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Learner-generated contexts in the elementary EFL classroom: A GenAI-assisted framework

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Abstract

Focus on the development of autonomous learning capacities among elementary English as a Foreign Language (EFL) learners highlights the need for systematic inquiry into effective pedagogical approaches. This paper proposes a conceptual framework to integrate Learner-Generated Contexts (LGC) and generative AI (GenAI) to bridge this gap by promoting self-directed learning within collaborative environments through structured scaffolding. Grounded in heutagogy and obuchenie models, the framework emphasizes student agency and socially constructed knowledge. Students, within the framework, co-create learning contexts, while GenAI provides adaptive scaffolding and content generation that align with digital literacy standards. The framework comprises four components: (1) Learner autonomy and agency, (2) Teacher-guided scaffolded learning, (3) Cultivation of a collaborative learning environment, and (4) Assessment and evaluation. The proposed framework could empower elementary EFL learners to navigate digital and collaborative contexts confidently; it may also serve as a guideline for elementary school instructors to promote student collaboration and learning autonomy through LGC-based approaches.

Keywords: *Elementary classroom, English as a foreign language (EFL), generative AI (GenAI), learner-generated contexts (LGC)*

INTRODUCTION

The rapid development of society has given rise to new educational perspectives that are reshaping both teaching and learning practices. One aspect of education that has seen significant growth in recent years is the focus on heutagogy. Defined as self-directed learning, heutagogy is associated with learner agency and learning how to learn (Blaschke & Hase, 2019). It emphasizes the development of skills such as critical thinking, adaptability, and independent problem-solving, empowering learners to take full control of their educational journey. Emerging from the principles of heutagogy, Learner-Generated Contexts (LGCs) empower EFL students to co-construct the learning environment by contributing to the learning process, usually by means of collaboration and technology (Luckin et al., 2011). To elaborate, LGCs encourage learners to design meaningful learning contexts tailored to their interests and needs. To achieve this purpose, students are driven to generate contents through prior knowledge or technology, initiate tasks aligned with their learning goals, and interact with peers, resulting in deeper cognitive engagement. In EFL settings, LGC implementation encourages the adaptation of authentic materials using the target language, negotiation of meaning, and collaborative knowledge-building (Lee, et al., 2022). For example, students may share their experiences in learning with others, while simultaneously learning from others' experiences. Therefore, students alternate between the roles of knowledge constructors and learners, simultaneously learning as well as sharing knowledge in the context, therefore embodying both student and teacher identities within the learning dynamic.

Within the LGC framework, the integration of technology serves as a foundational component, and emerging technology holds potentials to augment pedagogical efficacy. The adoption of Generative AI (GenAI) in place of conventional technology under the LGC approach is expected to optimize learning outcomes through personalized and human-like support. Studies on utilizing the algorithm in education have found that it is capable of producing dynamic responses that can adapt to individual learning needs (Joo, 2024), making it an asset in pedagogical practices. The casual interaction and real-time communication offered by GenAI lead to improved linguistic performance and allow deeper understanding and retention of linguistic knowledge (Du & Daniel, 2024). Empirical studies in both elementary and higher education have also highlighted the effectiveness of GenAI in promoting self-regulated language learning, as the adaptive nature of these conversational agents allows learners to pace their learning process and backtrack on linguistic knowledge if necessary (Campos, 2025; Kong et al., 2024; Yuan, 2024). Finally, the interactive nature of GenAI facilitates the co-construction of learning content and activity (Cress & Kimmerle, 2023), and allows learners to play an active role in shaping contexts, which aligns with the LGC framework. These affordances make GenAI a pedagogically sound, supportive technology for implementing LGC in education.

In the elementary school context, LGC-based frameworks empower young learners to take an active role in directing their own learning processes by encouraging them to plan and implement strategies to acquire different aspects of knowledge (e.g., vocabulary, grammar). Through participation, students engage in knowledge construction and develop collaborative competencies such as shared decision-making and joint problem-solving (Peng et al., 2019). These hands-on experiences foster a sense of collective responsibility, enabling learners to achieve shared goals through coordinated effort. LGC-based frameworks in the elementary school classroom have been found to enhance learners' intrinsic motivation and learning autonomy, supporting both learning motivation and performance within the classroom context (Tasdelen & Bodemer, 2025; Ramas, et al., 2024). By cultivating abilities such as peer collaboration and decision-making – which can be achieved through LGC – from a young age, learners will be better equipped to learn more effectively and autonomously as they mature. However, a significant gap persists in the practical

application of this approach: existing LGC models are largely conceptual or designed for older learners with greater metacognitive and learning autonomy, leaving a void in age-appropriate frameworks for younger classrooms (Lee et al., 2023; Ramas, et al., 2024), particularly elementary school classrooms. Existing research on learner-generated content (LGC) in elementary classrooms largely adopts teacher-guided approaches, which deviates from the core concept of LGC that emphasizes student agency and autonomy (Wong, 2013). For scholars and educators at the elementary school level, the integration of an LBC approach in EFL instruction necessitates careful consideration of multiple contextual and pedagogical factors (Chan et al., 2019), particularly given the limited number of existing case studies available for reference. Elementary school learners require more structured scaffolding to navigate the open-ended nature of knowledge creation without being overwhelmed.

To summarize, in consideration of the developmental needs of younger learners, and to fill the gap in integrating LGC-based approaches into younger classrooms, an LGC-based model integrating scaffolding strategies and supportive technologies is essential to make EFL learning both accessible and effective in an elementary school setting. Therefore, the proposed LGC-based elementary EFL framework is constructed on previous literature in LGC (Luckin et al., 2011; Luckin, 2010; Cook, 2010), GenAI (Wang & Fan, 2025; Wang et al., 2024; Hiniz, 2024; Zhou, 2023), and elementary EFL learning (Yuan, 2024; Hastuti, 2020; Chan, 2019; Wong, 2013). To reap the benefits of the LGC approach while maintaining an effective and organized learning experience, consideration must be given to instructional scaffolding and the adoption of innovative technologies (Pan & Chen, 2021). With reasonable assistance from teachers and technology, personalized support can be provided, ensuring that learners progress at their own pace while staying engaged and motivated. On the basis of the core concepts of LGC and the development stages of younger students, teacher instruction and GenAI platforms are suggested, providing applicable approaches to integrate LGC-based instruction in elementary EFL classrooms. It is expected that the proposed framework may serve as a guideline for elementary school instructors to follow when implementing LGC-based approaches integrated with GenAI in the classroom to promote student collaboration and learning autonomy.

Theoretical foundations

Learner-generated context (LGC)

The concept of an LGC originates from the interactive properties accelerated by the development of technology, through which users access resources and create output to expand these resources. This concept gave rise to the proposition that educational settings function as a dynamic, "learner-centric ecology of resources" (Luckin et al., 2011, p.72). An LGC is established when individuals or groups actively coordinate available resources to construct a tailored learning environment that addresses their specific needs. Drawing on values advocated by the pedagogy-andragogy-heutagogy (PAH) continuum and the obuchenie model, LGC-based frameworks describe learners as both the consumer and creator of knowledge. In this context, the learner plays an active role in collaborating to shape goals, determine learning contents, and execute learning tasks through the effective use of technology or reference texts while sharing and acquiring knowledge in the process.

The PAH continuum is represented by a continuum of pedagogy, andragogy, and heutagogy, where the teacher gradually develops learning skills in the student (Blaschke, 2012). In pedagogy, the educator assumes primary responsibility for determining both learning objectives and methodology, reflecting a teacher-centric paradigm. In andragogy, partial agency shifts to the learner, who directs the process and application of knowledge while the instructor establishes the broad framework. In heutagogy, learners define learning

goals and methods, epitomizing self-regulated and emergent learning. The LGC framework benefits from the heutagogy approach in that learners are empowered to make decisions in determining not only the content but also the context in which learning occurs (Luckin et al., 2011). As a result, learners appraise the epistemological construction of learning contents and recognize the importance of social collaboration in creating learning contexts. As another foundation of LGC, the obuchenie model integrates sociocultural learning theories (LeBlanc & Bearison, 2004), with the dynamic interplay between instruction and development, highlighting the co-construction of knowledge. This model emphasizes the dialectical unity of teaching and learning, in which knowledge is enhanced through interaction between the teacher and learner, resulting in mutual cognitive growth (Leblanc & Bearison, 2004). Therefore, the systematic interaction between teacher and learner is conditioned so that both sides benefit from the learning process and become co-learners. In an LGC, the obuchenie model is reflected in the way students take on the roles of both 'teacher' and 'learner', with the two roles are coexisting rather than functioning in an inversely proportional manner within collaborative learning. Therefore, students acquire knowledge while contributing to the learning environment, actively shaping the context through continuous interaction.

In an LGC, learners draw from and contribute to learner-centric resources, including the subject or knowledge that is learned, the social and physical environment where learning occurs, and both human and inanimate resources with which the learner interacts to access information. To achieve this objective, careful consideration must be given to the design of the technology, the provision of personalized support, and the availability of resources to ensure smooth implementation (Lee et al., 2022). Various technology platforms should be introduced so as to enable students to decide their learning contents and goals with greater flexibility (Fisch, 2013). These resources should be diverse not only in the breadth and depth of knowledge they offer but also in their form of representation, enabling students to engage in both input and output-oriented learning opportunities. Subsequently, it is important to assist learners in selecting appropriate learning methods tailored to their specific learning preferences and requirements (Singh & Sisodia, 2024). Finally, in LGC classrooms where individualized instruction is limited, intelligent agents such as GenAI should be facilitated to provide immediate feedback and offer guidance to learners. Based on learners' technological proficiency and self-regulatory capabilities, educators aiming to foster an LGC-based environment must provide appropriate instructional and technological support to fully reap its benefits.

Generative AI in education

The rise of artificial intelligence (AI) has brought about significant change in the mechanisms of teaching and learning (Wang et al. 2024, Seo et al., 2021). Since the introduction of AI, educators have profited from intelligent decision-making frameworks that adjust instructional scaffolds to optimize learning experiences (Castro-Schez et al., 2021). Built on structured databases, rule-based AI has proven to be advantageous in supporting students through systematic learning tasks (e.g., drills, scaffolded sequences), thereby promoting differentiated learning and improving learning outcomes in student engagement and retention (Lin et al., 2023). Furthermore, with the emergence of GenAI, AI in education has taken a significant step forward (Chan & Hu, 2023). While conventional AI implementation in education compares students' learning processes to a module structure, GenAI has the capacity to further construct dynamic student-centered learning experiences. Developed on the basis of large language models (LLMs), GenAI can produce contextually appropriate language output in response to given prompts (Chan et al., 2024). Therefore, the adaptability of GenAI shows potentials in supporting diverse educational needs by accommodating a wide range of disciplines and levels of learning (Baidoo-Anu & Ansah,

2023). In summary, the rapid advancement of GenAI has opened new frontiers in pedagogical practices.

The advent of GenAI has induced a surge in empirical studies that examine the impacts of GenAI in educational contexts, particularly in language learning. Previous studies have affirmed the potential of AI chatbots in improving English language fluency (Hiniz, 2024; Kang & Sung, 2024). GenAI improves language learning by identifying students' individual problems and providing solutions in real time, thereby facilitating more accurate conceptual understanding (Wang & Fan, 2025). Moreover, studies (Younas et al., 2025; Kang & Sung, 2024) show that GenAI facilitates self-directed learning by virtue of its adaptable and interactive design, which allows learners to regulate their learning and revise linguistic content as needed. By offering personalized experiences, GenAI shifts the learning dynamic from reception to active participation (Khoso et al., 2025). To elaborate, it paves the way for a more learner-centered approach, where students are empowered to take control of their language learning process and move beyond the limitations of traditional drill-based methods. As GenAI becomes more integrated into EFL classrooms, it challenges traditional learning methods and invites educators to reconsider the nature of knowledge acquisition.

In order to fully leverage the potential of GenAI in supporting student learning in EFL classrooms, previous studies have explored possible pedagogical frameworks and theories. Niepes (2025) proposed a triadic GenAI integration theory that emphasizes three 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" (p.36). The connection between these elements suggests a holistic approach for integrating GenAI into English language instruction. Building upon this holistic view, the Generative AI for Instructional Development and Education (GAIDE) framework offers a structured framework for implementation. Introduced by Dickey & Bejarano (2023), GAIDE presents a systematic framework for incorporating generative AI tools into educational planning. This framework guides educators in establishing clear learning objectives and leveraging GenAI to produce learning content and context through targeted prompting. Progressing through the stages of setup, rough draft, macro- and micro-refinement, educators interact with GenAI while maintaining contextual integrity of the lessons and consolidate options generated by GenAI.

To incorporate GenAI in students' learning experiences, Reyna (2023) introduced a comprehensive framework to integrate ChatGPT into tertiary education: A Comprehensive Framework for ChatGPT Integration in Teaching and Learning in Higher Education. The framework comprises five elements: integration strategies, student engagement, assessment and feedback, ethical considerations, and professional development. Through evaluation and research, the five elements are mediated to enhance ChatGPT integration into the learning process. Reyna's (2023) A Comprehensive Framework for ChatGPT Integration in Teaching and Learning in Higher Education provides a guideline to assessment design for learning tasks that use ChatGPT to promote student engagement, personalized learning, and critical thinking abilities.

The integration of GenAI into classrooms presents transformative opportunities for language learning, yet its effective implementation requires structured pedagogical frameworks. By aligning GenAI with established theories, educators can harness its potential to enhance engagement, personalization, and linguistic competence in educational contexts. As technology advances, GenAI is becoming more increasingly accessible and holds strong potential for integration into younger classrooms under structured support from instructors and peers. To ensure meaningful language acquisition while harnessing GenAI to its full potential, this paper proposes a refined framework for optimal GenAI implementation in LGC-based elementary EFL classrooms.

Framework components

LGC and its componential constructs have been predominantly implemented in tertiary education. To enable elementary students who are learning English as a foreign language to benefit from this approach, pedagogically appropriate modifications are required. This study proposes an adapted LGC framework referred to as 'LGC-based elementary school EFL framework' that is responsive to the developmental needs and linguistic abilities of younger learners, who are referred to as 'students' in this context.

Learner autonomy and agency

Students leverage technological literacy that lays the foundation for learner autonomy. In the proposed framework, students use GenAI algorithms to generate and mediate content aligned with learning goals and create a learning context within an elementary school classroom. GenAI plays a crucial role in fostering learner autonomy within the LGC by enabling students to shape the direction of the educational experience through prompts (e.g., give me three examples, correct my grammar). By utilizing GenAI applications such as text generators and image creators, students can design learning materials and engage in self-directed inquiry. For example, students may engage GenAI to generate contextualized sentences that enhance their understanding of certain vocabulary. Students may also prompt GenAI to organize facts and display pictures of certain holidays in different cultures. In such contexts, GenAI acts as a cognitive partner, helping students explore and articulate their ideas with greater independence. Linguistically, GenAI rephrases questions grammatically and generate texts in the target language, which can be simplified for enhanced comprehension through prompts. Furthermore, this framework enables learning that extends beyond traditional temporal and spatial boundaries, as the context is learner-generated and assisted by GenAI, ensuring flexible learning that can occur outside of the classroom in accordance with spontaneous intellectual engagement. Finally, GenAI accommodates diverse learning styles in an LGC with its dynamic interactive properties (Yildirim-Erbasli et al., 2024), resulting in a learning environment that empowers students to engage in and take responsibility for the learning process.

Students are empowered to make choices about learning in the context. The facilitation of GenAI-assisted LGC-based elementary school EFL classroom enhances learner agency by facilitating informed decision-making in the process of context generation. Students are empowered with the sense of control over learning through leveraging GenAI to identify relevant resources, including the selection of platforms for content generation (e.g., chatbots or PowerPoint generators), preferred formats (e.g., graphics or interactive media), and the evaluation of options provided by GenAI. In the process, students develop critical thinking as they decide the course of action (Zou et al., 2023). However, educators must appropriately scaffold this process to ensure learners can make 'informed' choices beneficial to the learning experience. For example, educators may introduce students to various GenAI platforms designed to facilitate content generation, such as AI-based presentation builders or conversational agents. After exploring these options, students might select a presentation builder, such as Gamma AI, to generate materials on a certain topic (e.g., the ocean). Subsequently, students determine relevant subtopics to address and decide whether textual explanations, visual representations, or a combination of both would more effectively convey their understanding. Empowering students with making choices about the context not only enhances students' comprehension of the subject matter, but also develops their capacity to use GenAI for knowledge construction.

Scaffolded learning

In tertiary education, the learner-centric properties of LGC demonstrate minimal dependency on instructors, emphasizing the role of peer interaction and self-regulated

learning. However, LGC-based approaches in elementary school classrooms necessitate more pronounced teacher presence to mediate technological integration and foster peer collaboration, ensuring that young learners develop foundational competencies for optimal learning results. In the proposed framework for an LGC-based EFL classroom, elementary teachers must provide scaffolding in various aspects to ensure effective learning, listed as follows:

Establish a shared learning objective. Within a LGC, the establishment of mutual learning objectives enhances peer collaboration, motivation, and learning performance as group members collectively strive toward a shared goal (Johnson & Johnson, 2012). In an elementary EFL context, teachers should provide possible goals pertaining to language acquisition (e.g., achieving reading competence or vocabulary memorization) backed up by pedagogical theories (e.g., area of proximal development or Bloom's taxonomy) and assist students in reaching a consensus on the abilities they expect to acquire during the lesson. Finally, students should discuss assessment methods and criteria that can evaluate their progress in achieving the learning objectives.

Introduce content and context generating resources. GenAI plays a critical role in offering individualized support to students as they engage in content mediation and creation. In the elementary school setting, students may be overwhelmed by the open-ended nature of GenAI and struggle to formulate appropriate prompts or discern appropriate outputs (Jeon, 2022). In the LGC-based elementary school EFL classroom, the teacher initiates students into the capabilities and responsible use of various GenAI technologies through demonstration and appropriately guided hands-on practice. The exploration of GenAI should be systematically structured to increase in complexity: beginning with keyword-driven, content-generative tools, such as mind-mapping or PPT-generation platforms (e.g., GammaAI or Tome AI), and advancing toward fully open-ended conversational agents that demand prompt formulation (e.g., ChatGPT or DeepSeek). As students progressively develop familiarity with GenAI, they become increasingly adept at and resourceful in creating personalized and meaningful learning contexts.

Design LGC-based contextual tasks that progress from simple to complex. Through scaffolded tasks that increase in complexity, teachers can progressively support language acquisition and the cognitive development of elementary EFL students. Rooted in Vygotsky's Zone of Proximal Development, scaffolded tasks allow students to engage with manageable content (e.g., finding information about a topic using GenAI), before gradually encountering more linguistically and cognitively challenging tasks (e.g., sharing findings on the topic). Effective scaffolding should be contingent (Lantolf & Poehner, 2014), interactional (de Oliverira et al., 2020), and gradually implicit (Li & Zou, 2021), so as to support the learner-centric and collaborative features of LGCs.

Collaborative learning environment

Collaborative learning is pivotal in an LGC as knowledge is co-constructed. Students are encouraged to work together to create content, set learning goals, and assess peer contributions. Through interaction and negotiation, learners develop a stronger sense of agency and accountability for their learning process. In the LGC-based elementary EFL framework, students should be guided to engage in collaborative tasks based on the following factors:

Students choose their collaborators. LGC is rooted in advances in technology, where users can acquire knowledge and contribute to information via internet platforms. In a learning context, students acquire and contribute to knowledge, which are received and expanded by other learners in the LGC. The collaborative learning environment encompass students to exchange ideas and design learning strategies, leading to improved critical thinking and

better learning results (Hastuti et al., 2020). Empirical evidence suggests that self-selection of collaborators enhances intrinsic motivation among students engaged in collaborative tasks (Fischer et al., 2023). Furthermore, in accordance with LGC foundations, where users direct their own interactions on the internet, learners' agency in the selection of learning collaborators not only constitutes a smoother learning process, but is also the making of the context itself. In the process of forming collaborative groups, GenAI can function as a matchmaking tool by allowing students to input their strengths, weaknesses, and learning goals, along with information about potential collaborators. The tool can then analyze these variables and generate recommendations for group composition. Furthermore, GenAI can be used to structure a team charter to define roles tailored to individual skills and personalities. An example prompt could be: 'We are a team of three students who are asked to make an English presentation on Japanese cuisines. I am good at art, and I have an easy temper. Amy is good at speaking, and she is a very careful person. John is quiet, but he is a good planner. Suggest role definitions and communication protocols to help us finish our work.' By integrating GenAI into the process of selecting collaborators, students take on a reflective approach to teamwork, where the goal is not just to work with friends, but to co-create a dynamic and resilient learning unit. In the elementary school LGC-based framework, students possess the agency to choose their collaborators, and the collaborative process becomes more efficient as members develop familiarity, thereby enhancing students' capacity to undertake increasingly complex tasks.

Students know how to interact with others. An important aspect of learner interaction in an LGC is verbalizing ideas and seeking help in a collaborative learning environment. This contributes to collectively richer learning experiences and supports the collective advancement of understanding within educational communities (Gillies, 2017). Therefore, the teacher must guide the students in expressing ideas, asking for help, suggesting alternative possibilities, and giving legitimate reasons for their choices. To scaffold student discourse in an LGC, elementary teachers may implement sentence frames that guide and structure student interactions (Palenstino, 2025). Teaching and helping students understand the value of listening is also an important aspect of promoting collaborative learning (Sjöblom & Meaney, 2021). Attentive listening behaviors (e.g., making eye contact and nodding) contribute to the cultivation of positive peer interaction, which is essential in creating an inclusive learning environment in a LGC-based elementary EFL framework. GenAI may also come to play in this aspect, resuming a role of note-taker in collaboration to ensure active participation. For example, students may implement note-taking transcription tools like otter.AI to monitor peer interaction. These types of GenAI tools generate a neutral, comprehensive record of the entire discussion, which allows for the refinement of group protocols and individual communication strategies, optimizing the efficacy of collaborative endeavors.

Dialogic peer feedback is exercised, which supports language development and context creation. Peer feedback conducted through dialogic interaction helps students engage in meaning negotiation and refine ideas through discussion (Steen-Utheim & Wittek, 2017). In the LGC-based elementary EFL classroom, this interaction may occur among various configurations of participants, including students, peers, the teacher, and GenAI. The dialogic process facilitates context creation by incorporating language practice and critical thinking in authentic exchange. To enhance the effectiveness of feedback in an LGC-based elementary EFL framework, it is essential to explicitly introduce students to the core components of dialogic feedback. First, students should be instructed to consider contextualization (Zhang, 2023), ensuring the feedback aligns with learning goals. Second, iterative exchanges are essential, allowing the context to be refined through multiple cycles of discussion and application (Er et al., 2020). Finally, students should be aware that reciprocity is the core component of dialogic feedback, encouraging unidirectional learning

and resulting in mutual progression. It is both a mechanism and outcome of dialogic feedback in LGC-based elementary EFL classrooms, supporting learners as they reinforce their roles in shaping the content and context of the learning process. Regarding GenAI use in peer feedback, students may input their ideas into conversational agents, using prompts (e.g., is my writing clear, challenge my work with three questions rooted in Socratic questioning) to receive feedback in different aspects of their work. By engaging GenAI in the feedback process, students may further deepen their critical and analytical skills through a uniquely objective form of feedback that differs from conventional instructor or peer review.

Assessment and evaluation

In LGC-based elementary EFL classrooms, learning assessments focus on the extent to which students have attained the predetermined learning objectives. When setting shared objectives in the classrooms, students will have reached a consensus on the method and standards of assessment. In the LGC-based elementary EFL framework, teachers may suggest the following assessment and evaluation components that help students reflect on their learning progress, with recommendations for GenAI integration:

Assessments should be feasible for everyone in the collaborative context, while individuals may set different standards for themselves. In the LGC, a contextually appropriate assessment task enhances the authenticity and effectiveness of assessment. In the proposed framework, collaborative learning is embedded in the construction of inclusive assessment tasks (Nieminen, 2024), while learner-centered principles are demonstrated by self-defined performance standards. An illustrative assessment task requires students to introduce a topic using a minimum of three English sentences, although the framework allows for individualized extension, such as delivering the entire presentation in English. This constitutes a balanced dynamic where collaboration encourages individual ambition, resulting in both cohesion and personal excellence. For collaborators grappling with assessment types to evaluate their learning, GenAI can systematically deconstruct tasks into a sequenced pathway of verifiable sub-goals. Learners may prompt GenAI (e.g., give me a step-by-step goal, how can I achieve…) to guide students through a series of milestones that make abstract objectives concrete and manageable. Through further prompting (e.g., how can I assess this sub-goal, generate assessment tasks for…), GenAI can generate feasible assessments for all collaborators, while allowing individuals to establish personalized goals that reflect their unique competencies. In doing so, assessments promote both collective accountability and individual differentiation, aligning shared group goals with the diverse needs of individual learners.

Assessment tasks encourage metacognitive awareness. In a LGC, learners should be aware of the learning process so as to actively adjust the context. This results in the cultivation of self-regulatory skills that underpin lifelong learning (Fan et al., 2022). Designing assessments that engage metacognitive awareness increases reflection by making cognition concrete: for instance, when students annotate their understanding of linguistic utterances based on contextual cues, they externalize their thinking and contribute to the making of the learning context. Therefore, instead of rigid closed-ended assessments, students in the LGC-based elementary EFL classroom may consider assignments that require the utilization of knowledge about people, tasks, or strategies, encouraging learners to plan, monitor, and evaluate their learning processes. In the process, GenAI may act as a "contender" for evaluation. Rather than simply submitting their work, learners can be assessed on their ability to critically evaluate and improve a GenAI-generated response to the same learning goal. This requires learners to engage in metacognitive practices that shift the focus from reflecting on one's own thinking to critically evaluating the thinking of another, i.e., GenAI, thereby strengthening learners' own analytical frameworks.

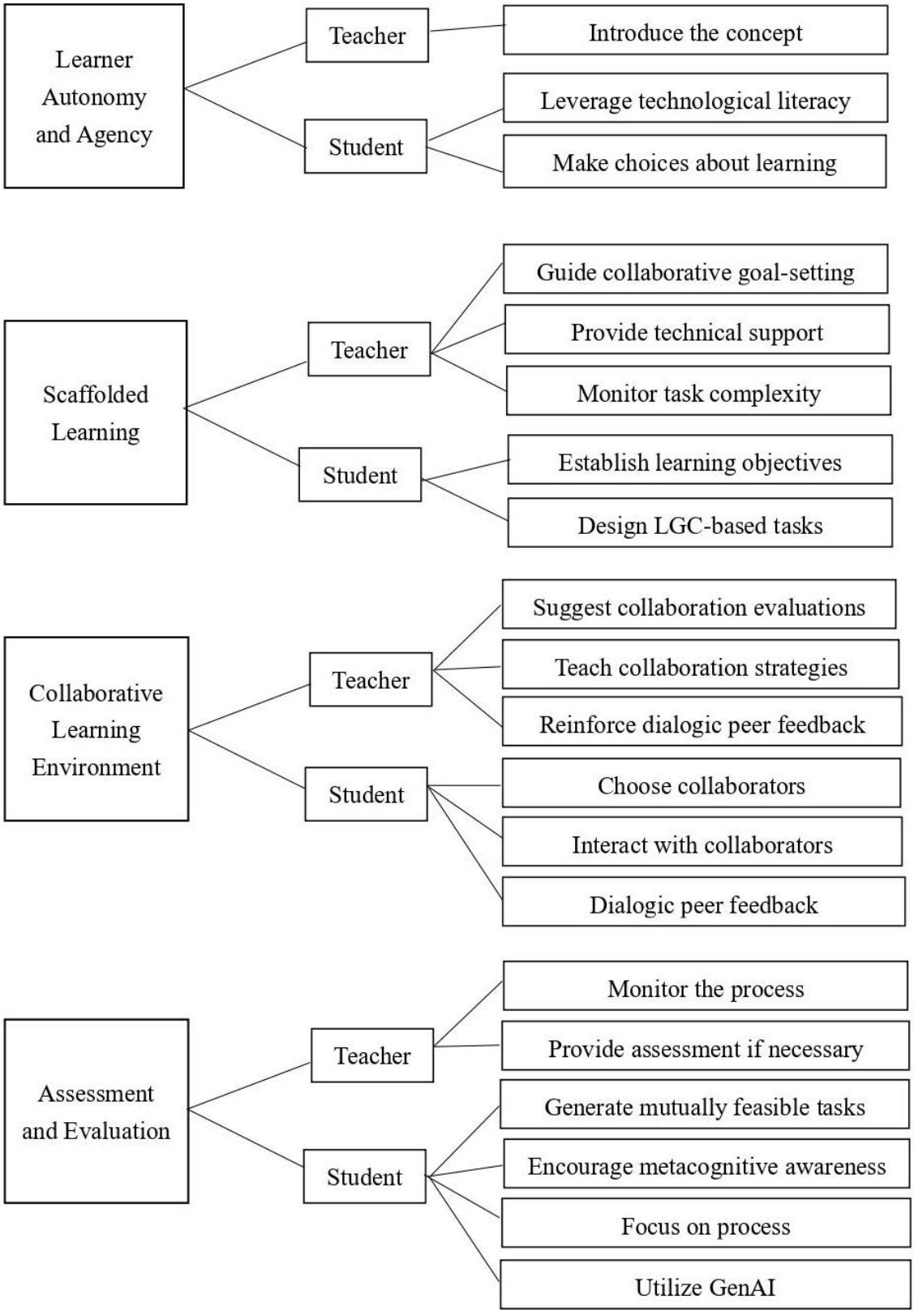
Evaluation is process-oriented and formative. In LGCs, learners actively direct their learning paths through contextual curation (Luckin, 2010), focusing on the process to attain learning objectives. Learners adjust strategies based on feedback and reflection to ensure improvement over time, highlighting the importance of formative assessment. In the LGC-based elementary EFL framework, rubrics for linguistic and cognitive evaluation should be shared with or mediated by the students so that they become aware of what is expected from them in a certain stage of learning (Jonsson & Svingby, 2007). Furthermore, teachers may suggest multiple forms of assessment in learning to understand the trajectory of improvement, including observations, feedback (from peers, the teacher, and GenAI), tasks, and self-assessments. Students refer to this information to refine their learning strategies and optimize learning efficiency.

Evaluate interaction with GenAI as a learning partner. Evaluating interaction with GenAI requires a multidimensional approach that considers cognitive, behavioral, and affective outcomes (Koltovskaia, 2024). Cognitively, students should demonstrate the ability to formulate appropriate prompts (e.g., through inquiry or explicit requesting) to elicit suitable content from GenAI. In the process, students must elicit linguistic awareness, prompting or choosing suitable generated content in the target language. Behaviorally, evaluation may focus on learner engagement, students' revision of content based on GenAI feedback, and the ability to self-direct learning with GenAI. Affective measures, such as learning motivation and satisfaction, provide insight into the psychological impact of GenAI. Additionally, self-assessment of the learning process can offer an understanding of how GenAI contributes to the learning processes.

Framework integration

In the LGC-based elementary EFL framework, learner autonomy and agency are the outcome and the mechanism that facilitates the learning process. Students generate and mediate learning content through means of technology and exercise agency in decision-making to construct meaningful learning contexts. In this paper, GenAI is positioned as a support technology due to its capacity for dynamic adaptation and personalization of learning experiences. It demonstrates significant utility across three domains: content development, instructional design, and learning assessment. The selection of GenAI algorithms to contextualize content is a manifestation of learner agency, which leads to increased learner autonomy. The integration of the LGC-based EFL framework into the elementary school context is visualized in the LGC-based elementary EFL framework (Figure 1) below.

Figure 1
LGC-based elementary EFL framework



To ensure elementary students can benefit from the LGC approach, the integration of targeted scaffolding is critical to meet students' requirements. In fostering learner agency, teachers should begin by introducing the concept of learner autonomy, highlighting its pedagogical significance in promoting self-directed learning. Teachers may highlight the motivational and cognitive benefits associated with autonomous learning while illustrating these ideas through accessible examples (e.g., independently searching for information, monitoring one's own progress). By grounding the concept of learner autonomy, teachers help learners recognize its relevance to their own learning processes. Then, teachers should provide scaffolding in terms of (a) guided collaborative goal-setting to align learning objectives with student capabilities, (b) technological support to ensure accessibility, and (c) monitor gradual increases in task complexity to promote development while maintaining learner autonomy. With appropriate scaffolding, students' linguistic and cognitive abilities are systematically developed through task completion. The ultimate objective is to cultivate elementary school students' capacity to navigate English learning contexts while gradually minimizing instructor intervention.

Collaborative environments are a vital component in LGCs in that learners work together to co-create learning contexts. In the LGC-based elementary EFL framework, optimized learning occurs when the teachers can support the following conditions: (a) student select their collaborators, (b) students are explicitly instructed in collaborative interaction strategies, and (c) dialogic peer feedback is reinforced to stimulate linguistic and metacognitive development. To optimize collaborative learning outcomes, educators should inform students of the benefits of selecting team members based on complementary skills and diverse abilities. To foster growth in collaborative skills, instructors may propose evaluations of group dynamics after projects. Students are encouraged to use these reflections as a basis to form new teams for subsequent tasks or contemplate how to improve the collaboration process. In the collaborative environment, students engage in shared decision-making to meet their collective needs, which not only distributes cognitive load but also fosters essential negotiation and joint problem-solving skills.

Finally, assessment and evaluation are important aspects of the learning process. In the LGC-based elementary EFL framework, teachers should engage students in self-directed assessment planning, and monitor assessments and evaluations so that they: (a) are feasible for everyone in the context, (b) encourage metacognitive awareness, (c) are process-oriented and formative, and (d) consider student interactions with GenAI. Finally, to bridge the gap between students' perceptions of the learning materials and objective competency, teachers may consider providing additional assessments that offer a reflection for students to evaluate whether their work aligns with the set goals (e.g., goal checklist, comprehensive quiz). In elementary EFL settings, assessments help bridge the gap between learner initiative and pedagogical effectiveness, ensuring that learning outcomes are measured and continued development ensues.

The proposed LGC-based elementary EFL framework adapts the LGC approach to an elementary school EFL context through carefully scaffolded interactions with both technological (GenAI) and social (peer collaboration) learning resources. This adaptation is built on the basis of previous literature on LGC approaches, GenAI, and elementary EFL education. Unlike adult LGC models, this elementary adaptation incorporates 'choice within implicit constraints', providing curated options for context generation (e.g., selecting from pre-approved AI tools or collaboration formats) that balance autonomy with developmental appropriateness.

Implications for future research

This study proposes an adapted LGC framework designed for elementary EFL contexts, addressing both language acquisition and learner autonomy through context generation. The framework introduces targeted modifications to traditional LGC components, including scaffolded learning practices and developmentally appropriate collaboration structures, thereby bridging the gap between theoretical LGC principles and practical classroom implementation in elementary education. These refinements are expected to enable authentic application while maintaining the core foundations of LGCs: heutagogy and obuchenie. The implementation of an LGC-based elementary EFL framework is expected to empower students to assume greater autonomy in their learning processes by actively engaging in the identification and extraction of linguistic cues and structural patterns. In this framework, knowledge is constructed through the appraisal of self-, peer-, or GenAI-generated content, as well as through collaborative interactions within the learning context. As a result, students in an LGC-based elementary EFL classroom acquire not only linguistic knowledge, but also collaborative knowledge, metacognitive knowledge, autonomy, and agency.

Future research may consider further exploration of the LGC-based elementary EFL framework from three aspects: (a) student-teacher roles, (b) student learning proficiency, and (c) GenAI integration. To begin with, exploring the evolution of pedagogical relationships in the LGC-based EFL classroom may yield rewarding results. The framework's core principle of increased student participation and context creation is distinguished from conventional instructor-led models. Empirical studies are warranted to understand how student and teacher roles shape interaction in the classroom. Secondly, the effect of the LGC-based elementary EFL framework on students' English proficiency may be investigated. Given that its effectiveness may be mediated by topic-specific or skill-related variables (e.g., receptive vs. productive language abilities), future studies can employ controlled experimental designs to identify the conditions for LGC-based elementary EFL framework implementation. Finally, research can be done to investigate the suitableness of certain GenAI tools and explore difficulties in implementing these GenAI tools. Further research may probe into the efficacy of particular GenAI algorithms in context generation, particularly in terms of cognitive engagement, linguistic output, and long-term knowledge retention.

CONCLUSIONS

One of the main focuses of modern education is fostering learner autonomy and heutagogy through innovative pedagogical approaches. The implementation of LGC empowers elementary students to co-construct knowledge through collaboration while developing agency in their learning processes. When assisted by GenAI, this framework further enhances digital literacy and the generation of content and context by providing scaffolded, real-time support. While adapting this framework to individual EFL classrooms may present challenges, the outlined components serve as a flexible foundation, encouraging teachers to refine instruction and guidance in response to student differences. As elementary students familiarize themselves with LGC methodologies in EFL instruction, they develop greater learner agency in pursuing deeper and more expansive knowledge acquisition, enhancing collaborative interactions, and autonomously accessing multimodal resources for learning and problem-solving.

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