



Developing theory on sustainable integration of GenAI in tertiary English language teaching: The triadic GenAI integration theory

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Abstract

Artificial Intelligence (AI) revolutionizes tertiary language education with innovations, cautions, and questions. It also raises significant ethical and pedagogical concerns that impact both educators and future professionals. This led to a decline in future professionals' critical thinking, creativity, and values. This study aims to develop a strategic framework that would describe the sustainable integration of GenAI in tertiary English language teaching. A deductive approach to theory development was utilized, where scholarly literature is the foundation for generating a theory. Secondary analysis was used to analyze the data collected from research studies and literature. The theory was developed based on the readings and discussion of the process of integrating GenAI into tertiary language education. Axioms were generated to come up with propositions. The following propositions are posed: 1) GenAI integration should be aligned with language proficiency; 2) The development of language skills should be alongside AI literacy; 3) core educational values and sustainability principles should guide GenAI integration. The propositions concluded that the strategic approach for sustainably integrating GenAI in tertiary English language education has three key elements: aligning AI tools with language proficiency levels, embedding AI literacy within the higher education curriculum, and ensuring implementation is guided by educational values and long-term sustainability. This framework, known as the Triadic GenAI Integration Theory, aims to guide teachers in effectively incorporating GenAI into their teaching practices while focusing on language learning objectives and ethical considerations of future professionals.

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INTRODUCTION

Artificial Intelligence (AI) revolutionizes tertiary English language education with innovations, cautions, and questions. This triad of aspects shapes the landscape of AI integration in English Language Teaching (ELT), including tertiary education. The innovation trends of AI in tertiary education are evident through adaptive learning systems and automated assessment (World Economic Forum, 2022). Generative AI (GenAI), a subset of AI, demonstrates innovative capabilities in analyzing students' language skills, providing personalized feedback, and adapting learning materials to individual needs. In Asia and the Philippines, AI integration in ELT has surged recently, driven by its benefits in improving student language skills and offering personalized learning experiences (Edmett et al., 2023). These innovations have led to critical changes in teaching and assessment practices, altering students' learning mindsets and teachers' roles (Lee et al., 2024; Gao et al., 2024). These key changes were commonly observed in tertiary education since students were introduced to several generative AI.

Despite the potential benefits, multinational organizations collectively caution about the need for ethical guidelines, policy frameworks, and capacity building. These cautions address issues such as data privacy, algorithmic bias, and the digital divide, aiming to ensure AI benefits all learners equitably (OECD, 2021; European Commission, 2023; UNESCO, 2021). AI-based assessment tools face technical, reliability, and sustainability challenges, particularly in multicultural contexts (Manggiasih et al., 2023; Saraswati & Yuliati, 2023). These concerns may affect humanity's sustainability in creativity, integrity, and other aspects. In which what college students need to strengthen as future professionals in their field.

The integration of AI in ELT raises sustainability questions, especially in tertiary education. How can educators navigate the dilemma between banning AI entirely or guiding its sustainable use (Prather et al., 2024)? What constitutes sustainable AI integration in ELT? How can existing frameworks like Technological, Pedagogical, and Content Knowledge (TPACK) (Mishra & Koehler, 2006), Substitution, Augmentation, Modification, and Redefinition (SAMR) (Puentedura, 2010), and value-sensitive design (Friedman & Kahn, 1990s) be adapted or extended to address the specific challenges of AI in language education? Moreover, given the Philippines' poor performance in international academic assessments and average performance in English proficiency tests (PISA, 2019; EF, 2022; IELTS, 2022), how can AI be leveraged to improve these outcomes?

The interplay of these innovations, cautions, and questions underscores the need to explain sustainable AI integration in ELT for tertiary education comprehensively. The researcher identified a theoretical gap in the prior research concerning AI integration. The existing theories like TPACK (Mishra & Koehler, 2006), SAMR (Puentedura, 2010), and value-sensitive design (Friedman & Kahn, 1990s) tend to focus only on how educators integrate technology in their classrooms; they often address technology, pedagogy, and human factors separately, and it does not encompass the needs for sustainability. Sustainability in education emphasizes the long-term viability of educational innovations, not just their adoption based on trends. If this is not addressed, teachers in tertiary education will be challenged in their integration of AI.

This study aims to develop a theory explaining how to sustainably integrate AI in tertiary language education. By addressing the innovations, heeding the cautions, and answering the pressing questions, this framework seeks to guide the sustainable integration of AI in ELT. Such an approach can help train more responsible and aware students, contributing to the sustainable development of humanity (Shenkoya & Kim, 2023). Thus, building quality education builds quality humans.

Literature review

Reviewing the existing theories in educational technology integration

The integration of Artificial Intelligence (AI) in higher education presents both opportunities and challenges, particularly in the context of English Language Teaching (ELT). While AI can enhance personalized learning and improve educational outcomes, it raises significant ethical and pedagogical concerns that impact educators and students. Some argue that the overreliance on AI could undermine the educational process, leading to a decline in critical thinking and creativity among students (Zaman et al., 2024). The ultimate focus of language courses in tertiary education is to improve future professionals' critical thinking, creativity, and values. This perspective emphasizes the need for a balanced approach that integrates AI while preserving essential human elements in

education. Integrating AI (as a new educational technology) in tertiary language education can be understood through these existing theories and frameworks.

The TPACK Framework (Mishra & Koehler, 2006) emphasizes the intersection of technology, pedagogy, and content knowledge, while the SAMR Model (Puentedura, 2010) describes levels of technology integration in education. Value-sensitive design (Friedman and Kahn, 1990s) and Human-Centered AI in Education focus on incorporating human values into technology design and implementation. However, these existing theories separately explain the concepts of technology, pedagogy, and human factors across different times. While they explain how educators integrate technology in their classrooms, the sustainability of its use is not explicitly discussed. The novel Triadic GenAI Integration Theory for ELT fills this gap by providing a strategic framework specifically tailored to the complexities of GenAI in tertiary language education.

To elaborate, the TPACK framework emphasizes the complex interplay between technological, pedagogical, and content knowledge, highlighting the importance of their integration for effective teaching with technology. The SAMR model provides a spectrum of technology integration, from mere substitution to redefinition of tasks, offering a roadmap for educators to enhance and transform learning experiences. Value-sensitive design and Human-Centered AI approaches prioritize ethical considerations, and user needs in developing and implementing AI technologies, ensuring that human values are not overlooked in pursuing technological advancement.

The Triadic GenAI Integration Theory attempts to synthesize the three critical elements: the alignment of AI tools with language proficiency levels, embedding AI literacy within the curriculum, and implementing GenAI guided by core educational values and sustainability principles. By interweaving these components, the theory offers a perspective on sustainable AI integration in ELT, addressing the technological and pedagogical aspects and the ethical and long-term implications of GenAI use. This holistic approach ensures that the integration of GenAI in ELT is not merely a trend-driven adoption but a sustainable, ethically sound, and pedagogically effective practice that enhances language learning while preparing students for an AI-integrated future. The theory thus extends beyond the scope of existing frameworks, offering a tailored solution to the specific challenges and opportunities presented by GenAI in language education.

METHODS

This study employed the deductive axiomatic approach in theory development (Padua, 2012) to formulate the Triadic GenAI Integration Theory. The deductive approach begins with general ideas and progresses to specific conclusions (Gilgun, 2019). Bayne (2018) characterizes this as top-down thinking, typically starting with axioms. These axioms are primitive assumptions or propositions (Delaram & Valilai, 2018).

As Marciszewski (1981) explains, axioms are postulates or fundamental theorems. They are statements accepted in the theory without demonstration from other statements within the theory (Lehrer, 2018). These axioms are then processed and assimilated into propositions (Zhang et al., 2019). Propositions are the products derived from different axioms. These propositions are then tested using appropriate methods and, when accepted, form the basis for theory formulation (Zalaghi & Khazaei, 2016).

In this study, the Triadic GenAI Integration Theory was formulated using the deductive axiomatic approach, adapting the steps for generating a theory outlined by Padua (2012). The first step in formulating this theory using the deductive axiomatic approach was selecting the phenomenon of interest. This crucial step focuses on theory development, potentially encompassing various underlying ideas (George, 2019). For this study, the chosen phenomenon was the sustainable integration of Generative AI (GenAI) in tertiary language teaching.

After identifying the focus, the next vital step was an extensive review of relevant literature (Selden, 2016). This review explored various aspects of AI in education, GenAI applications in tertiary language education, and the challenges and opportunities presented by these technologies in ELT contexts. The literature review helped to explicitly discuss the phenomenon, elaborating on its substance and comprehensively detailing its various aspects (Bennett & Royle, 2016). This process broadened the knowledge base, contextualizing the nature and importance of the theory being developed. It facilitated the identification of gaps and potential solutions, strengthening the foundation for formulating axioms and propositions (Mintzberg, 2017).

The brainstorming phase involved eliciting pertinent information, connecting ideas, and presenting different perspectives on GenAI integration in ELT. The researcher brainstormed with students, colleagues, and professors. This process highlighted various factors that generate axioms and propositions (Paulus & Kenworthy, 2019). It promoted the coherence and cohesiveness of information to develop the theory (Henningsen & Henningsen, 2018). This stage was vital in convergently aligning facts and related articles to exemplify the importance of sustainable GenAI integration in ELT (Seeber et al., 2017).

After gathering and analyzing related literature and studies, elaborating on their significance, and aligning these facts and ideas, axioms and propositions were formulated (Prasad et al., 2018). This phase was essential in theory development. Axioms, as fundamental theorems and primitive assumptions governed the propositions, while propositions were statements resulting from the axioms (Novikov, 2011). This study discussed five axioms: proficiency levels, AI existence in language education, AI literacy, sustainability, and core values.

The final step in developing the theory using the deductive axiomatic approach was the alignment of all propositions to identify and conclude the theory (Stergiou & Airey, 2018). The resulting Triadic GenAI Integration Theory comprises interrelated facts, ideas, propositions, concepts, and definitions. It presents a systematic view for predicting and explaining the strategic framework for sustainable GenAI integration in ELT (Kivunja, 2018).

FINDINGS AND DISCUSSION

The literature review focuses on developing hypotheses that serve as the basis for the propositions of the paper. The literature and studies cited are arranged to support the hypotheses and strengthen its proposal. The literature and study review were captured from technology-related, AI, ELT, and Sustainability-related literature and studies. The readings and discussions about developing a strategic framework for sustainable integration of Generative AI (GenAI) in English Language Teaching (ELT) were used to build the theory, as shown in Table 1.

Table 1. Propositional structure from axiomatic extractions

Axioms	Propositions	Theory
Axiom 1. In language education, language proficiency has levels	Proposition 1. GenAI integration should be aligned with language proficiency.	This strategic approach for sustainably integrating Generative AI (GenAI) in Tertiary Language Teaching has three key elements: (1.) aligning AI tools with language proficiency levels, (2.) embedding AI literacy within the curriculum, and (3.) ensuring implementation is guided by educational values and long-term sustainability. This framework aims to guide teachers in tertiary education effectively incorporate GenAI into their teaching practices while maintaining focus on language learning objectives and ethical considerations. (The Triadic GenAI Integration Theory)
Axiom 2. AI is now used in language education		
Axiom 3. In language education, AI literacy is needed for appropriate and sustainable use of AI		
	Proposition 2. The development of language skills should be alongside AI literacy.	
Axiom 4. AI sustainability means improving the present while preserving the future of humanity	Proposition 3. GenAI integration should be guided by core educational values and sustainability principles.	
Axiom 5. For human sustainability, core values are fundamental beliefs and guiding principles		

Axioms

Language proficiency is not a binary concept of "proficient" or "not proficient" but rather a continuum of skills and abilities that can be categorized into distinct levels. The Common European Framework of Reference for Languages (CEFR) is one of the most widely recognized systems for describing language proficiency levels. It outlines six primary levels of language proficiency: A1 (Breakthrough), A2 (Waystage), B1 (Threshold), B2 (Vantage), C1 (Effective Operational Proficiency), and C2 (Mastery) (Council of Europe, 2001). These levels range from essential ability to near-native fluency, providing a comprehensive framework for assessing and describing language

skills. In language education, these levels serve as guideposts for curriculum design, allowing educators to create targeted learning experiences that build upon each other progressively (Richards, 2015).

Each level in the CEFR is characterized by specific "can-do" statements that describe what a learner should be able to accomplish in reading, writing, speaking, and listening at that stage. For example, at the A1 level, a learner can understand and use familiar everyday expressions and essential phrases. In contrast, at the C2 level, a learner can easily understand virtually everything heard or read (Cambridge et al., 2013). This gradual progression allows for an understanding of language development and enables educators and learners to set realistic goals and track progress more effectively. In addition to the CEFR, other international testing systems provide standardized language proficiency assessments. For English, these include the Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS), and the Cambridge English Qualifications. Each system has its scoring method, but they often provide correlation tables to CEFR levels for ease of interpretation (Cambridge et al., 2013; IELTS, 2019).

Other frameworks for describing language proficiency levels exist as well, such as the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency Guidelines, which describe language abilities on a scale from Novice to Distinguished across five primary skills: speaking, writing, listening, reading, and intercultural communication (ACTFL, 2012). These various frameworks and testing systems highlight the complexity of language acquisition and the importance of recognizing different stages of proficiency. By acknowledging these levels and utilizing standardized assessment tools, language educators can better tailor their instruction to meet the needs of learners at different stages of language development. Hence, **axiom number 1 is: "In language education, language proficiency has levels."**

The constant evolution of language education is evident in the rapid development and adoption of Generative AI (GenAI) tools for developing language proficiency. GenAI is here to stay in education (UNESCO; Yang, 2022; Saraswati et al., 2023; Manggiasih et al., 2023). This permanence is reflected in studies across different Asian contexts, including Indonesia (Sumakul et al., 2022), Korea (Kim, 2023), and China (Lee et al., 2024; Gao et al., 2024). The AI tools range from chatbots and AI-powered apps to writing assistants and language translation tools, commonly focusing on productive skills. Kuki Chatbots (Yang, 2022) and AI Replika (Saraswati et al., 2023) are AI-powered chatbots that allow learners to practice conversation and enhance their speaking abilities. SmallTalk2Me (Manggiasih et al., 2023) offers a platform for practicing and assessing speaking skills. Elsa (Sumakul et al., 2022) focuses on comprehending and providing feedback on spoken utterances to help learners refine their pronunciation and fluency.

When it comes to teaching and assessing writing skills, there are machine translation tools such as Google Translate (Kim, 2023; Zulfa et al., 2023; Lee et al., 2024) and Naver Papago (Kim, 2023; Lee et al., 2024) that assist learners in translating text between languages. Grammarly (Kim, 2023; Zulfa et al., 2023; Lee et al., 2024) offers a comprehensive approach to writing assistance by providing suggestions for grammar, spelling, and punctuation. Quillbot (Marzuki et al., 2023; Zulfa et al., 2023) focuses on paraphrasing to help learners express ideas in alternative ways. WordTune (Marzuki et al., 2023) and Jenni (Marzuki et al., 2023) offer AI-powered assistance in improving clarity, conciseness, and style. ChatGPT (Marzuki et al., 2023; Pham et al., 2024), Paperpal (Marzuki et al., 2023), Copy.ai (Marzuki et al., 2023), and Essay Writer (Marzuki et al., 2023) generate human-like text and assist users in creating various types of content. ChatGPT (Nguyen & Tran, 2023; Zulfa et al., 2023; Nugroho et al., 2023; Gao et al., 2024), an AI-powered language model, can generate human-like text and assist with a wide range of writing tasks. DeepL (Zulfa et al., 2023) provides machine translations for multiple languages. These AI technologies, particularly in language education, are not just passing trends but integral parts of the educational landscape that will continue to evolve. Hence, axiom number 2 states that "AI is now used in language education."

The rapid integration of Artificial Intelligence (AI) into various aspects of daily life has led to a growing recognition of the importance of AI literacy. As AI systems become more prevalent and sophisticated, users must understand and critically engage with these technologies. AI literacy is a set of competencies that enables individuals to evaluate AI technologies critically and collaborate effectively at home and in the workplace (Long & Magerko, 2020). This definition underscores the multifaceted nature of AI literacy, emphasizing the ability to use AI tools, evaluate them critically, and interact with them effectively across various contexts.

The potential consequences of its absence further highlight the importance of AI literacy. Lack of AI literacy can lead to a digital divide and the exclusion of essential aspects of modern society. Moreover,

Yi (2021) expanded the definition of AI literacy, stating that it enables people to recognize changing cultures and design their lives in the AI era. This perspective aligns with the OECD Learning Framework 2030, which stresses the importance of anticipation and metacognition in navigating an uncertain future shaped by rapid technological advancements such as the AI phenomenon (Taguma et al., 2018).

The ethical implications of AI use further underscore the necessity of AI literacy. Kajiwaru and Kawabata (2024) discuss the importance of understanding AI ethics, highlighting principles such as beneficence, non-maleficence, justice and fairness, explainability and responsibility, and autonomy. These ethical considerations are crucial for users to responsibly and sustainably use AI. As AI systems become more integrated into society, users with AI literacy will be better equipped to recognize potential biases, protect their privacy, and make informed decisions about AI use. Thus, as AI continues to shape our world, developing AI literacy becomes not just a matter of technological proficiency but a fundamental requirement for effective and responsible citizenship in an AI-driven society. Hence, axiom number 3 states, "In language education, AI literacy is needed for appropriate and sustainable use of AI."

Sustainable AI integration has emerged as a crucial technological advancement and concept for sustainable development. This approach aims to harness AI's potential to enhance current conditions while safeguarding against potential negative consequences for future generations. Sustainable development is imperative at this time, with education playing a vital role in promoting sustainable lifestyles and acquiring the necessary skills for leading sustainable lives (Steffen et al., 2015; Figueres et al., 2017; Ripple et al., 2017). AI can assist in understanding complex environmental issues, predicting climate change, and developing solutions for sustainable living. In this context, AI integration in education must align with broader sustainability goals, ensuring that technological advancements contribute positively to societal progress without compromising future well-being. The sustainable integration of AI extends beyond mere technological implementation, encompassing ecological, social, and economic dimensions of sustainability (Elkington, 2004; Larivière & Smit, 2022).

Sustainable integration is a holistic approach that requires a careful balance between harnessing AI's potential for innovation and growth while mitigating its potential negative impacts. Pedro et al. (2019) highlight that using AI to improve learning outcomes and educational equity in the academic sector is crucial. For instance, AI can personalize learning, support students with learning difficulties, and ensure equal access to educational resources. This dual focus exemplifies the essence of sustainable AI integration, which aligns with the World Commission on Environment and Development's (1987) definition of sustainability as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

However, achieving sustainable AI integration presents several challenges. Tanveer et al. (2020) emphasize the need for AI to act logically and ethically, pointing out the difficulties in achieving this goal. This means developing AI systems that improve current conditions and align with ethical standards and long-term sustainability objectives. Furthermore, Pedro et al. (2019) identify six critical challenges in sustainable AI integration, including ensuring inclusion and equity, preparing teachers for AI-powered education, developing quality data systems, and addressing ethical concerns related to data collection, use, and dissemination. Addressing these challenges is crucial for ensuring that AI integration improves current conditions without creating new problems or exacerbating existing ones for future generations, thus embodying the true essence of sustainable AI integration in line with the three pillars of sustainability: planet, people, and profit (Elkington, 2004; Larivière & Smit, 2022). Hence, axiom number 4 is "AI sustainability means improving the present while preserving the future of humanity."

Considering the emergence of new technology and literacies, the current world is volatile, uncertain, complex, and ambiguous (VUCA). People consistently act upon fundamental values to guide their actions and decisions in times of change. These core values serve as reference points, helping people to navigate complex situations (Kramer, 2011). This further explains that technologies are not value-neutral and seek to proactively consider and incorporate critical human values such as privacy, autonomy, and fairness into the design of technological systems (Friedman and Kahn, 1990s). Doing so aims to create technologies more aligned with human values and societal needs.

Tambuskar (2022) emphasized the need for value-driven approaches to AI integration in education. Ronanki et al. (2023) proposed frameworks for ethical AI use in educational contexts. Tanveer et al. (2020) explored how core educational values can guide the sustainable implementation of AI in language teaching and assessment. Hence, axiom number 5 states, "For human sustainability, core values are fundamental beliefs and guiding principles."

Development of propositions

Proposition no. 1: GenAI integration should be aligned with language proficiency

Language proficiency is not a binary state but a continuum of skills that can be categorized into distinct levels. Recognized frameworks like the Common European Framework of Reference for Languages (CEFR) and the American Council on the Teaching of Foreign Languages (ACTFL) Proficiency Guidelines provide comprehensive systems for describing and assessing language abilities across various skills. These frameworks are essential guideposts for curriculum design and learner assessment in language education (Axiom 1).

In recent years, Generative AI has emerged as a powerful tool in language education, offering a wide range of applications from conversational practice to writing assistance. These AI technologies have become integral to the educational landscape, supporting productive and receptive language skills. These tools present new opportunities for enhancing language learning experiences as they evolve (Axiom 2).

The integration of Generative AI in language education should be strategically aligned with established language proficiency frameworks. This alignment ensures that AI tools are appropriately leveraged to support learners at different proficiency levels, from beginner to advanced. By matching GenAI applications to specific language skills and proficiency stages, educators can create more targeted learning experiences. This approach suggests that the complementary use of AI alongside traditional language acquisition methods optimizes learner progress through the established proficiency levels. In addition, language proficiency is necessary for students as they leverage and use AI properly. With that, teachers should be able to match the language proficiency to the GenAI students will be using.

Proposition no. 2: The development of language skills should be alongside AI literacy

Language proficiency frameworks like CEFR and ACTFL provide a structured approach to understanding and assessing language skills across various levels (Axiom 1). The integration of AI tools in language learning has become widespread, offering diverse applications for skill development (Axiom 2). AI is becoming more prevalent in language education, so it is crucial to develop AI literacy concurrently with language skills (Axiom 3).

Developing AI literacy alongside language skills ensures that learners not only progress in their language proficiency but also gain the ability to critically evaluate and effectively use AI tools in their learning process. This dual focus prepares students for a world where AI increasingly integrates into language use and learning contexts.

By aligning AI literacy development with language proficiency levels, educators can create a comprehensive curriculum that addresses both traditional language skills and the competencies needed to navigate AI-enhanced language environments. This approach suggests that linguistically proficient learners, technologically savvy and ethically aware of their AI use, can navigate human and AI-assisted language environments.

Proposition no. 3: GenAI integration should be guided by core educational values and sustainability principles

In the volatile, uncertain, complex, and ambiguous (VUCA) world of emerging technologies, core educational values serve as essential guideposts for decision-making and action. These values help navigate the complexities of integrating GenAI into education, ensuring that technological advancements align with fundamental human and educational principles (Axiom 5).

AI sustainability improves the present while preserving the future. Sustainable AI integration in education aims to enhance current learning conditions while safeguarding the interests of future generations. This approach balances the potential of GenAI for innovation and improved learning outcomes with the need to mitigate potential negative impacts across ecological, social, and economic dimensions (Axiom 4).

Ensuring GenAI integration is guided by core educational values and sustainability principles involves a holistic approach that considers both immediate benefits and long-term consequences. This integration should improve learning outcomes, promote educational equity, and support personalized learning experiences while addressing ethical concerns, ensuring inclusivity, and preparing educators for AI-powered education. By aligning GenAI implementation with these values and principles, we can create an educational environment that leverages technology to enhance learning while upholding ethical standards and promoting sustainable development in education.

The triadic GenAI integration theory

The axioms and propositions led to the development of the Triadic GenAI Integration Theory for ELT, which posits that a strategic approach for sustainably integrating Generative AI (GenAI) in English Language Teaching (ELT) emphasizes three key elements: aligning AI tools with language proficiency levels, embedding AI literacy within the curriculum, and ensuring implementation is guided by educational values and long-term sustainability. By balancing these aspects, the framework aims to help teachers effectively incorporate GenAI into their teaching practices while focusing on language learning objectives and ethical considerations.

The Triadic GenAI Integration Theory for ELT presents a comprehensive framework for incorporating Generative AI into English Language Teaching. This theory consists of three interconnected components, each addressing a crucial aspect of AI integration in language education.

As English language teachers navigate today's rapidly evolving educational landscape, they are likely encountering the growing influence of Generative AI (GenAI) in their field. This theory aims to help them integrate GenAI into their teaching practice using the Triadic GenAI Integration Theory for ELT. This approach offers a balanced, effective, and sustainable way to incorporate AI into their English Language Teaching.

The first key component of this approach is aligning AI tools with students' language proficiency levels. This involves carefully matching AI resources to the specific CEFR levels of learners. For instance, teachers might use more straightforward AI-generated texts for students at A1-A2 levels, gradually increasing complexity for B2-C1 levels. To implement this effectively, teachers should assess their students' proficiency and then research and select AI tools that cater to these specific levels. The goal is to integrate AI activities that complement the existing curriculum, enhancing rather than replacing carefully crafted lessons.

The second component is embedding AI literacy within the curriculum. In an increasingly AI-driven world, it is crucial that students not only use AI tools but also understand and critically evaluate them. This involves introducing AI concepts alongside language lessons and developing activities encouraging critical thinking about AI-generated content. For example, teachers might have students compare AI-generated and human-written texts, discussing the differences and potential biases. Addressing the ethical considerations of AI use in language learning is vital to helping students become responsible digital citizens.

The third component of this approach is ensuring that the implementation of AI is value-driven and sustainable. This means reflecting on how AI aligns with the teaching philosophy and considering its long-term impact on language acquisition. Teachers should regularly assess how AI affects their students' learning outcomes and maintain a balance between AI-assisted and traditional teaching methods. The goal is to use GenAI to enhance teaching, not to replace expertise or the invaluable human interaction in language learning.

To achieve sustainable GenAI integration in their ELT classroom, teachers should assess students' proficiency levels and select appropriate AI tools. They should gradually introduce AI literacy concepts, encouraging critical thinking about AI-generated content. Continuously evaluating how the use of AI aligns with educational values and its long-term impact on learning is crucial. This balanced approach will help create a rich, innovative learning environment that prepares students for a future where AI and language skills are increasingly intertwined.

At the center of this triadic model is the goal: Sustainable GenAI Integration in ELT for Teachers. This central positioning indicates that all three components must work harmoniously to achieve a balanced, effective, and sustainable approach to integrating GenAI into English Language Teaching. By simultaneously addressing proficiency alignment, AI literacy, and value-driven implementation, this theory provides a comprehensive framework for teachers and educational institutions to implement GenAI in ELT responsibly and effectively.

The diagram (see below) illustrates the Triadic GenAI Integration Theory for ELT, presented as a triangle with three key components. At the triangle's apex is "English Proficiency and AI Integration Alignment," which emphasizes the importance of matching GenAI tools to CEFR levels and integrating these tools to support specific language skills. This component forms the foundation of the theory, suggesting that AI integration should be tailored to students' proficiency levels.

The triangle's left side represents the "AI Literacy-Embedded Curriculum" component. This aspect focuses on teaching AI literacy and promoting the ethical use of GenAI in language learning. It highlights the importance of using AI tools and understanding their implications in the educational context.

English Proficiency and AI Integration Alignment

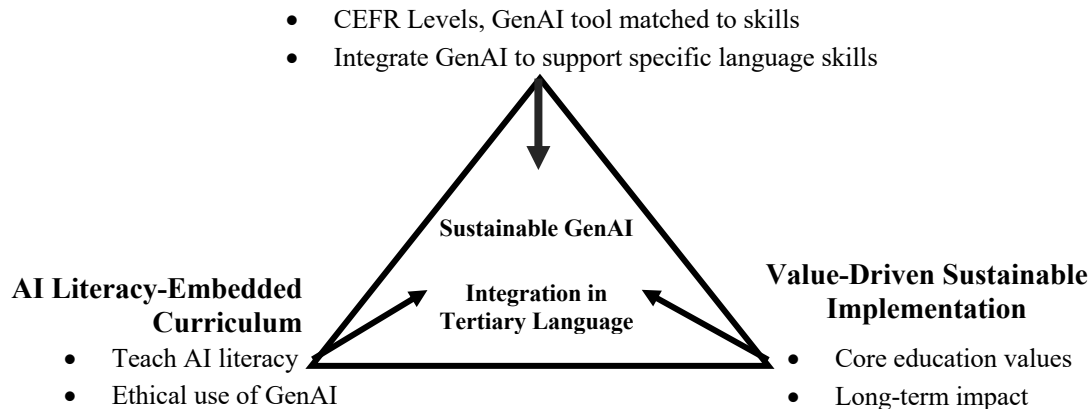


Figure 1. The triadic GenAI integration theory

The right side of the triangle depicts "Value-Driven Sustainable Implementation," which stresses the need to align AI integration with core educational values and conduct long-term impact assessments. This component ensures that the use of AI in language teaching is grounded in educational principles and considers its long-term effects.

The main goal is at the center of the triangle: "Sustainable GenAI Integration in ELT for Teachers." Arrows point from each of the three components towards this central objective, indicating that all three aspects contribute equally to achieving sustainable integration of Generative AI in English Language Teaching.

The triangular shape of the diagram effectively visualizes how these different components are interconnected and balanced, suggesting a strategic framework for successful and sustainable AI integration in language education. This visual representation underscores the holistic approach required for integrating GenAI into ELT, emphasizing the equal importance of proficiency alignment, AI literacy, and value-driven implementation in achieving sustainable outcomes.

CONCLUSION

Developing the Triadic GenAI Integration Theory can provide a strategic integration of Generative AI in tertiary language teaching. This theory, grounded in an extensive literature review and deductive axiomatic approach, addresses the complex interplay of technology, pedagogy, and ethics in language education. By emphasizing three key components - aligning AI tools with language proficiency levels, embedding AI literacy within the curriculum, and ensuring value-driven sustainable implementation - the theory provides a balanced and holistic approach to GenAI integration. This framework acknowledges AI's transformative potential in enhancing language learning experiences and addresses critical concerns regarding ethical use, sustainability, and preserving core educational values. As English educators navigate the rapidly evolving landscape of AI in education, this theory offers a valuable guide for creating innovative, responsible, and effective English language teaching practices. Researchers may conduct validation studies to improve and confirm the theory. These studies may focus on the three propositions in the theory.

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