

# Interactive Learning through Artificial Intelligence: Emerging Tools and Educational Implications

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**Abstract**— *The traditional educational system has changed from teacher-centred, library-based instruction to dynamic, technology-driven learning settings due to the rapid development of digital technologies. The use of online education was further hastened by the COVID-19 pandemic, which also made artificial intelligence (AI) a key factor in the transformation of teaching and learning methodologies. The present study adopts a qualitative and descriptive methodology based on the analysis of recent scholarly articles, reports, and empirical studies related to AI applications in education. The study synthesizes literature focusing on AI-driven language learning tools, research writing platforms, and video-making and editing technologies. Secondary data from peer-reviewed journals and academic databases were critically examined. The results indicate that AI replaces passive learning models with collaborative and individualized approaches by fusing intelligent components with learning strategies to produce interactive and adaptive educational experiences. This review study examines how AI can improve interactive learning through platforms for creating and editing videos, research writing tools, and language learning tools. Learner engagement and academic performance are enhanced by applications like AI-powered tutoring systems and adaptive platforms, which offer individualized curriculum, real-time feedback, interactive assessments, and content creation. The paper synthesizes existing literature to highlight how AI-driven technologies foster student–teacher collaboration, promote self-directed learning, and bridge methodological gaps in education. It concludes that AI has significant potential to revolutionize formal and informal education by making learning more engaging, efficient, and learner-centred.*

**Keywords**— *Learning, Artificial Intelligence, AI Tools, Interactive Learning, Educational Technology.*

## I. INTRODUCTION

Traditionally, libraries were the primary source of learning resources in educational institutions. However, the scenario over the last two decades has changed, and now access to all teaching and learning resources is just a click away. The rapid advancement of technology has revolutionized the educational landscape, offering innovative approaches to teaching and learning. The pandemic imposed online delivery of classes, and technology has played a critical role. Now, Artificial Intelligence (AI) is intended to transform the traditional frontal model in which lecturers take responsibility for the learning process while students are passive listeners (Minhas et al., 2012; Hyun et al., 2017). It can catalyze the online education market in India. Learning strategies are combined with intelligent components to create intelligent learning, which helps to increase the effectiveness of teaching (Guo et al., 2021; Alam et al., 2025). Such technological advancements have already had a huge impact on the educational landscape, giving students new abilities and fostering a collaborative learning environment in higher education that will have far-reaching effects soon (Kuleto et al., 2021).

Interactive learning practices include a variety of methods designed to support learning through meaningful interactions between the lecturer and students and between students themselves. Many interactive learning practices are developed and supported by digital tools, which are intended to enhance this interactivity (Barnett et al., 2023). Therefore, interactive learning generally pertains to a learning approach where knowledge is acquired through interactive and adaptive methods, frequently employing artificial intelligence (AI) techniques (Ukenova and Bekmanova, 2023). AI applications such as ChatGPT, Gemini, Knowji, Duolingo, ELSA, and other intelligent tutorial systems can bring opportunities for collaboration to interactive learning environments. Students and teachers can collaborate with AI for more engaging learning and teaching experiences. Such applications provide personalized learning experiences, different language learning options, speaking practice, content generation, and immediate feedback, ensuring that each student and teacher receives the support they need (Chiu and Rospigliosi, 2025).

AI is expected to fill the gaps in learning and teaching methodology and delivery. In today's educational landscape, AI tools have revolutionized student learning and engagement. Teachers now have access to AI-powered websites and tools that enhance lesson plans and create personalized learning experiences. With the help of AI, students can get personalized curriculum, tests, learning methods, and delivery. With AI's assistance, teachers can cater to individual needs, promote student engagement, and improve learning outcomes. These innovative education tools have truly transformed the way students learn and thrive in the digital age. These AI tools provide interactive quizzes, adaptive learning platforms, and intelligent feedback, making them the best companions for students. This paper explores the role of AI in enhancing interactive learning through language learning tools, research writing tools, and video-making and editing tools. It aims to provide insights into how AI can reshape educational practices, making learning and research more engaging, personalized, and effective in both formal and informal educational settings.

## II. METHODOLOGY

The present study adopts a qualitative and descriptive methodology based on the analysis of recent scholarly articles, reports, and empirical studies related to AI applications in education. A systematic literature search was conducted using academic databases including Scopus, Web of Science, Google Scholar, and PubMed. Keywords used for the search included "artificial intelligence in education," "AI language learning," "AI research writing tools," "AI video editing," "interactive learning," and "adaptive learning systems." The search was limited to peer-reviewed articles, conference proceedings, and reputable institutional reports published between 2015 and 2025. The study synthesizes literature focusing on AI-driven language learning tools, research writing platforms, and video-making and editing technologies. Secondary data from peer-reviewed journals and academic databases were critically examined using thematic analysis to identify key patterns, tools, and implications across the three domains.

## III. LANGUAGE LEARNING AI

Language learning is a dynamic and continuous process that requires consistent practice, exposure, and meaningful interaction. Among the various components of language acquisition, vocabulary development plays a central role in enhancing listening, speaking, reading, and writing skills. AI in language learning focuses on developing tutoring systems, writing assistants, virtual reality environments, chatbots, and other types of adaptive learning systems (Woo et al., 2021).

The language learning app Duolingo is a free app for learning over 40 languages through quick, bite-sized lessons. It allows practice of speaking, reading, listening, and writing to build vocabulary and grammar skills. It offers courses on languages ranging from popular languages such as English and Spanish to less commonly studied languages such as Welsh, Irish, and Swahili. It also offers the Duolingo English Test certification program (Luis von Ahn and Severin Hacker, 2015).

According to Stanford alum Ms. Vu Van and Dr. Xavier Anguera, ELSA (English Language Speech Assistant) is an English-speaking application that helps businesses utilize AI-based tools to recognize speech, evaluate, and give feedback on language pronunciation and fluency. It uses speech technology and artificial intelligence (AI) to help non-native English learners improve their speech and pronunciation via short, app-based lessons. The app is currently localized in nine languages and accessed by users across over 100 countries for learning English and other languages (J. Lin et al., 2020).

Knowji is a research-based audio-visual vocabulary app that learns vocabulary by monitoring learning advancements for individual words and prioritizing those that users find challenging by presenting them more frequently. It tracks learning progress for each word and brings back words that users are struggling with more frequently than others. It also uses a spaced repetition algorithm that anticipates when students are about to forget a word and prompts them to drill again. The main intent

of these tools has been to generate personalized and customizable learning experiences for the purposes of optimizing language learning by increasing autonomy, motivation, engagement, and effectiveness (Woo et al., 2021).

**TABLE 1**  
**AI APPS FOR LANGUAGE LEARNING**

S. No.	AI Language Learning App	Key AI Features	Target Users	Languages Offered	Learning Support Features
1	Duolingo	Adaptive learning algorithms, AI chatbots, speech recognition	Beginners to intermediate learners	40+ languages	Gamified lessons, pronunciation practice, progress tracking
2	Babbel	AI-based review system, personalized lessons	Adults and professionals	14+ languages	Conversation practice, grammar exercises
3	Memrise	AI-powered spaced repetition, chatbot conversation	Students and self-learners	20+ languages	Real-life video clips, vocabulary training
4	Elsa Speak	AI speech recognition and pronunciation scoring	English learners	English	Accent correction, real-time feedback
5	HelloTalk	AI translation and correction tools	Peer learners and global users	150+ languages	Live chat, voice calls, correction suggestions
6	Busuu	AI-driven study plan, performance analytics	Beginners to advanced learners	12+ languages	Certification courses, peer feedback
7	Rosetta Stone	AI speech recognition, immersive learning tech	All age groups	25+ languages	Interactive lessons, pronunciation analysis

#### IV. RESEARCH WRITING AI

Traditionally, researchers had depended on well-known search databases like the Web of Science, PubMed, Google Scholar, and Scopus. Although useful, these tools require the manual selection of pertinent articles and have trouble with strictly quantitative analysis. These restrictions are overcome by AI-powered algorithms, which move the emphasis from quantitative to qualitative research and reveal hidden, important insights in massive volumes of data. AI holds the potential to fundamentally transform the traditional scientific process, which primarily relies on an analog approach in its methodology. This process involves conducting background research on a rational idea, formulating a hypothesis, testing it through trials or experimental observational studies, analyzing the collected data, drawing a conclusion, and ultimately writing and communicating the results to the scientific community (Filetti et al., 2024).

AI-based tools are developed to assist researchers in their writing process. Artificial Intelligence (AI) tools have significantly transformed the process of research writing by enhancing efficiency, accuracy, and accessibility (Srivastava et al., 2024). Writing assistance tools have become essential companions for both individuals and professionals. With its extensive support for functions like grammar checking, style improvement, and plagiarism detection, Grammarly Premium has become a well-known option among these products (Mohammed et al., 2023). However, as advanced language models like ChatGPT become more well-known, concerns are raised about their ability to compete with well-known writing aids. In order to determine whether ChatGPT, a powerful language model created by OpenAI, can effectively replace Grammarly Premium as a tool for improving writing, this evaluation explores its capabilities (Rasul et al., 2023; OpenAI, 2022; Firat et al., 2023).

Natural language processing (NLP) methods are used by AI applications like Elicit and Research Rabbit to speed up literature studies. The time spent on manual searches is greatly decreased by these tools, which automatically extract key words,

sentences, and paragraphs from research publications (Filetti et al., 2024). These tools can assist researchers in eliminating time-consuming manual tasks, thereby accelerating and simplifying the steps of the procedure that are currently carried out manually. These tools support researchers at various stages of academic work, including literature search, drafting, editing, citation management, and plagiarism detection (Xames et al., 2023). Paperpal AI tools can help speed up and improve the academic writing, English editing, and journal submission process for students and researchers. Not only can Paperpal refine academic writing skills, but it also helps ensure articles meet the language and technical requirements for publication.

**TABLE 2**  
**AI APPS FOR RESEARCH WRITING**

S. No.	AI Research Writing App	Key AI Features	Main Use in Research	Target Users	Special Advantages
1	Grammarly	Grammar correction, tone detection, AI rewriting	Editing and proofreading	Students, researchers, academicians	Improves clarity, conciseness, academic tone
2	QuillBot	AI paraphrasing, summarizer, citation generator	Paraphrasing and summarizing literature	Students and scholars	Multiple writing modes, plagiarism checker
3	Turnitin	AI-based plagiarism detection	Originality checking	Universities and researchers	Ensures academic integrity
4	Mendeley	Smart reference management, PDF annotation	Citation and bibliography management	Researchers and PhD scholars	Automatic citation formatting
5	Zotero	AI-assisted citation organization	Literature review and referencing	Academics	Free, easy integration with MS Word
6	Research Rabbit	AI-based paper recommendation	Literature discovery	Researchers	Visual research network mapping
7	Elicit	AI literature review assistant	Evidence synthesis	Social science and policy researchers	Extracts key findings from papers
8	Scite	Smart citation analysis	Evaluating research credibility	Scholars and reviewers	Shows supporting/contradicting citations
9	ChatGPT	AI text generation, idea development	Drafting, structuring papers	Students and researchers	Generates outlines, abstracts, summaries

## V. VIDEO MAKING AND EDITING AI

AI video tools help users create, edit, and enhance videos with minimal effort and technical expertise. They are widely used for marketing, education, social media content, presentations, explainer videos, and storytelling. In the educational sector, AI video tools support interactive learning by transforming textual content into visual presentations and animated explanations. Video conferencing is also the most effective technology that assists teachers in offering collaboration and increasing student engagement. It offers features such as whiteboard sharing, screen sharing, discussion platforms, chat rooms, and polls (Verm et al., 2023; Kumar et al., 2015). AI serves as a virtual mentor and is being used extensively in a variety of educational technology platforms, particularly those that are online. The method of mentoring involves a more experienced individual helping a less experienced individual to reach a learning goal (Fitria et al., 2021; Klamma et al., 2020). Like a teacher or tutor, AI can offer suggestions for information that needs to be reviewed after providing comments on students' learning exercises and practice problems.

In marketing and social media, AI enables rapid content production according to target audiences. For content creators, AI solutions expand the scope of video production capabilities. Platforms like InVideo and Pictory enable the regular production of large volumes of content through extensive libraries of stock video and editable templates. Additionally, AI-powered platforms like Deepbrain AI and HeyGen eliminate the need for actors or voice actors by allowing the creation of engaging

explainer videos and marketing materials with lifelike AI spokespersons. AI video creation tools are particularly valuable in the educational sector. Platforms like Elai.io and Pictory enable teachers to develop engaging and visually stimulating learning materials, enhancing student engagement and retention. Rosca (2024) also illustrates the benefits of motion precision video detection based on AI algorithms with great efficiency in image precision (85.98%), resolution (90.14%), fluency (93.06%), and fidelity (98.25%).

A significant portion of content on the internet is based on videos. Yet, the process of editing these videos is still time-consuming. Video editing faces numerous difficulties, such as the requirement to handle multiple videos at once and the difficulty of processing each frame of the video. In order to make video editing simple and quick, artificial intelligence has also been extremely important. The rapid development of AI technology makes real-world tasks easier than before. AI subfields such as computer vision, deep learning, reinforcement learning, and machine learning have revolutionized scientific advancements (Bieda and Panchenko, 2022). AI tools are also fundamentally changing the content creation process. Features like text-to-video generation allow users to create videos from scripts. At the same time, AI-powered editing tools automate tasks such as colour correction, object removal, and scene detection, streamlining workflows. These advancements not only open up new creative possibilities but also save time and resources.

**TABLE 3**  
**AI APPS FOR VIDEO MAKING AND EDITING**

S. No.	AI Video App	Key AI Features	Main Use	Target Users	Special Advantages
1	Canva	AI video generator, text-to-video, auto captions	Social media and educational videos	Students, teachers, creators	Easy templates, drag-and-drop editing
2	InVideo	AI script-to-video, auto scene generation	Marketing and YouTube videos	Content creators and marketers	Large template library
3	Pictory	Blog-to-video, automatic summarization	Educational and explainer videos	Educators and businesses	Converts articles into videos
4	Synthesia	AI avatars, text-to-speech video	Training and corporate communication	Trainers and companies	No camera required
5	CapCut	AI auto captions, background removal	Reels and short-form videos	Social media users	Mobile-friendly, free tools
6	Runway	AI video editing, object removal, generative fill	Professional editing	Designers and filmmakers	Advanced AI editing tools
7	Adobe Premiere Pro	AI-powered auto reframe, speech enhancement	Professional video production	Editors and media professionals	High-quality cinematic editing
8	Lumen5	Text-to-video automation	Content marketing	Bloggers and brands	Quick social media videos

## VI. LEARNING TECHNIQUES USED BY AI TOOLS

Artificial Intelligence (AI) tools across language learning, research writing, and video production are built upon advanced computational learning techniques. These techniques enable AI systems to analyze data, recognize patterns, adapt to user behavior, and generate contextually relevant outputs. The major learning techniques are discussed below:

### 6.1 Machine Learning:

Machine Learning is the foundational technique used in most AI tools. It allows systems to learn from large datasets and improve performance without explicit programming. Machine learning analyzes learner performance, detects vocabulary gaps,

and personalizes exercises based on proficiency level. It predicts grammar corrections, improves sentence structure, and suggests relevant academic phrasing.

## 6.2 Deep Learning

Deep Learning, a subset of machine learning, uses artificial neural networks with multiple layers to process complex data such as text, speech, and images. It supports speech recognition, pronunciation analysis, and real-time translation. It powers advanced text generation, summarization, paraphrasing, and coherence modelling used for research writing. In video making, deep learning enables facial recognition, motion tracking, background removal, and deepfake generation.

## 6.3 Natural Language Processing (NLP)

NLP allows AI systems to understand, interpret, and generate human language. It provides grammar correction, contextual vocabulary suggestions, chatbot-based conversation practice, and semantic analysis. In research writing, AI assists in literature summarization, citation extraction, plagiarism detection, and academic tone adjustment. NLP converts scripts into voiceovers, generates subtitles, and performs automatic transcription.

## 6.4 Generative AI Models (Transformer-Based Models)

Transformer architectures (such as large language models) use attention mechanisms to generate contextually accurate text, images, audio, and video. They generate interactive dialogues, vocabulary exercises, and adaptive quizzes. They produce structured drafts, abstracts, outlines, and literature review summaries for writing. They convert text prompts into video scenes, AI avatars, animations, and synthetic voice narrations.

## VII. CONCLUSION

The integration of Artificial Intelligence into education marks a significant shift from traditional, teacher-centred instruction to interactive, adaptive, and learner-centred environments. The study showed that AI strengthens pedagogical methods and closes gaps in learning delivery by acting as a helpful partner rather than a substitute for teachers. AI-powered interactive education fosters the independence, creativity, critical thinking, and skill development required for the digital age.

All things considered, artificial intelligence has the power to completely transform the educational landscape by enhancing the dynamic, individualized, and accessible nature of learning. The future of teaching, research, and knowledge sharing will be significantly shaped by the careful incorporation of AI technologies into educational processes as they develop further.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this research paper.

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