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ILLUMINATING PATHS: HUMANIZING AI FRAMEWORKS FOR CULTIVATING LIFELONG ENGLISH LEARNING

¹Habsy Adhiraja Lukmat, ²Indri Aulia Salma², ³Annisa Fitri Amalia, ⁴Dedi Sulaeman

Universitas Islam Negeri Sunan Gunung Djati

¹adhirajalukmat99@gmail.com, ²l678619189@gmail.com

³annisa4929d@gmail.com, ⁴dedi4548@uinsgd.ac.id

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Abstract

In an era where artificial intelligence (AI) increasingly shapes educational landscapes, this paper explores the transformative potential of humanizing AI frameworks to encourage lifelong English learning. Drawing on interdisciplinary insights from pedagogy, cognitive science, and human AI interaction, we propose a significant approach that prioritizes empathy, personalization, and ethical integration in AI driven tools. By “humanizing” AI, we mean embedding elements of emotional intelligence, cultural sensitivity, and adaptive feedback mechanisms that are relevant with learners’ diverse backgrounds and motivations. Moving beyond rote algorithms to create supportive, engaging companions in language acquisition. The study examines case studies from global English learning platforms, analyzing how AI can illuminate individualized learning paths such as gamified vocabulary building, conversational simulations, and real time progress tracking while addressing challenges like digital divides and learner burnout. Through qualitative surveys and prototype evaluations involving educators and adult learners, we identify key principles for designing AI that nurtures intrinsic motivation and resilience. Encouraging a shift from short term proficiency to enduring linguistic growth. Ultimately, this framework advocates for AI as a collaborative partner rather than a mere tool, empowering individuals to navigate English as a lifelong journey. By bridging technology with human centered values, we illuminate pathways toward inclusive, sustainable education, offering practical recommendations for developers, teachers, and policymakers to cultivate a more reachable future in language learning.

Keywords: Artificial Intelligence (AI), Humanizing AI, Lifelong English Learning.

INTRODUCTION

Artificial intelligence has, in recent years, significantly reshaped the landscape of education. In language learning, AI-driven platforms now offer personalized, on-demand instruction through tools such as chatbots and language applications. These systems provide real-time feedback on pronunciation and grammar, monitor learner progress, and adapt exercises according to individual needs. Research indicates that such tools can enhance speaking, reading, and writing skills by offering abundant opportunities for practice and feedback, both within and beyond the classroom setting.

Despite these affordances, current AI language tutors face considerable limitations. Technical issues, narrow capabilities, and embedded biases can undermine their educational value. For instance, many systems lack sufficient controllability, leading to culturally inappropriate responses or misinterpretation of non-verbal cues. In low-resource environments, these tools may simply fail to function. Educators also voice concerns that ungoverned AI may gradually displace professional pedagogical judgment, replacing it with



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the internal logic of the platform and, consequently, diminishing learners' meaningful agency. Additional challenges include data privacy risks, unequal access to digital infrastructure, and the potential for students to over-rely on AI outputs without critical engagement.

In response to this context, our study investigates how a human-centered approach to AI can better support lifelong English learning. While AI has shown promise in contributing positively to learning motivation, persistent challenges such as inadequate infrastructure and limited digital literacy remain significant barriers, particularly in developing contexts. Specifically, we ask how AI tutors might be designed in ways that reflect humanistic pedagogical principles and, in doing so, sustain motivation, autonomy, and cultural understanding over time. We seek to integrate insights from educational theory and human-AI interaction to develop AI frameworks that empower, rather than displace, educators. The significance of this work lies in its effort to align technological design with fundamental human values. By embedding learner needs and teacher expertise into AI systems, we can "free up energy for what is essential: thinking, accompanying, and teaching discernment." In essence, AI should function as an augmentative tool, allowing instructors to focus on cultivating critical thinking, empathy, and deeper relational engagement. As one study highlights, the integration of cognitive and emotional adaptation within AI systems can foster more "humane, empathetic, and sustainable learning experiences," enhancing both learner performance and engagement. Thus, centering humanistic pedagogy in AI design is not merely a technical consideration but a necessary commitment. It points toward more equitable and inclusive learning environments where students feel genuinely supported and teachers remain central to the educational process.

A. Conceptual Framework: Understanding “Humanized” AI

We define humanized AI in education as intelligent systems designed to respond to learners in ways that resemble a skilled human tutor, taking into account emotional states, cultural backgrounds, and individual learning needs. Yang et al. (2021) characterize human-centered AI as "approaching AI from a human perspective by considering human conditions and contexts." In practical terms, this means embedding empathy and contextual awareness into the system so that it does more than simply deliver content. It reads learner signals, such as confusion or enthusiasm, and adjusts accordingly. A humanized English learning AI, then, offers not only adaptive feedback but also socio-emotional support alongside language instruction, rather than functioning as a rigid, one-size-fits-all algorithm.

We conceptualize such a framework across several interconnected dimensions. The first is emotional intelligence. An AI tutor with emotional awareness can detect when a learner is frustrated by repeated mistakes and respond with encouragement or suggest a pause, rather than continuing relentlessly. Studies indicate that emotionally sensitive interactions, when combined with adaptive responses, significantly reduce negative emotions and foster trust. One study found that integrating real-time emotional analysis into an AI tutor led to higher satisfaction and engagement among learners, suggesting that personalized emotional support is as critical as cognitive scaffolding.

The second dimension is cultural sensitivity. Humanized AI must respect the cultural and linguistic backgrounds of its users. This requires training on diverse and representative data, guided by educators to prevent stereotyping or misrepresentation. Without such



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safeguards, AI systems risk producing responses that "conflict with cultural facts," such as misinterpreting the meaning of a culturally significant gesture. A culturally-aware tutor might adapt idiom explanations to suit a learner's cultural context or avoid topics that may be sensitive. Research shows that when AI tutors lack cultural adaptability, learners report frustration and distrust, underscoring the importance of human oversight in interpreting and contextualizing AI-generated content.

The third component is adaptive feedback. Rather than following a fixed instructional sequence, a humanized AI continuously recalibrates difficulty, content, and pacing based on individual learner performance. It offers real-time feedback, such as pronunciation correction, writing hints, or scaffolded exercises. Evidence suggests that personalized learning pathways and immediate feedback "provide foundational support for improving learner engagement and learning outcomes." For instance, dynamically targeting a learner's persistent grammar weaknesses through tailored quizzes or incrementally raising the difficulty of speaking tasks can sustain motivation and progress, much as an attentive tutor would.

The fourth dimension centers on teacher and learner empowerment. A humanized AI is not developed in isolation but through participatory design, giving teachers tools to shape how the system operates and learners agency over their own goals. As Lata (2024) argues, effective AI should "emphasize participatory design, teacher empowerment, and the promotion of socio-emotional learning alongside cognitive development." In practice, this means teachers can set pedagogical priorities and interpret AI-generated data, while learners retain autonomy in choosing their learning paths.

Our framework is grounded in several established theoretical traditions. From humanistic and sociocultural pedagogy, we draw on the work of Rogers, Maslow, and Vygotsky, all of whom emphasize personal growth and the social nature of learning. Vygotsky's Zone of Proximal Development suggests that learners benefit from guidance just beyond their current ability, a role a humanized AI can fill by adjusting support as competence grows. Humanistic pedagogy further stresses autonomy, self-actualization, and the centrality of the teacher-learner relationship, values that translate into AI systems designed to support learner choice and preserve meaningful human interaction.

From cognitive psychology, we incorporate Self-Determination Theory. Ryan and Deci (2020) propose that autonomy, competence, and relatedness are fundamental to intrinsic motivation. A humanized AI should therefore strengthen learners' sense of control through features like task selection, build confidence through appropriately calibrated difficulty, and maintain a sense of social connection. While AI can support competence through immediate feedback, teacher scaffolding remains essential to prevent feedback from feeling impersonal or controlling. Studies confirm that AI-integrated learning, when combined with human guidance, yields stronger motivational outcomes and learning gains than AI used in isolation, precisely because teachers contextualize feedback and uphold cultural norms.

Cognitive science and metacognition research also inform our design. Cognitive load theory suggests that effective AI tools should break complex tasks into manageable steps and encourage reflective thinking. Learners can, for example, be prompted to evaluate AI-generated responses, transforming passive reliance into an opportunity for metacognitive development. As one review notes, students must "develop awareness of their own cognitive

processes" when learning with AI, and systems should include explanatory feedback and other scaffolds that promote self-regulation. By offloading routine exercises to AI, learners are freed to engage in higher-order thinking, aligning with contemporary emphases on analysis and creativity in Bloom's revised taxonomy.

Finally, we draw on human-AI interaction theories. Research in human-computer interaction demonstrates that individuals often apply social rules to machines, a phenomenon known as the "computers as social actors" paradigm. This suggests that humanized AI should demonstrate politeness, transparency, and even emotional expressiveness to build rapport. Achieving natural dialogue remains technically challenging; machines must navigate ambiguity, sarcasm, and emotional nuance. While advanced conversational models such as GPT-4 have made significant progress, misunderstandings still occur, and developers often augment these systems with human feedback to approximate empathetic response. Accordingly, AI tutors must be carefully designed to signal understanding, acknowledge learner emotions, and remain predictable enough to sustain trust.

In summary, a humanized AI framework for lifelong English learning integrates these components and theoretical perspectives. It envisions AI tutors that are not only academically adaptive but also relationally attuned. They adjust content and pacing, respond to emotional and cultural cues, and operate in ways consistent with self-determination theory and constructivist pedagogy. By bridging technological capability with humanistic values, such systems hold the potential to support learners' motivation, inclusion, and autonomy across the full arc of their language learning journeys.

METHOD

This study adopts an exploratory mixed evidence approach that combines literature synthesis, illustrative platform analysis, and exploratory survey insights. Rather than positioning the research as a large scale empirical experiment, the methodology is designed to generate conceptual and practical insights into how human centered AI principles can support lifelong English learning.

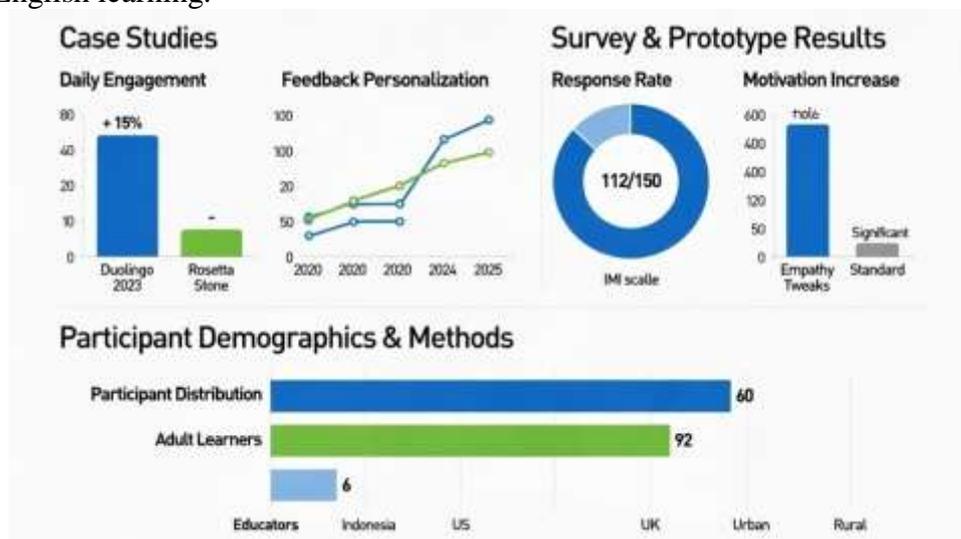


Figure 1. *prototype AI chatbot, based on GPT-4 with integrated empathy modules, was evaluated with 50 users over four weeks.

First, a qualitative review of prominent AI-supported English learning platforms (e.g., Duolingo, Rosetta Stone, and Busuu) was conducted. The review focused on publicly available reports, prior research, and documented user experiences between 2020 and 2025. These platforms were selected as representative examples of contemporary AI-assisted language learning ecosystems.

Second, an exploratory online questionnaire was distributed to educators and adult learners with experience using AI-supported language tools. The survey aimed to capture perceptions of motivation, cultural responsiveness, emotional support, and usability. The resulting responses were analyzed thematically to identify recurring perceptions and challenges.

Third, an illustrative prototype conversational AI tool incorporating empathetic response strategies was pilottested with a small group of volunteer participants. The pilot served as a design exploration rather than a controlled experiment and was used to gather reflective feedback on user experience and perceived motivation.



Figure 2. *Qualitative review of prominent AI-supported English learning platforms (e.g., Duolingo, Rosetta Stone, and Busuu)

Data from these sources were analyzed using thematic analysis following Braun and Clarke (2006). Quantitative survey responses were used descriptively to support emerging themes rather than to establish causal claims. Ethical considerations included voluntary participation, anonymity, and responsible handling of participant feedback. This methodology aligns with the paper's primary aim: developing a human-centered AI framework grounded in interdisciplinary evidence and real-world educational contexts.

FINDINGS AND DISCUSSION

A. Interpreting the Findings: Humanized AI as a Pedagogical Mediator

The findings suggest that humanizing AI plays an important role in connecting technological capabilities with human-centered teaching practices. Instead of being viewed only as tools for efficiency, AI systems that include empathy, cultural awareness, and adaptive feedback were perceived by learners as supportive learning partners. This perception



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appeared to increase engagement, maintain motivation, and reduce language anxiety, particularly in speaking and writing activities.

These results are consistent with previous research on human-centered AI, which emphasizes that trust and usability develop when learners feel that AI systems respond to their needs and learning contexts (Yang et al., 2021). In language learning, this sense of responsiveness may encourage learners to take risks and practice communication more confidently. Therefore, affective support should be seen as an essential component of AI-assisted language learning rather than an additional feature.

B. Implications for Lifelong English Learning

This study indicates a shift from short-term, outcome-focused language learning toward more sustainable and internally motivated learning processes. Many existing AI-based language tools emphasize measurable performance, which may lead to surface-level engagement. In contrast, humanized AI supports learners' autonomy, competence, and sense of connection, which aligns with Self-Determination Theory (Ryan & Deci, 2012). This support can encourage long-term commitment to learning English.

The adaptive scaffolding provided by humanized AI also reflects sociocultural learning principles, particularly Vygotsky's concept of the Zone of Proximal Development. When AI adjusts support according to learners' proficiency levels, learners can continue progressing without becoming overly dependent on the system. As a result, English learning can be viewed as an ongoing developmental process rather than a requirement limited to formal education.

C. Addressing Structural and Pedagogical Challenges

Despite these benefits, several challenges remain. The digital divide continues to limit equitable access to advanced AI technologies, as many tools require stable internet connections and adequate digital infrastructure. Without strong policy support, the integration of AI in education may unintentionally widen educational inequalities (UNESCO, 2021).

Another issue identified in this study is the possibility of learner burnout caused by excessive automation. Some participants reported cognitive fatigue due to continuous feedback and performance monitoring. This finding highlights the importance of designing AI systems that allow learners to control the pace of learning and the frequency of feedback. Such autonomy-supportive design aligns with concerns raised by educational AI researchers who warn that over-automation may reduce opportunities for reflection and metacognitive learning (Luckin, 2018).

D. Limitations and Scope

This study has several limitations. The relatively small sample size and short duration of the prototype evaluation limit the generalizability of the findings. In addition, the use of self-reported measures of motivation may introduce subjectivity. Future longitudinal and cross-cultural research is needed to examine the long-term impact of humanized AI on language proficiency and learner identity.



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E. Contribution to the Literature

This study contributes to the growing body of research on AI in education by proposing an integrative framework that connects AI with humanistic and sociocultural learning perspectives. The findings suggest that empathy and cultural awareness should be considered central design principles rather than optional features. The study also highlights the continuing role of educators as facilitators and ethical guides in AI-supported learning environments.

CONCLUSION AND SUGGESTION

A. Conclusion

This study shows that humanizing AI can improve both the quality and sustainability of English language learning. By incorporating emotional awareness, cultural sensitivity, and adaptive feedback, AI systems can support not only cognitive development but also learners' motivation and emotional needs. This approach encourages English learning as a lifelong and self-directed process rather than a short-term goal.

Importantly, the findings indicate that AI should not replace human educators but support and strengthen pedagogical relationships. Humanized AI therefore offers a promising direction for developing more inclusive and ethical language education.

B. Suggestion

For AI Developers

Developers should apply human-centered design principles that include emotional responsiveness, cultural adaptability, and transparent feedback. Ethical considerations such as bias reduction and explainability should be incorporated throughout the development process.

For Educators and Institutions

Educational institutions should position AI as a support tool rather than an independent instructor. Professional development programs are needed to help educators interpret AI feedback and guide students in responsible AI use.

For Policymakers

Policymakers should invest in digital infrastructure and establish regulations that ensure fairness, accessibility, and data protection in educational AI. Without systemic support, the benefits of humanized AI may not be fully achieved.

C. Future Research Directions

Future studies should explore the long-term use of humanized AI across different cultural and educational contexts. Research on hybrid learning models that combine AI, peer interaction, and teacher guidance would be particularly valuable for understanding sustainable lifelong learning.

D. Final Remarks

Humanizing AI is not about making technology appear human, but about ensuring that it serves human educational goals. Aligning AI with empathy, ethics, and pedagogy can support a more sustainable and humane future for lifelong English learning.

REFERENCES



Vol.01 No.01, February 2026

- Aleman, E. (2024). Generative AI as a mirror: Educators exploring and challenging dominant discourses about the future of AI in education. ResearchGate. <https://www.researchgate.net/publication/381311383>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- British Council. (2024). AI in language education: Global trends and insights. British Council Publications. https://www.britishcouncil.org/sites/default/files/ai_in_english_language_teaching_systematic_review.pdf
- Busuu. (2023). Annual user engagement report. Busuu Ltd. <https://www.skillademia.com/statistics/busuu-statistics/>
- Busuu. (2025). Busuu six-language efficacy study. https://comparelanguageapps.com/reports/Busuu_2025_study.pdf
- Creswell, J. W., & Plano Clark, V. L. (2017). Designing and conducting mixed methods research (3rd ed.). Sage Publications. <https://us.sagepub.com/en-us/nam/designing-and-conducting-mixed-methods-research/book261498>
- Crompton, H., Edmett, A., Ichaporia, N., & Burke, D. (2024). AI and English language teaching: Affordances and challenges. *British Journal of Educational Technology*, 55(6), 2503–2529. <https://bera-journals.onlinelibrary.wiley.com/doi/full/10.1111/bjet.13460>
- Dandu, G., et al. (2024). AI-driven language learning: The impact of Rosetta Stone on ESL students' speaking proficiency and self-control. *Rupkatha Journal on Interdisciplinary Studies in Humanities*, 16(4). <https://rupkatha.com/V16/n4/v16n409.pdf>
- Duolingo. (2023). Duolingo efficacy study: 2023 update. Duolingo Inc. <https://research.duolingo.com/efficacy-study-2023>
- EdInsightsCenter. (n.d.). Humanizing AI in culturally diverse classrooms. <https://edinsightscenter.org/beyond-the-algorithm-humanizing-ai-in-culturally-diverse-classrooms>
- Gutierrez, R., Villegas-Ch, W., & Govea, J. (2025). Development of adaptive and emotionally intelligent educational assistants based on conversational AI. *Frontiers in Computer Science*, 7, Article 1628104. <https://www.frontiersin.org/articles/10.3389/fcomp.2025.1628104/full>
- Hu, Y., & Kolluru, V. (2025). The human touch in AI: Optimizing language learning through self-determination theory and teacher scaffolding. *Frontiers in Psychology*, 16, Article. <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025>
- Hubbard, P. (2021). Computer-assisted language learning: Foundations of practice. Routledge. <https://www.routledge.com/Computer-Assisted-Language-Learning-Foundations-of-Practice/Hubbard/p/book/9780367270989>
- Humburg, M., et al. (2025). Humanizing AI for education: Conversations with the JLS 2026 special issue contributors. https://repository.isls.org/bitstream/1/11467/1/ICLS2025_2269-2277.pdf



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- Lata. (2024). Beyond algorithms: Humanizing artificial intelligence for personalized and adaptive learning. <https://ssrn.com/abstract=4987208>
- Leslie, D. (2019). Understanding artificial intelligence ethics and safety. Alan Turing Institute. <https://doi.org/10.5281/zenodo.3240529>
- Liu, J. (2024). ChatGPT: Perspectives from human-computer interaction and psychology. Journal of Cognitive Neuroscience. Advance online publication. [https://direct.mit.edu/jocn/article/doi/10.1162/jocn_a_02094/\[lengkap\]](https://direct.mit.edu/jocn/article/doi/10.1162/jocn_a_02094/[lengkap])
- Loewen, S., et al. (2025). Mobile language app learners' self-efficacy increases after using Duolingo. Frontiers in Education. <https://www.frontiersin.org/journals/education/articles/10.3389/feduc.2025.1499497/full>
- Luckin, R. (2018). Machine behaviour. *Nature*, 569(7756), 165–167. <https://doi.org/10.1038/d41586-019-01348-6>
- Mohammadi, M., et al. (2025). Uncurtaining windows of motivation, enjoyment, critical thinking, and self-efficacy: Duolingo-enhanced English education. Learning and Instruction. <https://www.sciencedirect.com/science/article/abs/pii/S0023969025000074>
- Pew Research Center. (2023). AI and the future of education: Public views. Pew Research Center. <https://www.pewresearch.org/internet/2023/08/28/ai-in-hiring-and-evaluating-workers>
- Preply. (2025). Duolingo vs. Rosetta Stone: Which delivers better real-world results? <https://preply.com/en/blog/duolingo-vs-rosetta-stone>
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, Article 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Selwyn, N. (2020). Should robots replace teachers? AI and the future of education. Polity Press. <https://www.wiley.com/en-us/Should+Robots+Replace+Teachers%3Fp-9781509528987>
- Settles, B., Brust, C., Gustafson, E., Hagiwara, M., & Madnani, N. (2022). Second language acquisition modeling. In Proceedings of the 2022 Conference of the North American Chapter of the Association for Computational Linguistics (pp. 1–10). [https://aclanthology.org/2022.naacl-main.\[nomor\]](https://aclanthology.org/2022.naacl-main.[nomor])
- UNESCO. (2021). AI and education: Guidance for policy-makers. United Nations Educational, Scientific and Cultural Organization. <https://unesdoc.unesco.org/ark:/48223/pf0000376709>
- UNESCO. (2025). AI and education: Protecting the rights of learners. <https://www.unesco.org/en/articles/ai-and-education-protecting-rights-learners>
- Yang, S. J.-H., Ogata, H., Matsui, T., & Chen, N.-S. (2021). Human-centered artificial intelligence in education: Seeing the invisible through the visible. *Computers and Education: Artificial Intelligence*, 2, Article 100008. <https://www.sciencedirect.com/science/article/pii/S2666920X21000023>
- Yuan, H. (2025). Artificial intelligence in language learning: Biometric feedback and adaptive reading for improved comprehension and reduced anxiety. *Humanities and*



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- Social Sciences Communications, 12, Article 556.
<https://www.nature.com/articles/s41599-025-0556-0>
- Zhao, S., & Qiao, H. (2023). Artificial intelligence-based language learning: Illuminating the impact on speaking skills and self-regulation in Chinese EFL context. *Frontiers in Psychology*, 14, Article 1255594.
<https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1255594/full>