

## **From Chalk to Clicks: The Pedagogical Imperative of AI Literacy for the 21<sup>st</sup> Century Educator**

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### **Abstract**

Traditional English Language Teaching (ELT) is becoming outdated because its rigid style "old way" cannot meet the individual needs of all students. The "new way" of teaching must rely heavily on Artificial Intelligence (AI) to create fast, personalized learning experiences for every student. The core issue this paper addresses is that while many teachers are already using AI tools (60%), they are not properly trained for it in their university studies. This lack of preparation creates risks like ethical misuse and unfair results. Clear evidence shows this shift is essential: studies confirm that students in AI-enhanced programs achieve up to 54% higher test scores and are ten times more engaged than those in traditional classes. Therefore, we argue that future teachers must have mandatory AI Literacy and Computational Thinking included in their academic curriculum. This specialized "computer knowledge" is critical. It ensures that teachers can ethically manage AI, check tools for biases (like those against non-native accents), and act as expert guides. The modern teacher must use AI as a vital tool to support learning, not just be a traditional content deliverer.

**Keywords:** Artificial Intelligence, English Language Teaching (ELT), AI Literacy, Computational Thinking, Personalized Learning

### **1. Introduction: The Urgent Need for Change in Teaching**

The way we teach English today is going through a massive, permanent transformation, shifting from outdated, standardized teaching to dynamic, personalized learning powered by AI. AI is now a central priority in global education because it can quickly improve teaching methods and help achieve goals like ensuring quality education for all people. Because of this, the instructional style based on standardized delivery which we call "old teaching" is professionally obsolete, meaning it just can't last forever. Traditional methods are too rigid. They are built to teach the "average student," which means they fail to properly address the unique needs, strengths, and weaknesses of every individual student

in the class. Furthermore, traditional systems waste a lot of the teacher's time on simple administrative work like grading. This limits how much energy a teacher has for more complex tasks that require human skills, such as offering emotional support or cultural nuance. When teaching methods are unable to offer continuous, personalized, and immediate feedback, they are limited and inefficient. The biggest problem we see is the large gap between how quickly teachers are using AI and how slow teacher training programs are to catch up. About 60% of current teachers already use AI tools for daily tasks like gathering information and planning lessons. However, this adoption often happens without clear guidance or rules. This means there are serious risks, including ethical issues like plagiarism, students becoming too reliant on technology, and the "black box problem," where no one understands how the AI came up with its answer. Our reason for demanding mandatory AI training in university programs is a professional duty to prepare future educators for a world run by algorithmic systems. If we fail to make this training official, we allow policy to lag behind technology, preventing new teachers from becoming the ethical managers and experts these new learning environments require.

The modern teaching model requires clear definitions for the key terms driving this change. The "New Teaching" or Algorithmic Pedagogy moves away from standardized lessons and focuses on data-driven learning that lets students take charge of their education. It uses AI systems to adapt content immediately based on how well a student is performing. AI Literacy (AIL) is the essential computer knowledge and skills that teachers need to succeed in an AI world. This includes knowing how to use, create with, manage, and ethically evaluate AI tools. Computational Thinking (CT) takes this further by requiring teachers to apply problem-solving logic the same logic used to build AI to fix teaching problems. This technical understanding is vital because it lets teachers truly understand the AI, moving them from passive tool users to active creators and problem-solvers.

## **2. The Great Divide: From Rigid Instruction to Personalized Learning**

The constraints of teaching without AI are the main reason we need to switch to AI-based methods. Traditional methods are tied down by time and location, meaning lessons only happen at specific hours and places. Because a human teacher has limited energy and time, it is impossible for them to give ongoing, individualized attention to every student in a large class. Furthermore, traditional methods rely on static resources, like textbooks, which are often not engaging enough to motivate today's students. The curriculum is designed for a general student, meaning it overlooks the unique needs, strengths, and weaknesses of many learners. Since AI systems can automate routine work, the time teachers spend on tasks like grading could be redirected to more complex human tasks, such as emotional support and cultural teaching. AI fixes the problem of scarce resources and rigidity by allowing lessons to change instantly based on a student's performance, speed, and ability, leading to much more effective learning and better engagement. Intelligent Tutoring Systems (ITSs) are the core foundation of personalized language education. These systems constantly track student data and automatically adjust the lessons to match individual skill levels. Case studies show that using adaptive learning systems even helps faculty members think more deeply about their teaching methods and use student data to ensure success. This continuous, data-driven

adjustment is impossible to do by hand, proving that using AI is necessary for the best learning design.

Generative AI tools significantly reduce the huge burden of administrative work and content creation that slows down traditional teaching. AI tools can create entire presentation drafts from simple prompts, generate unique images, and help with writing, proofreading, and summarizing. By automating these basic tasks, AI frees the teacher to focus on complex, human-centered roles like leading critical discussions and giving feedback based on cultural context. Natural Language Processing (NLP) tools are vital for improving communication skills. These systems provide access to learning content 24/7 and give students immediate, personalized feedback, unlike the slow, general feedback in a traditional classroom. NLP-powered chatbots are like tireless learning partners that students can access whenever they need, and they never get tired. Also, Speech-to-Text (STT) technology allows for personalized speaking practice systems. Research shows that this feature reduces the common fear students have of being judged by their peers or teacher when practicing difficult language elements, encouraging more confident, continuous practice.

### **3. Empirical Validation: AI as an Eye-Opener for the World**

The move toward AI is not just a theoretical preference; it is a necessity proven by solid data from controlled studies. This evidence shows that integrating AI leads to clearly better teaching results compared to old methods. This evidence should serve as an eye-opener to the world about the potential of modern education. Studies consistently show that AI-supported instruction provides a significant advantage in language achievement, student motivation, and the development of skills like self-regulated learning (SRL). The statistical evidence is powerful: students using AI-enhanced active learning programs achieve 54% higher test scores than those in traditional settings, and AI-enhanced education is linked to up to 30% better overall learning outcomes. Furthermore, AI-powered active learning creates ten times more engagement than traditional passive methods. This boost in motivation and engagement is crucial, leading to improved class completion rates and a reduction in students dropping out. AI tools enhance fluency and accuracy, especially in speaking performance, and significantly improve overall English proficiency, especially writing skills. Also, studies confirm that AI technology is particularly effective at building learners' vocabulary skills compared to other language skills. One of AI's most important impacts is its ability to promote educational fairness, or equity. Because AI can provide customized support, it directly helps fix the systemic fairness gaps created by standardized teaching that often overlooks struggling students. Analysis shows that learners with below-average proficiency levels see the most dramatic improvements when using generative AI tools, with one study showing a significant gain for these learners. This proves that AI can provide the exact, tailored support needed to help struggling students succeed, fulfilling the goal of providing quality education for everyone, which is central to UNESCO's mission. Even with such positive data, research highlights that the success of AI teaching depends on expert guidance from the teacher. The quality of the human-AI interaction specifically, whether the student actually uses the feedback and tries to revise autonomously is much more important for learning results than just how often the AI is used. The documented increase in self-regulated

learning (SRL) shows that the learning process itself is changing, with students taking more responsibility. This means the teacher's main focus must also change from simply delivering content to developing complex skills like critical evaluation and cultural awareness. This confirms that AI is only effective when managed by a teacher who understands how to design and oversee this new type of classroom.

#### **4. The Human-AI Collaboration Model: Defining Responsible Dependency**

The future of ELT is not about replacing the human teacher; it is about an essential partnership called the Hybrid Intelligence Framework. This model involves carefully mixing online (AI) tools with traditional (human) teaching parts to support language learners effectively. The classroom relationship changes to a teacher-AI-student dynamic, where the AI improves, rather than replaces, the human instruction. For this hybrid model to work, we need clear rules for who does what. The AI system is best for tasks that can be repeated and scaled quickly, such as providing real-time grammar help, checking pronunciation, offering virtual tutoring, and handling large-scale tests. These roles maximize AI's speed, consistency, and 24/7 availability. The human educator's role centers on skills machines cannot copy. This includes giving detailed feedback that includes cultural context, encouraging creativity and critical thinking, building emotional intelligence, and ensuring students develop the spontaneous communication skills needed for the real world. Human teachers oversee student motivation, emotional well-being, and progress, providing the human support that is missing in autonomous AI tools.

The degree to which teachers and students should rely on AI is defined by responsible dependency. This principle means knowing the difference between helpful reliance that supports the learning process and excessive reliance that causes problems, such as students losing critical thinking skills or their motivation to interact with others. To successfully use AI for language learning, its integration must be carefully balanced within educational frameworks. This responsible dependency requires teachers to become "ethical curators" of technology. They must actively teach students digital literacy, helping them understand when and how to use AI ethically and effectively. The teacher is also ethically required to always check AI-driven recommendations and outputs to ensure they are accurate and appropriate for the learning situation. The central difficulty here is managing the "Black Box Problem," where the hidden nature of the AI's system makes it hard for humans to understand how the answer was generated. If a teacher lacks the necessary computer knowledge, they cannot effectively check the system's behaviour or explain its limits, which stops them from being a true ethical curator.

#### **5. Mandatory Curriculum Reform: Integrating Computer Knowledge**

The clear shift toward AI teaching requires a mandatory change in the academic courses for future teachers. It is absolutely essential for future educators in language fields to gain a basic knowledge of various AI tools and learn how to use them effectively. Computer knowledge is a must-have part of future teacher training. Future teachers need structured, compulsory training, not just optional workshops. This academic framework must equip them with the skills necessary to ethically implement these technologies in a way that respects professional standards and learner needs. Integrating AI into teacher training

programs provides future ELT educators with the essential skills for modern classrooms and meets the high expectations of today's digitally capable students. This mandatory academic training should follow global standards, such as the UNESCO AI Competency Framework for Teachers and the ISTE/OECD AI Literacy Framework. UNESCO's guidelines define the knowledge, skills, and values teachers must master across five essential areas: focusing on the student (Human-centred mindset); understanding fairness and privacy (Ethics of AI); knowing the basics of AI (AI foundations); knowing how to teach with AI (AI pedagogy); and using AI for self-improvement (AI for professional learning). The necessary "computer knowledge" for modern ELT goes beyond just knowing how to click buttons; it must include Computational Thinking (CT). CT training is vital for blending technical understanding with teaching knowledge (Pedagogical Content Knowledge or PCK). By embedding CT into PCK, teachers learn to apply logical, algorithmic thinking to solve real teaching problems. This algorithmic literacy transforms the teacher into a curriculum innovator. Instead of just using tools handed to them, a teacher with CT can critically look at, adapt, or modify the core logic of the tool itself to fit their students' specific needs. This technical ability is essential for ensuring that AI integration is fair and works well, particularly in challenging situations where technological infrastructure is poor or tool accuracy is limited for low-resource languages. Without CT, teachers cannot overcome the 'black box' problem, which severely limits their ability to get the most educational value out of AI.

## **6. Ethical Challenges and Policy Directives**

While adopting AI is beneficial, it introduces complex ethical and societal challenges that need to be addressed through expert training and clear rules. The biggest risk is not that the technology will fail, but that people will accept AI without questioning it, leading to ethical failures. AI algorithms, because they are trained on vast amounts of data, risk reflecting and strengthening existing societal biases. A major concern in ELT is algorithmic bias in tools like speech recognition, which might struggle to correctly understand non-native accents, unfairly hurting learners from diverse linguistic backgrounds. Ensuring fairness requires continuous checking for bias, using diverse training data, and creating fairness-aware algorithms that adjust learning recommendations based on varied accents and language profiles. A major challenge to fair AI integration is the digital divide, which is the unequal access to necessary technology and reliable internet among students and schools. Teachers in schools with low resources often face significant hurdles, such as unstable infrastructure and limited device access, making successful AI integration difficult. This widening digital divide means that policies cannot use a "one-size-fits-all" approach to AI support and training.

Ethical AI design should always prioritize a hybrid approach where the technology improves human teaching, rather than directing it alone. The opacity of AI systems, or the "black box problem," leads to a lack of understanding that makes users question if they can trust the tool. Ethical AI models, which are more transparent and have lower bias scores, have been shown to gain more user trust. This confirms that educators must have the critical skills to choose and use only ethically designed tools. The professional duty of educators

includes providing society with guidance on the social and ethical results of using AI. Blind trust in AI can lead to issues like plagiarism; while completely distrusting it can lead to digital ignorance and missing out on technological benefits. The teacher acts as the essential critical filter, determining whether AI promotes fairness (by supporting struggling students) or unfairness (by penalizing non-native accents). Therefore, mandatory academic training in AI ethics and computational auditing is the essential rule to ensure AI lives up to its promise as a positive force in education.

## **7. Conclusion**

The evidence is clear: the future effectiveness of the English Language Teaching professional depends entirely on their mandatory skill in AI teaching methods. The outdated model of "old teaching" is simply too rigid and inefficient in an era where AI can provide significantly better, personalized learning outcomes. The role of the human educator is now upgraded, they must change from being content deliverers to highly skilled, ethical curators, data analysts, and guides for complex human skills. This necessary shift requires that technical computer knowledge be placed at the core of teacher training. To guarantee that the next generation of ELT professionals are equipped to expertly manage this human-machine partnership, this paper makes the following firm policy demands: Compulsory Academic Integration of AI Literacy (AIL) and Computational Thinking (CT) modules must be put in place for all future ELT teachers, following international standards like those from UNESCO. Training must focus heavily on Algorithmic Auditing, using CT principles to allow educators to check for bias and ethically manage the lack of transparency in AI systems.

Finally, Institutional Support is required; schools and universities must provide continuous training and structural support to fix the existing digital divide, ensuring fair access to technology and specialized training for all educators, especially in low-resource areas. By accepting this need for AI and making computer knowledge mandatory, academic institutions can ensure future educators are prepared not just to use technology, but to ethically build the personalized, data-driven learning experiences that define modern education.

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