FORUM DE L'ENSEIGNANT Journal
e-ISSN: 2437-0576 ISSN: 1112-5101
Volume: 22, Special Issue: 1 / October 2026 pp. 130-139

Title of the article

A Synergy between Artificial Intelligence, Critical Thinking and Self-awareness:

An Exploration of Teachers' Perceptions and Recommendations

Received: 28/07/2026; Accepted: 27/10/2026; Published: 31/10/26

Amel SAKRAOUI [1],*

1 Badji Mokhtar University Annaba (Algeria), amel.sakraoui@univ-annaba.dz
ORCID: (https://orcid.org/0009-0005-9927-0717)

Abstract:
Artificial intelligence is evolving rapidly in education. The present study investigates teachers' perceptions of AI, critical thinking and self-awareness. A questionnaire was given to (30) EFL teachers from the University of Badji Mokhtar Annaba. The results emphasized the need to balance AI technological innovations with uniquely human competencies such as self-awareness and critical thinking.

Keywords:
Artificial Intelligence; Criticality; Emotional Intelligence; Technology; Teachers' Perceptions;

* *Corresponding author: Amel SAKRAOUI*
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Introduction

In today's complex world, characterized by change and uncertainty, developing human potential has become imperative for educational institutions seeking to adapt to constantly evolving educational demands. The revolutionary advances in artificial intelligence (AI), including intelligent tutoring systems and generative AI applications, have created new forms of knowledge and new types of learning (Baker & Smith, 2024). In the context of learning English as a foreign language, these technologies enable personalized instruction, immediate feedback, and content generation. However, despite their powerful positive impact on learning outcomes, concerns are growing about students' dependence on technology and the possible erosion of essential human competencies, particularly critical thinking and self-awareness.

Critical thinking is widely recognized as one of the most important twenty-first-century skills. It enables learners to analyze information critically, evaluate evidence, question assumptions, solve problems, and make informed decisions (Zhou et al., 2012). In the age of AI, these abilities have become even more important because students are constantly exposed to automatically generated information whose accuracy, reliability, and ethical implications require scrutiny. Consequently, educators are increasingly expected to help learners develop the capacity to use AI critically to mitigate its negative effects.

Intertwined with critical thinking, self-awareness has emerged as a fundamental dimension of effective learning. Self-awareness refers to individuals' ability to recognize their emotions, strengths, weaknesses, beliefs, and cognitive processes while reflecting on how these factors influence their learning and decision-making (Goleman, 1995). Self-aware learners can better monitor their understanding, identify knowledge gaps, regulate their learning strategies, and reflect on the quality of AI-generated responses. As a result, self-awareness serves as an important metacognitive foundation that supports independent learning and responsible AI use. This explains the rationale for combining efficient AI use with developing criticality and self-awareness to create 'synergy' and increase the likelihood of better academic outcomes.

A vast array of studies has underscored the need to develop pedagogical practices that target critical and rational mindsets in learners (Silvia & O'Brien, 2004; Uribe-Enciso et al., 2017). Yet, a scant attention has been devoted to understanding how AI use may intersect with students' critical thinking and selfawareness within the specific educational conditions of Algerian higher

education. Addressing this gap, the present study explores EFL teachers' perceptions of the relationship between artificial intelligence, critical thinking, and self-awareness. Based on the aforementioned aims, the following three research questions are raised:

1. How do teachers perceive AI-supported EFL learning?
2. How do EFL teachers perceive the influence of artificial intelligence on students' critical thinking and self-awareness?
3. What recommendations do EFL teachers propose for integrating AI while fostering critical thinking and self-awareness?

I. Review of Literature

1. Definition of Key Concepts

a) **Artificial Intelligence:** Russell and Norvig (2021, p. 4) define Artificial Intelligence (AI) as 'the study of agents that receive percepts from the environment and perform actions'. Consistent with this definition, AI encompasses intelligent tutoring systems, adaptive learning platforms, and generative AI tools that increasingly support language learning, writing, and feedback. In this study, AI is operationalized through teachers' reported frequency of use, perceived usefulness, benefits, challenges, and recommendations for its application in EFL instruction.

b) **Critical thinking:** the concept of critical thinking, regarded as a central ingredient to successful educational performance, has been defined as: "being aware of our own thinking processes, activating and organizing the matters by taking understanding ourselves and the matters around a goal, by implementing the points we learn and taking into account others' thinking skill" (Choy & Cheah, 2009, p. 199). In this study, critical thinking is measured indirectly through teachers' questionnaire responses. It is operationalized as teachers' perceptions of the extent to which AI-assisted pedagogical practices foster students' analytical reasoning in EFL.

c) **Self-awareness:** represents a fundamental dimension of emotional intelligence and reflective learning. Goleman (1995), in his book *Emotional Intelligence*, describes self-awareness as the ability to recognize and understand one's own emotions, strengths, weaknesses, values, and their influence on thoughts and behaviors. Emotional intelligence is also defined as 'the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships'. It is considered paramount to emotional and intellectual growth (Mayer & Salovey, 1997).

Furthermore, critical thinking and self-awareness are intimately related. Self-awareness is the foundation of effective critical thinking because it helps individuals recognize how their beliefs, emotions, assumptions, and biases shape their reasoning. Operationally, it is examined through teachers' perceptions of the extent to which AI-backed pedagogical practices stimulate students' reflective assessment in EFL.

2. The Interplay between AI, Critical Thinking, and Self-Awareness

The literature review reveals that there exists a close association between AI, critical thinking and self-awareness: AI enhances learning, while self-awareness is basic to critical thinking and enables learners to regulate their learning and make use of AI in a responsible and ethical way (Ally, 2023).

Despite the growing body of research on artificial intelligence in higher education in the Algerian academic setting, relatively few studies have examined 'the triadic' relationship between these concepts. Many previous studies have primarily explored digital transformation in higher education and teachers' perceptions of educational technologies, with limited focus on how AI can simultaneously nurture cognitive competencies among EFL learners. Hence, an effort was made to address this gap and understand how it can be applied to promote both critical thinking and self-awareness, particularly in the sphere of EFL education.

II. Method

1. Participants

The participants consist of 30 EFL teachers from the Department of English at Badji Mokhtar University, Annaba, Algeria. They were selected through purposive sampling because of their teaching experience and familiarity with current pedagogical practices. The study participants were selected through purposive sampling. Participation was voluntary, and respondents were informed that their responses would remain anonymous and would be used solely for research purposes.

2. Procedure

Data were collected through an online questionnaire administered via Google Forms to 30 university EFL teachers from Badji Mokhtar University (Annaba). The current study does not aim at testing any hypothesis but is based on what can be deduced from the participants' beliefs and perceptions; that is, «by probing the participants' accounts of their actions, this will help to understand

what they are really doing in their settings» (Cohen & Manion, 1994, p. 271). To provide an in-depth examination of teachers' thoughts and insights, the interpretive approach has been applied, as it enables us to make sense of teachers' subjective experiences and understand the phenomenon of criticality through the meanings teachers assign to it (Radnor, 2002).

The questionnaire consists of 20 questions divided into four sections. Most questions are closed-ended, multiple-choice or yes/no. The first section gathers demographic information about the participants and includes four questions: gender (Q1); current academic rank (Q2); teaching experience at the university (Q3); and EFL domain specialization (Q4).

The second section entitled «Teachers' perceptions of artificial intelligence» consists of 6 closed-ended questions designed to explore teachers' familiarity with AI (Q5); the frequency of AI use in teaching (Q6); the benefits of AI integration into EFL classroom (Q7); the challenges and ethical concerns associated with AI use (Q8); teachers' self-efficacy in integrating AI into their teaching (Q9); institutional support and training (Q10).

The third question entitled «Teachers' perceptions of critical thinking and self-awareness» includes 8 closed-ended questions that tap teachers' views about learners' critical thinking in EFL (Q11/Q12), learners' self-awareness in EFL (Q13, Q14); the interplay between critical thinking and self-awareness in EFL (Q15/Q16) and the development of criticality and self-awareness through AI-assisted teaching (Q17/Q18).

The fourth question, entitled «Teachers' recommendations and reflections», includes 2 open-ended questions that elicit teachers' examples of pedagogical practices (Q19) and pedagogical recommendations for developing learners' selfawareness and critical thinking through AI-assisted teaching (Q20). The quantitative data obtained from the close-ended questions were analyzed using descriptive statistics, including frequencies and percentages. Besides, open-ended questions were used to grant the informants space for self-expression. Given the study's interpretive orientation, the questionnaire responses were analyzed using thematic analysis, which revealed salient patterns and subtle nuances in the responses (Braun & Clarke, 2006).

III. Results and Discussion

1. Section One: Demographic Information (N=30)

The demographic profile of the participants reflects a relatively balanced representation of male and female teachers, with female respondents (53.3%) only

slightly outnumbering their male counterparts (46.7%). This balanced gender distribution enhances the diversity of perspectives captured in the study and minimizes the likelihood of gender-related bias in the findings. In terms of academic rank, 'assistant professors' constituted the largest group (40%), followed by 'lecturers' (33.3%). Respondents also had varying levels of teaching experience, with the largest proportion (26.7%) having 11 to 15 years of professional experience. This diversity suggests the study benefited from teachers at different career stages, enriching the analysis with both experienced and relatively recent viewpoints. Finally, almost half of the participants (46.7%) teach courses such as didactics, ethics and deontology, IA pedagogy assessment, digital literacy, and educational psychology, making the sample particularly relevant to the study's focus.

This suggests that most participants were actively engaged in both teaching and academic responsibilities, enabling them to provide well-informed and thought-provoking insights into current pedagogical practices and the role of AI in EFL learning.

2. Teachers' Perceptions of Artificial Intelligence (N=30)

The findings indicate that university EFL teachers generally hold positive perceptions of artificial intelligence. (83.3%) Of respondents reported being familiar with AI tools (Q5), while 60% indicated that they regularly integrate AI into their teaching practices (Q6). A large majority (86.7%) agreed that AI enhances language learning by providing personalized feedback (Q7). However, (80%) of teachers expressed considerable concern regarding ethical issues such as plagiarism, privacy, and over-dependence on AI (Q8). Moreover, (50%) of teachers reported feeling efficacious in relation to integrating AI tools effectively into their teaching practices (Q9). Unexpectedly, (40%) of teachers opted for a neutral tone. In addition to this, the results reveal insufficient institutional support, with (63.4%) of respondents disagreeing that adequate training and guidance were available (Q10). These findings suggest that while teachers acknowledge AI's educational value, they also emphasize the need for stronger institutional policies and professional development.

Table n° 01: Teachers' Perceptions of AI

Question	SD	D	N	A	SA
Q5 Familiarity with AI	0%	6.7%	10%	43.3%	40%
Q6 Frequency of AI use	6.7%	13.3%	20%	36.7%	23.3%
Q7 AI benefits	0%	3.3%	10%	50%	36.7%
Q8 Ethical concerns	0%	6.7%	13.3%	40%	40%
Q9 Teachers' Self-efficacy	0%	10%	40%	25%	25%
Q10 Institutional support	26.7%	36.7%	20%	13.3%	3.3%

Source: Prepared by the author based on questionnaire data (N=30)

3. Teachers' Perceptions of Critical Thinking and Self-Awareness

Table n° 02: Teachers' Perceptions of Critical Thinking and Self-Awareness

Question	SD	D	N	A	SA
Q11 Critical thinking (CT)	0%	0%	0%	40%	60%
Q12 Critical thinking	40%	30%	20%	5%	5%
Q13 Self-awareness (SA)	0%	0%	20%	40%	40%
Q14 Self-awareness	30%	30%	40%	0%	0%
Q15 Teaching Practices/CT	0%	10%	30%	40%	20%
Q16 Teaching Practices/SA	0%	20%	20%	50%	10%
Q17 AI/CT	0%	10%	10%	20%	60%
Q18 AI/SA	0%	30%	10%	20%	40%

Source: Prepared by the author based on questionnaire data (N=30)

The results show strong consensus among teachers on the importance of developing criticality (Q11) and self-awareness (Q13) as primary objectives in EFL education. Conversely, similarly high proportions (70%) and (60%) perceived that students had not yet reached satisfactory levels in critical thinking (Q12) and self-awareness (Q14), respectively. Furthermore, (60%) of the participants reported planned and deliberate use of teaching strategies like reflective activities, self-assessment and discussions to promote critical thinking (Q15) and self-awareness (Q16). In addition to this, (60%) of the respondents endorsed that AI should be integrated in ways that foster both competencies simultaneously in both critical thinking (Q17) and self-awareness (Q18) respectively.

4. Teachers' Recommendations and Reflections

The thematic analysis unveils five (5) major themes, as summarized in Table 03. This reinforces the quantitative results: 90% of teachers advocated balancing

AI with classroom interaction, and 50% recommended problem-based learning in the EFL classroom.

Table n° 03: Thematic Analysis of Open-Ended Responses (Q19/Q20)

Theme	Frequency	%
AI / classroom interaction	27	90%
Responsible digital literacy	24	80%
Reflective thinking	23	76.7%
Learner-centered pedagogy	21	70%
Problem-based learning	15	50%

Source: Prepared by the author based on open-ended responses (Q19/Q20)

5. Summary of the Findings

The present study focused on teachers' perceptions of developing criticality and self-awareness in EFL learners through AI-assisted pedagogical practices. Some significant points emerge from the results of the investigation that took place with EFL teachers at Badji Mokhtar University (Annaba) during the academic year 2025/2026:

a) The majority of teachers agree on the fact that efforts should be aligned towards 'the protection' of the humanistic and authentic dimension of the academic experience and the consolidation of the values of language education while taking advantage of technological innovation.

b) Most teachers emphasized the need for explicit instruction in AI literacy and ethical use to reduce plagiarism, misinformation, and algorithmic bias.

c) A high proportion of teachers stressed the importance of promoting learner-centered pedagogy to stimulate learners' engagement and enhance their creativity. This does not exclude, yet, the central role that teachers play as role models for fostering motivation, ethical awareness and cultural sensitivity.

d) Most participants underlined the importance of classroom practices that combine technological innovation with collaborative learning, discussion, reflection, and authentic human interaction. This is achieved through *actively* designing activities that require students to analyze, question, and evaluate AI-generated content rather than passively reproduce it.

Conclusion

It is noteworthy that this investigation is limited by its relatively small sample which restricts the generalizability of the findings. Future research should involve larger, more diverse samples across multiple institutions to provide a

more comprehensive understanding of the relationship between AI, critical thinking, and self-awareness.

As AI continues to reshape higher education, fostering the synergy between artificial intelligence, self-awareness, and critical thinking is considered 'a sine qua non' for enacting genuine change and ensuring quality learning in EFL. Attempts should also be made to dispel researcher anxiety that characterizes the initial stages of dealing with AI tools and which often impedes them from engaging in novel forms of knowledge. This can be achieved by encouraging teachers to devise action research plans on the use of AI. Engaging in 'action research' would beyond doubt equip teachers with an informed and deep understanding of many aspects related to AI and hence ultimately broaden their perspectives, better their own practices (Johnson, 2012) and ultimately enable them to make «an exemplary contribution to instructional improvement» (Suter, 2006, p. 24, as cited in Sadruddin, 2012).

Artificial Intelligence could be depicted paradoxically both as 'a golden opportunity' and at the same time a 'tremendous challenge' for EFL university teachers and academics. Its successful implementation depends not solely on technological progress but on guiding learners to develop both cognitive and metacognitive awareness in EFL. This reinforces the need to instill in EFL learners strong skills that help them adjust to changing roles and build a stronger framework for entrepreneurship and self-realization in higher education.

We believe an appropriate pedagogy would support students' academic growth by pushing them 'out of their comfort zone' and stretching them 'intellectually' and 'affectively'. By adopting such an approach, teachers are likely to become effective agents of change and a source of inspiration for their students.

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