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Reimagining Pedagogy in the Age of AI: Constructivism, Creativity, and Human-AI Symbiosis in English Language Teaching

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Abstract:
This paper explores the pedagogical implications of artificial intelligence (AI) teaching in education by synthesizing constructivism, human-centric pedagogy, and creativity, with special regard to English Language Teaching (ELT). With the generative AI transforming the production of knowledge, learning is utilized in a way that does not imply active acquisition of information but instead active co-construction of knowledge, mediated by AI. Although AI offers opportunities of personalization, accessibility, and real-time feedback, AI also brings on challenges of cognitive offloading, algorithmic bias, and reduced epistemicengagement.

This study uses an interdisciplinary research method (a narrative review) to synthesize recent interdisciplinary investigations (2020-2026) to explore how constructivism principles can be effectively aligned with AI-assisted learning settings. This paper suggests one such model: a human-AI symbiotic model where AI takes the form of a cognitive scaffold. It also redefines creativity as a process that is transformative, dialogic, and critically informed and emphasizes the importance of ethical, process-based, and critically informed pedagogical practicesincontemporaryELTsettings.

Keywords: Artificial Intelligence in Education; Human-Centric Pedagogy; Constructivism; English Language Teaching (ELT); Human-AI Symbiosis; Creativity in Education.

Introduction

The invention of generative AI is a sea change in the way knowledge is generated, consumed, and verified in the field of education and is essentially a fundamental epistemological shift in the educational sector. Unlike the earlier digital technologies, which

simply helped to access the information, the modern AI products are actively utilized to create the content, simulate conversations, and also take part in the process of creating meanings (Dwivedi et al., 2023; Kasneci et al., 2023). This shift represents a shift from using information to co-construcing knowledge, and learners increasingly engage with smart systems as both examples of intelligence partners.

The generation of AI tools in the field of education and research is a testament of the perceived value of these tools in terms of efficiency, access and customization (Guidance for Generative AI in Education and Research, 2026; Gautam, 2024). One of the most popular ways in which AI can now be used is in drafting academic texts, solving complicated problems, and explaining abstract concepts. This increasing reliance, however, poses some serious questions as to the very nature of the learning process, especially when it comes to deciding what the proper degree of technological support is in relation to the cognitive engagement.

A constructivist view of learning states that learning is an active and engaged, effortful and (socially) mediated process (Piaget, 1974; Vygotsky & Cole, 1978). The need for artificial intelligence-led solutions and responses, however, brings a risk that this could reduce the opportunities for contemplation and deep processing. It has been pointed out that there is a phenomenon in which today's learners give up thinking on their own and rely on technology, the deceptively named “cognitive offloading” (Kirschner & Hendrick, 2020; “AI Competency Framework for Teachers,” 2024). Although recent decades can be characterized by the rapid development of research on the topic of artificial intelligence (AI) in education, the majority of applications are confined to technological affordances like personalization, efficiency, and automation. Less emphasis is placed on how AI can be synchronized with constructivist pedagogy in a manner that will not only ensure the maintenance of a deep level of cognitive engagement and meaning-making through learning but also the integrity of learning in its entirety. Likewise, creativity is being reconstructed within the context of productivity as opposed to the transformative, dialogic process in question, which is based onhumanagency.

This disjuncture has been specifically noticeable in the context of English Language Teaching (ELT), in which the research focus is typically placed on tool-based applications rather than on reconfiguring pedagogical approaches more broadly. The integrative models of relationships between human-centered pedagogy, constructivism, and creativity in AI-mediated settings are still scarce. In addition, important considerations like cognitive offloading, learner control, and moral considerations are regularly made separately as opposed to the context of a cohesive pedagogical model.

This paper seeks to fill these gaps by providing a thoughtfully synthesized and critically-studied framework of AI in Education, incorporating both constructivism and human-centric education with creativity. Rewrites the AI as a cognitive aid capable of encouraging questioning, reflection, and cognitive co-construction in place of human cognition. The study, targeted toward The English Language Teaching (ELT) context, is set to illustrate how AI technologies can be pedagogically integrated into language learning to foster improvements in language acquisition while maintaining the agency, creativity, and ethical consciousness of the learner.

For this inquiry the following questions are used:

1) What are the challenges and opportunities for attempting an effective alignment between the principles of constructivist pedagogy and human-centric environments for learning with AI in English language teaching (ELT)?

2) What new possibilities and difficulties arise when respecting the human capability of engaging in cognitions, creativity, and autonomy with AI in cognitive learning?

2.TheoreticalFramework

2.1ConstructivismintheAIEra

Constructivism is an organization of thought that believes that knowledge is built when people interact with the environment and when people negotiate their knowledge through social interaction. Piaget's cognitive constructivism also focuses on cognitive development at the internal level, whereas a socio-cultural theory (Vygotsky & Cole, 1978) of Piaget foregrounds development in the domain of social interaction and support in the Zone of Proximal Development (ZPD) (Piaget, 1974). The combination of these views points to the need to work, discuss, and mentor in significant learning.

These principles in AI-mediated scenarios are not only expanded but destabilized as well. AI systems can mimic scaffolding, which can provide adaptive feedback, individual guidance, and context-related support (Holmes et al., 2023; Luckin et al., 2022; Kubsch et al., 2025). This extends the conventional boundaries of the ZPD, which consequently exposes the learner to the task that they would otherwise not be able to do as an independent activity.

Nonetheless, there exists a strong drawback of this affordance, namely, the fact that providing comprehensive and finished outputs, AI may be able to avoid the intellectual challenge inherent in deep learning. Empirical research suggests that an over-dependence on AI may result in a decrease in the amount of engagement in higher-order thinking processes, including analysis, synthesis, and evaluation (Kasneci et al., 2023; Oecd, 2024). As a result,

constructivism in the age of AI has to be re-conceptualized as a hybridization process between human cognition, on the one hand, and machine-aided learning, on the other hand.

2.2Human-CentricPedagogy

The human-centric pedagogy focuses on the learner, his or her agency, identity, and ethical participation in the course of learning. It questions technocentric models that focus on efficiency and standardization but frames education as a relational and value-based practice(Biesta,2021).

The significance of the given approach will gain particular importance in the AI-driven environment. Algorithms can often be based on data-driven profiling that can reduce learners to quantifiable metrics and limit diversity in the learning experience (Selwyn, 2021; Williamson & Eynon, 2020). This begs the question of equity, representation, and autonomy.

International policy measures also underline that the incorporation of AI should be adhered to human principles to make sure that progress in technology does not undermine ethical and pedagogical guidelines (Guidance for Generative AI in Education and Research, 2026; OECD, 2024). The role that teachers play in this process is critical because it necessarily mediates the interactions of AI, promotes critical digital literacy, and ensures that the human aspect of learning remains (“AI Competency Framework for Teachers," 2024; Biesta, 2021).

2.3CreativityasTransformativeEngagement

Creativity is currently being defined along with a change in orientation as a central competency model in modern education and is viewed as a quality involving the capacity to come up with unconventional ideas, think divergently, and solve complex problems (Runco & Jaeger, 2012). Nonetheless, having generative AI makes even the classical concepts of creativity more complex since the results produced can be compared to the work of a human.

On the one hand, AI improves productivity and generation of ideas (Dwivedi et al., 2023; Bozkurt, 2023; Gautam, 2024), but, on the other hand, it poses a threat of homogenization and loss of originality (Kohnke et al., 2023). It has resulted in scholars having to conceptualize creativity as a transforming process instead of a generating one (Hawkridge, 2011).

In this context, the learners critically peruse the AI outputs, reinterpret them, and inject them with individual meaning. In such a way, creativity becomes a dialogic process, which is lying on the border of human thinking and machine intelligence.

3.Methodology

This paper follows a narrative review design that will synthesize the interdisciplinary research on educating with the policies of artificial intelligence, constructivism, and

creativity. The use of narrative reviews is especially applicable to analyzing evolving, multifaceted, and interdisciplinary events where strict systematic guidelines could restrict conceptual vistas (Snyder, 2019). In contrast to systematic reviews, which are conducted to answer narrowly defined questions and exhaustive inclusion criteria, narrative reviews are done to provide an interpretive synthesis, theoretical integration, and critical analysis of various sources (Zawacki-Richter et al., 2019). This quality makes them especially efficient as far as exploring the emerging pedagogical consequences of generative AI is concerned.

Guiding an addition to transparency and rigor involved presupposing a structure but lenient criteria in the literature selection process. Academic databases like Scopus, Web of Science and Google Scholar were used to search the sources combination with the above mentioned keywords such as ‘AI in education', ‘generative AI', ‘constructivism', ‘human centred pedagogy', and ‘creativity in learning'. It was limited by the relevance of the articles to the current developments in education with AI and by the year of publication (less than 2026).

Inclusion criteria prioritized:
• Empirical and theoretical research in connection to AI in education.
• Works that interact with constructivist or human-centrical models.
• Policy texts of international organizations (e.g., UNESCO, OECD, etc.)
Exclusion criteria included:
• Pure technical AI research that lacks any pedagogical use.
• Non-peer-reviewed opinion articles that are not based on scholarship.
Thematic synthesis, a qualitative method, was used to examine the selected literature to identify common patterns and conceptual relationships across studies (Bearman et al., 2022). This procedure was carried out in three steps: (1) preliminary coding of important concepts, (2) categorizing of codes into larger themes and (3) interpretive synthesis in order to come up with a coherent framework of the connection of AI, constructivism, and creativity.

Although the appraisal of narrative reviews may at times be criticized as being subjective, the subject of this study has alleviated the previously mentioned limitations because of the numerous, high-quality materials used and a clear explanation of how the study was selected to be carried out through the use of those materials. The point is not to offer exhaustive coverage but rather to produce a theoretically informed and critically engaged synthesis that makes contributions to ongoing arguments on human-centric pedagogy in the AI era.

4. AI in Education: Opportunities and Structural Tensions

The emergence of artificial intelligence (AI) has reconfigured the educational landscape, presenting both opportunities and structural tensions. Although AI technologies are suggested to revolutionize teaching and learning because they commercially provide them with the capacity to personalize the teaching and learning process, they also bring up serious concerns in terms of epistemic depth, equity, and the nature of the human cognition process. Such duality is, in fact, critical to understand in order to be able to develop the pedagogical structures that will not deprive the principles on which the foundation has been built of their meaningful learning properties.

Perhaps one of the most well-known benefits of AI in learning is the ability to learn on a one-on-one basis. The systems that are driven by AI can analyze the learner data in real time and adapt the instructional material, progression, and feedback to specific requirements (Holmes et al., 2023; Luckin et al., 2022). This responsiveness enables learners to work at their own pace with material, thus facilitating differentiated learning and potentially enhancing the learning experience. An example is that adaptive learning platforms are capable of detecting areas of missing understanding and provide specific interventions, thereby supporting a more personalized learning process compared to traditional classroom models. This can be traced back to the principle of scaffolding existing within the constructivist view that support should be provided in a way that adjusts according to the level of the development of the learner.

Intimately linked in concept to personalization is the problem of accessibility and inclusion. The AI tools can democratize education, where resources of superior quality are available to a wide range of learner populations, and even in those contexts that are remote or under-resourced. Enhanced learning in learners with disabilities and those with linguistically diverse backgrounds can be supported by features such as automated translation, speech recognition, and assistive technologies (Guidance for Generative AI in Education and Research, 2026). In the latter respect, AI may act as a levelling factor, mitigating agency obstacles to engagement and increasing access to education. Nevertheless, this hopeful opinion should be modulated by the fact that the digital divide is still not eliminated and access to AI technologies in the socio-economic and geographical settings remains uneven. In the absence of equal infrastructure, AI is simply going to widen existing gaps instead of helping to narrow them.

The other great opportunity is the improvement of formative assessment and feedback. Immediate, data-driven feedback can be presented by AI systems, and learners can identify mistakes and develop their knowledge in real-time. This is consistent with the modern pedagogical focus on high assessment and self-contemplative learning. Furthermore, AI can benefit an educator by automating their less important assessment activities so that

they can focus on higher-order instructional functions such as mentoring and facilitation (Bearman et al., 2022). However, the growing use of automated evaluation brings up the question of the validity and richness of evaluation. Artificial Intelligence-made feedback tends to focus on superficial accuracy rather than a deeper comprehension, which may limit thelearningprocess.

In spite of the opportunities, there are tensions in terms of cognitive and epistemological profiles caused by the integration of AI. Among the most urgent issues, one should mention the phenomenon of cognitive offloading in which the learners use AI systems to do some tasks that otherwise would require active thinking (Kirschner & Hendrick, 2020; Oecd, 2024). Though offloading can help to decrease cognitive load and enhance efficiency, overreliance would impede the acquisition of critical thinking, problem-solving, and metacognition skills. In this regard, learning threatens to be the retrieval of answers as opposed to building knowledge, which is fundamental to constructivist thought.

Another associated problem is the distorting of the boundaries between the knowledge access and the knowledge creation. It is possible to create cohesive and environmentally suited responses through AI systems, which in many cases cannot be distinguished by humans from responses created by humans. This leads to the questions of authorship, originality, and the contributions made by effort in learning. Whereby learning is focused on acquiring the correct answer rather than on inquiry, the learning process has been transformed into a consumption process as opposed to a process of discovery. This may potentially reduce the epistemic value of learning, as it is understood as the process of constructingmeaning(Selwyn,2021).

Algorithms and structural biases introduced by the use of AI can affect the learning experience in minor yet meaningful ways. AI systems are trained with large datasets that can also mirror the social, cultural, and language biases existing at the time. As a result, the outputs in such systems are likely to reinforce hegemonic views and exclude other possible viewpoints (Williamson & Eynon, 2020; Guidance for Generative AI in Education and Research, 2026). When applied to the teaching and learning process, this may result in the homogenization of teaching content and the loss of diversity in the teaching contents. These results call into question the humanistic and inclusive aims of education, which requires criticalinteractionwithAI-generatedcontent.

Moreover, with the growing influence of AI in education, the question of teacher agency and professional identity becomes a concern. As AI systems assume the functions traditionally carried out by the tutor, e.g., content delivery, feedback, and assessment, there is a danger of reducing the role of the tutor in reductive terms. Teachers can be placed in the

role of supervisors of technology-driven processes rather than being facilitators of learning and critical analysis. But studies indicate that the introduction of AI will need increased, rather than decreased, teacher engagement. Instructors need to decipher AI results, contextualize them within the pedagogical objectives, and provide learners with a critical disposition toward technology ("AI Competency Framework for Teachers," 2024; Biesta, 2021).

The other tension area that appears critical is in the area of data privacy and surveillance. The effective operation of AI systems is associated with collecting a large amount of data about learners, which is why the ethical use of learner data is a controversial topic. Commentation-related challenges, transparency, and data security are especially relevant in education, where students might not have a lot of knowledge about how their data are being used (OECD, 2024; AI and Education: Protecting the Rights of Learners, 2025). The possibilities of surveillance and profiled individuals only worsen the ethical situation, since learners might easily be diminished to isolated data points in algorithms.

Lastly, the advent of AI requires a re-evaluation of the aims and principles of education. In case education is turned into efficiency, productivity, and measurable results, the integration of AI may not seem problematic. But when education is conceived as a process of human development that entails critical thinking, creativity, and ethical awareness, then the blind neglect of AI becomes an issue. This conflict highlights the significance of a human-based approach in which the qualitative aspects of learning receive moreemphasisthanquantitativeones.

In conclusion, AI in education has become an evolution paradox that has both the potential to transform the education system and challenges to that structure. It can cause risks of cognitive engagement, access, and efficiency, as well as equity, bias, and prejudice, although it brings with it potentials of personalization, access, and efficiency like never before. To cope with these tensions, the approach to technological innovation, concerning balance and critical informedness, should be used in the process of managing these tensions. Only with this balance can educators be certain that AI can be used to augment, as opposed to decrease, the human elements of learning.

5.AligningAIwithConstructivistPedagogy

To align AI with constructivist pedagogy, the learner role in AI-mediated settings must be redefined as well as the design of the instruction to be delivered with the help of AI. Constructivism highlights the fact that knowledge is dynamically constructed based on experience, dialogue, and reflection (Piaget, 1974; Vygotsky & Cole, 1978). Here, AI must not be considered an authority source of final solutions but a cognitive scaffold that triggers a question, aids in solving problems, and prompts metacognitive awareness (Luckin et al.,

2022). This means creating activities in which learners will have to question, refine, and expand the AI-generated content instead of accepting it passively.

The integration of guided inquiry-based learning is one of the key strategies that are used to achieve this alignment. Teachers can organize activities where AI is used as a starting point to be explored, e.g., by generating various opinions on a concept that students should analyze and synthesize. These practices are reinforcing the higher-order thinking skills, which guarantees that AI supplements but does not substitute higher-order thinking skills (Holmes et al., 2023). Likewise, self-regulated learning can be reinforced by metacognitive prompting, in which learners start cogitating about their usage of AI and its purpose.

Constructivist alignment is also based on dialogic interaction. The conversations simulated by AI applications can help students clarify concepts and acquire new vocabulary; nevertheless, they can only be useful when a student critically engages with the simulated conversations (Kohnke et al., 2023). Integrating AI into collaborative learning communities also promotes construction principles by enabling learners to negotiate meaning as a collective through the collective use of AI as a common resource.

Finally, constructivism should align AI, and this requires deliberate pedagogical planning, which lays emphasis on process over product. When educators approach technologically mediated learning contexts by positioning AI as an exploration, reflection, and knowledge co-construction tool, they can preserve and maintain depth and integrity of thelearningprocess.

6.CreativityintheAgeofAI

Within AI-mediated settings, creativity needs to be reimagined as a dialogic, context-sensitive, and process-oriented practice as opposed to a pure act of generativity. Although generative AI systems use patterns in existing information to quickly generate text, images, and ideas, they are still based on patterns in current information (Gautam, 2024). As a result, probabilistic coherence rather than originality is a commonality of the content generated by AI. This difference prefigures the ongoing pivotal position of human agency in the creative work.

The most helpful perspective of creativity as a transformative engagement is, in a pedagogical sense, creativity during the age of AI. The learners are not simply going out in order to make something out of nothing, but they engage with the outputs of AI and criticize them, as well as transform them in other ways that reflect their own perceptions, cultural backgrounds, and people's intentions to convey (Hawkridge, 2011). This iterative process (including drafting, evaluation, revision, and recontextualization) is a type of formulation that compares to similar principles of constructive meaning-making (Douglas, 2014). The

process of the interpretation and decision-making process remains human because AI can be used to assist in this process by suggesting alternative phrasing or generating prompts or suggestingstructuralimprovement.

At the same time, due to the popularity of AI tools, creative homogenization as a threat is also being introduced, where AI tools make it easier to get a stylistic uniformity due to the dependence on similar training data and prompts (Kohnke et al., 2023; Bozkurt, 2023). Teachers in their response should also devise the activities that target original voice, radical deviation, and adaptation to the context. As an example, students can be tasked with comparing two or more AI responses, determining whether they have any limitation or bias, and developing a revised version, which demonstrates personal knowledge and disciplinary expertise.

Moreover, AI-assisted environments demand cultivating crucial digital literacy to be creative. Along with getting to know what can be done in AI tools, it is important to take the time to get to know not only what is possible in AI tools but also to challenge their assumptions, constraints, and the data structures that underlie the tools. Ethics, including the question of authorship, originality, and responsible use, come to form part of creative practice. In the same light, creativity is not just limited to production but also to evaluation, transformation, and ethical consideration, which also reinforces the place of creativity as a higher-order cognitive and cultural process in contemporary education.

7.Human-AISymbiosisinPedagogy

The paradigm of human-AI symbiosis re-scales the role of artificial intelligence in the field of education with the transformation of AI as both a tool of automatism and as a cognitive partner with whom humans co-cognize. This approach states that there is the reciprocal relationship where central to the process are still the human agency, judgment, and creativity (Luckin et al., 2022; Holmes et al., 2023). This is consistent with the constructivist beliefs, where the process of learning is developed through interaction, scaffolding,andrepetitivemeaning-making.

The symbiosis model is generally depicted as having human curiosity and inquiry as a starting point of engagement with a problem or concept. The AI will then make its contribution, which can be described as the offering of multiple perspectives or the creation of examples or simulating a conversation, hence extending the cognitive horizon of the learner. However, the most important actions that must be taken are the human actions of assessment and processing of these products. The learners should read, question and make amendments to the content created by the AI based on their personal knowledge, disciplinary knowledge and context. This dialectic turns the process of constructing knowledge off active

and reflective and no longer into seeing the construction of knowledge as delivering information and information technology.

What education plays a part in equally is reconsidered as a result of human-AI symbiosis. Teachers as mediators of interaction (Biesta, 2021) and the role of making learners become the mediator of interaction for effective and ethical engagement of AI systems (AI Competency Framework for Teachers, 2024) is also playing a part. This includes fostering critical digital literacy and maintaining the epistemic rigour and social and emotional nature of learning that are ineliminable by AI.

At a larger scale, this model can be harnessed to find its connection with the new policy frameworks, which place AI as the augmentation factor and not as a replacement (Oecd, 2024; Guidance on Generative AI in Education and Research, 2026). It expects a balanced absorption, a kind of absorbency which doesn't challenge the loss of human autonomy in the face of opportunities brought by technology. Lastly, human-AI symbiosis is a sustainable pedagogical paradigm that will not diminish in depth, creativity, or ethical nature of education in an ever more AI-driven world.

8.ELTimplications

The integration of artificial intelligence (AI) is transforming the field of English Language Teaching (ELT) along with the classroom practice as it requires a shift between the product-based instruction and the process-based, learner-oriented instruction practice. The AI-powered tools can facilitate language acquisition by offering instant, personalized feedback on grammar, vocabulary, pronunciation, and discourse structure (Godwin-Jones, 2022; Kohnke et al., 2023). This allows learners to undergo the processes of cyclic drafting as well as revising, which are crucial in the formation of communicative competence. Besides, the conversational AI systems may imitate natural conversation and provide a practice opportunity that may not be limited to the classroom setting and accommodates variouslevelsofproficiency.

But the pedagogical worthiness of AI in ELT will rest on the assimilation of artificial intelligence into learning activities. When utilized on a daily basis of creating full-fledged responses, AI can promote addiction and deny linguistic processing. Consequently, educators need to plan activities where learners need to be critically aware of AI-generated language, e.g., by editing, restructuring, or contextualizing outputs. This conforms to the constructivist and communicative language teaching concepts, where constructing meaning andcommunicationplaykeyroles.

The implication of AI on the assessment practices is also huge. The old-fashioned assessment methods that view final products as the ultimate objectives may not be useful any

more since AI can be used to produce grammatically and coherently correct texts. Instead, the assessment is supposed to focus on the act of speaking a language, i.e., the planning, revising, and commenting are reflective (Bearman et al., 2022). The shift does not only guarantee academic integrity but also eases in-depth learning.

Furthermore, achieving integration with AI, digital, and critical literacy skills needs to be cultivated. The learners must be informed about the limitations of AI, including the risks of bias, accuracy, and contextual appropriateness (Bozkurt & Sharma, 2023). It is also essential that teachers become a guiding force that plays the mediator role in promoting the ethical use of AI promotion and the sense of autonomy of learners. With a human-centered approach, ELT will be able to think of AI as the means through which the process of language learning will be facilitated without posing a threat to it as communicative, creative, and interculturalasitcanbe.

9.EthicalConsiderations

The implementation of AI in the educational field poses some difficult ethical challenges to contemplate that do not just relate to the technical functionality of AI but also to other problems in terms of authorship, accountability, equity, and data governance. One of the most pressing issues is that of academic integrity: how to determine whether the texts are more or less homogeneous, whether they are identifiable as contextually appropriate with respect to the specific context and at the same time genuinely baffling with respect to what has been written (original) vs. assisted production (AI). This calls into question traditional views of the authors and also draws into question what may be regarded as real learning. Teachers will not be able to prevent their students from using AI, but rather, should establish clear rules that will assist in determining a boundary between appropriate use and improper use (Guidance for Generative AI in Education and Research, 2026; Oecd, 2024).

Two more important questions are the bias and fairness related to algorithms. The training of AI models is fueled by massive amounts of data, which can have culturally, linguistically, and ideologically biased representations, which are then recreated or amplified in the educational setting (AI and Education: Protecting the Rights of Learners, 2025; Williamson & Eynon, 2020). These biases can exclude or underscore the views of certain perspectives or reinforce the generalized claims of dominant narratives, thus compromising inclusivity and diversity in learning. To deal with this, it is necessary to consider both technical reduction measures and pedagogical interventions to educate the learners to rationalize AI-generated texts and identify their limitations.

Other ethical issues are data privacy and surveillance. Educational systems based on AI are frequently premised on the huge amount of data gathering, such as learning outcomes, behavior, and patterns of interaction. Lack of properly developed security

measures may also lead to the abuse of this data, causing consent, transparency, and security issues (OECD, 2024; AI and the Future of Education). Disruptions, Dilemmas and Directions, 2026). The possibility of constant surveillance also brings into question the learner autonomy, and the psychological effects of being monitored on a constant basis may be affecting the learner psychologically as well as affecting learner autonomy.

Nonetheless, to ethically integrate AI, it is necessary to discover how to create the most important digital literacy. It is pertinent that the learners be ready not only to hold on to technical skills but also to be in a position to question the mechanism in which the artificial intelligence systems are installed, to which interests they are committed, and what are the biases that they possess. The crux regarding the creation of this knowledge lies with the educators who should make certain that AI will be employed to be thoughtful and responsible.

Lastly, the aspect of ethical issues surrounding AI-enhanced education is not incidental but core. In this context, it should also be noted that technological innovations should be based on the concepts of fairness, transparency, accountability and recognition of human dignity, such that it is understood that AI is a means of empowerment and not control.

10.ConclusionandContributions

10.1.Conclusion

The turning point which AI has posed for education is the transformation of the meaning of the method pedagogy. Despite the fact that AI opens up a vast array of positive variables in terms of efficiency, personalization, and agency, there are also numerous threats to even those conditions upon which the entire education is built, such as cognitive engagement, personalization, and agency. The review shows that constructivist pedagogy can be used extensively in the time of AI, which can serve as a framework to ensure that learning is active, social, and meaningful. Creativity appears as one of the key mediating factors between human cognition and AI capabilities since it allows learners to transform, but not simply reproduce knowledge.Human–AI symbiosis is a middle way of integration, in which AI makes a supportive partner, not a substitute for human intelligence. Adding this kind of perspective, educators will be able to use the beneficial impact of AI while maintaining the key principles of education.

10.2. Key contributions of the study

Based on this paper, there were a couple of significant contributions regarding the field:

1. Theoretical Integration

It integrates constructivism, human-centered pedagogy, and creativity in a common AI system, which fills a gap in the existing literature.

2. Conceptual Advancement
It redefines creativity as change and offers a new perspective to the understanding of learning in environments involving AI.
3. Pedagogical Model
It suggests a symbiotic relation between humans and AI that balances the technological support and human agency and cognition.
4. Policy Relevance
It correlates theoretical knowledge with international policy approaches (OECD, UNESCO) and helps to increase its level of applicability.
5. ELT Application
It diversifies the discussion to English language teaching, providing discipline-specific information.
6. Future Research Direction
It shows the necessity of empirical research investigating long-term cognitive and creative effects of using AI in education.

10.3 Final Insight

The future of education is not in substituting human knowledge with artificial solutions but in developing an active cooperation when it comes to technology supplementing human potential. The question facing the educators is not whether to apply AI but how to apply AI in such a way that does not take out the depth, creativity, and humanity of learning.

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