explanations, presentations, and other forms of content.

The education sector is one of the areas in which these technologies are increasingly being used. Students can use AI applications to understand concepts, prepare study materials, practice questions, improve writing, and conduct research. Teachers can use them for lesson

planning, preparation of classroom activities, creation of quizzes, development of presentations, and other academic tasks.

Several AI applications have been developed specifically for education, while others are general-purpose AI systems that have become useful in educational environments. For example, ChatGPT provides conversational assistance and a Study Mode designed to guide students through problems step by step. Google Gemini provides AI assistance for teaching, learning, research, lesson planning, and content creation.

This paper focuses on ten selected AI applications that can be used by students, teachers, and researchers. The objective is to provide a concise description of their major features and educational applications.

2. Artificial Intelligence Applications Used in Education

2.1 ChatGPT

ChatGPT is a conversational generative AI application developed by OpenAI. It can understand natural-language questions and generate responses in a conversational format. It can be used for explanations, question answering, summarization, writing assistance, brainstorming, coding, problem solving, and study support.

One important educational feature of ChatGPT is **Study Mode**. It is designed to guide students through problems instead of simply providing final answers. It can ask questions, provide step-by-step explanations, check understanding, create practice questions, and work with uploaded study materials such as notes, slides, worksheets, and PDFs.

Educational Uses

ChatGPT can be used for:

- Explaining difficult academic concepts in simple language.
- Creating notes and summaries.
- Generating practice questions and quizzes.
- Providing step-by-step assistance with problems.
- Supporting programming and coding practice.
- Helping students prepare for examinations.
- Improving grammar and written communication.
- Generating examples and explanations for classroom topics.
- Assisting teachers in preparing lesson materials.
- Helping researchers organize ideas and understand technical literature.

For example, a Computer Science student can ask ChatGPT to explain recursion, generate C++ programming exercises, or provide an explanation of a database concept at different levels of difficulty.

2.2 Google Gemini

Google Gemini is a generative AI application developed by Google. **Gemini for Education** is designed for educational users and can assist educators, students, and staff with teaching, learning, research, brainstorming, and content creation.

Gemini can generate and organize information through natural-language interaction. In education, it can assist with lesson planning, research, writing, question generation, and personalized learning activities.

Google provides educational features such as Deep Research, Gems, Canvas, and Audio Overviews within its education-oriented AI ecosystem.

Educational Uses

Gemini can be used for:

- Preparing lesson plans.

- Generating quizzes and examination questions.
- Explaining academic topics.
- Summarizing educational materials.
- Brainstorming classroom activities.
- Supporting academic research.
- Creating differentiated learning materials.
- Generating writing and coding content.
- Developing study resources.
- Converting information into different formats.

For example, a teacher can provide a syllabus topic and request a lesson plan followed by practice questions for students.

2.3 Microsoft Copilot

Microsoft Copilot is an AI assistant integrated into Microsoft's ecosystem. In education, Microsoft Copilot can be used with applications such as Word, PowerPoint, Excel, Outlook, Teams, and OneNote. It can assist users in drafting, summarizing, translating, analyzing information, generating content, and creating educational materials.

Microsoft also provides a **Study and Learn Agent** in Copilot. It is designed specifically for learning and supports guided practice, quizzes, flashcards, matching exercises, and fill-in-the-blank activities. It can work with student-provided documents, slides, PDFs, and other learning materials.

Educational Uses

Microsoft Copilot can be used for:

- Preparing lesson plans.
- Creating quizzes and rubrics.
- Summarizing documents.
- Creating presentations.
- Generating educational content.
- Assisting with academic writing.
- Supporting programming and coding tasks.
- Analyzing data in Excel.
- Preparing study materials.
- Providing guided learning activities.

For example, a teacher can use Copilot with Microsoft Word to create a first draft of a lesson plan and use

PowerPoint to develop presentation material from the same topic.

2.4 Claude

Claude is a generative AI assistant developed by Anthropic. It can process and generate natural-language content and is capable of working with long documents, research materials, and other academic information.

Anthropic introduced **Claude for Education** with a Learning Mode specifically designed for higher education. Learning Mode guides students through reasoning using questions and explanations rather than simply supplying answers. It can also assist with research papers, study guides, thesis development, and academic content.

Claude can also support educators by helping create rubrics, provide feedback on student writing, prepare educational materials, and analyze academic information.

Educational Uses

Claude can be used for:

- Explaining complex concepts.
- Developing study guides.
- Supporting literature reviews.
- Improving academic writing.
- Generating research outlines.
- Providing feedback on written work.
- Creating questions and educational activities.
- Analyzing lengthy academic documents.
- Supporting programming and coding.
- Assisting teachers with educational content.

For example, a student can provide a research topic and ask Claude to help organize the topic into research questions, objectives, and a structured outline.

2.5 NotebookLM

NotebookLM is an AI-powered research and learning application from Google. It is designed around the user's own source materials. Users can provide documents such as PDFs, Google Docs, web sources, notes, and other academic materials, and the system can generate summaries, answer questions, create study guides, and organize information based on those sources.

This source-oriented approach makes NotebookLM particularly useful for students and researchers who want to work with a defined collection of study or research materials.

Educational Uses

NotebookLM can be used for:

- Summarizing textbooks and research papers.
- Understanding lecture notes.
- Asking questions about uploaded documents.
- Creating study guides.
- Organizing research information.
- Reviewing multiple documents.
- Identifying important concepts.
- Preparing revision material.
- Supporting literature review activities.
- Converting source information into structured learning resources.

For example, a student can upload lecture notes and research papers and ask NotebookLM to identify the major concepts, summarize each document, and create questions for examination preparation.

2.6 Khanmigo

Khanmigo is an AI-powered educational assistant and tutor developed by Khan Academy. It is designed specifically around teaching and learning and is integrated with Khan Academy's educational content. Khanmigo can guide students through problems rather than simply providing answers.

For teachers, Khanmigo provides assistance with lesson planning, differentiation, quiz questions, student grouping, rubrics, classroom activities, and other teaching tasks.

Educational Uses

Khanmigo can be used for:

- AI-supported tutoring.
- Mathematics learning.
- Writing practice.
- Coding support.
- Concept explanations.
- Guided problem solving.

- Practice activities.
- Lesson planning.
- Quiz-question generation.
- Creation of classroom activities.

For example, when a student has difficulty solving a mathematics problem, Khanmigo can guide the student through the reasoning process and encourage the student to identify the next step.

2.7 Quizlet

Quizlet is a digital learning platform that provides AI-powered study tools. Its AI features include AI-generated practice tests, study guides, PDF summarization, flashcard generation, and AI-powered homework help.

Quizlet can transform student-provided notes, slides, and PDFs into structured study materials. Its study-guide feature can generate outlines and flashcards that students can edit according to their requirements.

Educational Uses

Quizlet can be used for:

- Creating digital flashcards.
- Generating practice tests.
- Preparing study guides.
- Summarizing PDFs.
- Reviewing lecture notes.
- Creating questions from study materials.
- Practicing vocabulary.
- Preparing for examinations.
- Supporting active recall.
- Providing homework assistance.

For example, students can upload lecture notes and use Quizlet's AI tools to create flashcards and practice tests for examination preparation.

2.8 Grammarly

Grammarly is an AI-powered writing assistance application. It provides writing support for grammar, spelling, clarity, sentence structure, tone, and other aspects of written communication. Grammarly also provides AI-powered tools for generating and improving written content.

For students, Grammarly provides support throughout the writing process. It can help identify writing problems,

suggest improvements, support citation-related tasks, and provide feedback on academic writing.

Educational Uses

Grammarly can be used for:

- Correcting grammar and spelling.
- Improving sentence structure.
- Improving clarity and readability.
- Revising essays and assignments.
- Supporting academic writing.
- Generating ideas for written work.
- Improving professional communication.
- Supporting citation-related activities.
- Checking potential plagiarism concerns.
- Providing writing feedback.

For example, a student can write an assignment independently and use Grammarly to identify grammatical errors and improve sentence clarity.

2.9 Canva AI

Canva is a visual communication and design platform that includes AI-powered features. **Canva for Education** provides tools for teachers and students to create presentations, documents, educational graphics, videos, posters, worksheets, and other visual materials.

Canva's AI features include **Magic Write** and **Magic Activities**. Magic Write can assist teachers in generating lesson-plan drafts, teaching ideas, and presentation content, while Magic Activities can suggest classroom activities based on prompts and learning objectives.

Educational Uses

Canva AI can be used for:

- Creating presentations.
- Designing educational posters.
- Preparing infographics.
- Creating worksheets.
- Generating lesson-plan drafts.
- Designing classroom activities.
- Creating educational videos.
- Developing visual study material.
- Creating certificates and academic documents.

- Preparing social and digital educational content.

For example, a teacher can enter a topic and learning objective and use Canva AI to generate a draft classroom activity or presentation, which can then be edited according to the course requirements.

2.10 Perplexity AI

Perplexity AI is an AI-powered search and research application that combines conversational responses with web-based information retrieval. It is particularly useful for users who want to explore a topic through questions and receive answers accompanied by sources.

Perplexity provides education-focused features through **Education Pro**, which includes features such as Learn Mode, file and image uploads, and advanced search capabilities for verified students and educators.

Perplexity's education services can also support academic research by helping students locate academic resources and conduct research with cited information.

Educational Uses

Perplexity AI can be used for:

- Academic information searching.
- Research topic exploration.
- Finding relevant sources.
- Understanding current information.
- Summarizing web-based information.
- Exploring research questions.
- Supporting literature searches.
- Asking follow-up questions about a topic.
- Working with uploaded files.
- Preparing preliminary research material.

For example, a student researching a Computer Science topic can ask Perplexity to identify recent developments, locate relevant sources, and provide a structured explanation of the topic.

3. Conclusion

Artificial Intelligence has resulted in a wide range of software applications that can be used in educational environments. This paper reviewed ten selected

applications: ChatGPT, Google Gemini, Microsoft Copilot, Claude, NotebookLM, Khanmigo, Quizlet, Grammarly, Canva AI, and Perplexity AI.

The applications serve different purposes. ChatGPT, Gemini, Copilot, and Claude provide general conversational and generative AI assistance. NotebookLM focuses on working with user-provided sources and academic materials. Khanmigo provides AI-supported tutoring and teaching assistance. Quizlet focuses on study materials, flashcards, and practice tests. Grammarly specializes in writing support, while Canva AI focuses on visual and educational content creation. Perplexity combines conversational AI with search and source-based research.

These applications demonstrate the increasing variety of AI software available for educational activities. Their features cover learning support, academic writing, research, lesson preparation, examination practice, document analysis, tutoring, and educational content creation. The continuing development of such applications is expanding the range of digital tools available to students, teachers, and researchers.

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