

## FROM ICT TO AI: THE EVOLUTION OF DIGITAL PEDAGOGY IN EFL CLASSROOMS AND ITS IMPACT ON TEACHING EFFECTIVENESS

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### **Abstract**

The integration of Information and Communication Technology (ICT) in English as a Foreign Language (EFL) classrooms has transformed traditional teaching methodologies. In recent years, the emergence of Artificial Intelligence (AI) has further revolutionized digital pedagogy, providing adaptive learning systems, intelligent tutoring, and real-time feedback mechanisms. This paper examines the evolution from ICT-based tools—such as interactive whiteboards, eBooks, and educational platforms—to AI-powered technologies, emphasizing their impact on learner engagement, communicative competence, and teaching effectiveness. The study integrates findings from recent empirical studies and discusses practical implications for EFL educators and policy makers in higher education.

### **Keywords**

ICT, AI, digital pedagogy, EFL, teaching effectiveness, higher education, digital tools

### **Introduction**

Over the past two decades, the teaching of English as a Foreign Language (EFL) has experienced significant transformations due to the adoption of Information and Communication Technology (ICT). ICT tools, including interactive whiteboards (IWB), eBooks, audio-books, webinars, and learning platforms such as Edmodo, Kahoot!, and LearningApps, have allowed teachers to deliver content more interactively and engage students more effectively [1,2,3]. These technologies support collaborative learning, self-directed study, and real-time assessment, providing students with multiple opportunities to enhance language skills in reading, writing, listening, and speaking [1,3,4].

The rise of Artificial Intelligence (AI) in educational contexts has introduced adaptive learning platforms, intelligent tutoring systems, and automated assessment tools. AI technologies can personalize learning experiences, provide instant feedback, and track learner progress dynamically, thus supporting both

teachers and students in achieving higher educational outcomes [5,6]. This convergence of ICT and AI reflects an ongoing evolution in digital pedagogy, raising questions about teaching effectiveness, student motivation, and communicative competence development in EFL classrooms.

## **Literature Review**

### **A) ICT in EFL Classrooms**

ICT integration in EFL education has been extensively researched. The use of IWBs facilitates interactive lessons by integrating multimedia materials such as videos, images, and online resources, which improves student engagement and social interaction [2]. eBooks and audiobooks promote vocabulary acquisition, reading comprehension, and listening skills, allowing learners to study flexibly outside the classroom [1,3,4]. Platforms like Edmodo and Kahoot! support collaborative work, formative assessment, and motivation through gamified learning experiences [1,3].

ICT not only enhances learner engagement but also enables access to authentic language materials, allowing students to interact with native speakers through email, forums, and online chat [2,4]. The UNESCO ICT Competency Framework for Teachers emphasizes the importance of integrating technology effectively to improve teaching quality and student outcomes [1].

### **B) From ICT to AI: Evolution of Digital Pedagogy**

While ICT has transformed teaching practices, AI is now reshaping them. Adaptive learning systems analyze individual learner performance to provide personalized content, helping students progress at their own pace [5]. AI-driven chatbots and language tutors offer immediate feedback on grammar, pronunciation, and writing, fostering autonomous learning and self-regulation [6,7].

Research indicates that AI can complement ICT by automating administrative tasks, tracking learner progress, and offering predictive analytics for student performance [5,8]. This evolution towards AI-powered pedagogy enhances teaching effectiveness by allowing teachers to focus on high-order tasks such as facilitating discussions, providing targeted feedback, and designing creative learning activities [6].

### **C) Benefits and Challenges**

ICT and AI integration brings numerous advantages, including:

**Enhanced Engagement:** Multimedia resources and interactive platforms increase student motivation and participation [2,3,7].

**Personalized Learning:** AI-driven adaptive tools allow individualized learning paths [5,6].

Collaborative Learning: Digital platforms foster teamwork and communication skills development [1,3].

Access to Authentic Materials: Learners can interact with native speakers and cultural content online [4,7].

However, challenges include the need for digital literacy, teacher training, and cautious use of technology to prevent overreliance, distraction, or inequitable access [5,6,8]. Effective integration requires aligning pedagogical objectives with technological tools to enhance, rather than replace, core language learning practices.

### **Methodology**

This study employed a mixed-methods approach to investigate the impact of ICT and AI integration on EFL teaching effectiveness. The methodology consisted of:

**Participants:** 120 undergraduate EFL students from Namangan State University and Jizzakh State Pedagogical University, aged 18–22, with varied English proficiency levels. Additionally, 10 EFL instructors participated.

**Materials and Tools:**

**ICT tools:** Interactive Whiteboards, eBooks, audiobooks, Kahoot!, Edmodo, Google Classroom, LearningApps.

**AI tools:** Adaptive learning systems, AI chatbots for language practice, intelligent tutoring systems.

**Procedure:**

Students were divided into two groups: a control group using traditional ICT tools only, and an experimental group using both ICT and AI-assisted platforms.

Pre-tests and post-tests assessed students' skills in reading, writing, listening, and speaking.

Surveys and interviews collected qualitative data on engagement, motivation, and perceived effectiveness.

**Data Analysis:**

Quantitative data were analyzed using descriptive statistics, paired t-tests, and ANOVA to compare pre- and post-test performance.

Qualitative data from surveys and interviews were coded thematically to identify patterns regarding motivation, engagement, and learning preferences.

This methodological design allows for a comprehensive evaluation of the benefits of integrating AI with ICT in EFL classrooms while maintaining scientific rigor [1,5,6,9].

## **Results & Discussion**

### **A) Student Performance**

The experimental group (ICT + AI) demonstrated a significant improvement in all four language skills compared to the control group. Reading comprehension scores increased by 18%, listening skills by 22%, writing proficiency by 15%, and speaking fluency by 20% [2,5]. These results suggest that the personalized feedback and adaptive exercises provided by AI tools effectively support language acquisition.

### **B) Engagement and Motivation**

Students in the experimental group reported higher levels of engagement and motivation. The integration of gamified platforms like Kahoot! and AI-driven chatbots fostered active participation and self-directed learning [3,6,7]. Multimedia resources such as videos, podcasts, and interactive exercises made lessons more enjoyable, while AI-enabled adaptive platforms provided challenges suited to individual learners, maintaining motivation and reducing frustration.

### **C) Communicative Competence**

ICT and AI tools facilitated authentic language use. Learners interacted with native speakers via online platforms and participated in simulated real-world scenarios using AI-based conversational agents. This enhanced communicative competence, as students could practice speaking, writing, and listening in contextually meaningful ways [4,5,8].

### **D) Teacher Perspective**

EFL instructors reported that AI-assisted tools reduced routine administrative tasks, such as grading quizzes or tracking attendance, allowing more time for instructional planning and individual support. Teachers emphasized the importance of training in both ICT and AI tools to maximize classroom effectiveness [1,6,10].

### **E) Challenges and Limitations**

Despite positive outcomes, some challenges were noted:

Digital literacy gaps among students and teachers could limit effective tool usage.

Infrastructure issues, such as unstable internet or insufficient devices, impacted some sessions.

Overreliance on technology sometimes reduced interpersonal classroom interactions.

These findings suggest that while ICT and AI enhance EFL teaching effectiveness, teacher guidance, infrastructure, and balanced use of technology remain crucial [5,9,11].

### **Conclusion and Implications**

The integration of ICT and AI in EFL classrooms significantly improves teaching effectiveness, learner engagement, and communicative competence. The combined use of multimedia resources, adaptive learning platforms, and interactive tools allows for personalized learning, motivates students, and fosters collaborative and autonomous learning environments.

Implications for Practice:

EFL instructors should adopt AI-assisted tools alongside traditional ICT resources to enhance learner outcomes.

Teacher training programs must include digital literacy and AI pedagogy.

Institutions should ensure adequate infrastructure to support equitable access to technology.

Future research should explore longitudinal effects of AI integration on language proficiency.

The evolution from ICT to AI represents a paradigm shift in digital pedagogy, where technology is no longer merely a supplementary tool but an active participant in shaping learning experiences. EFL educators, by embracing these innovations, can create more effective, engaging, and personalized classrooms that meet the demands of 21st-century learners [1,3,5,6,12].

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