

Advocating Virtual-Based Learning and Game-Based Learning: Designing Educational Games to Facilitate Learning Motivation in Hong Kong Primary English

Law Tsun Hin, The University of Hong Kong, Hong Kong, China

The Asian Conference on Arts & Humanities 2026
Official Conference Proceedings

Abstract

To reference the literature research and secondary information, this research used educational intervention and was evaluated by both user and functional tests. Regarding the user test, a Hong Kong community center invited primary school students ($n = 24$) to assist our intervention. They played thoughtfully educational games and provided first-hand experimental feedback regarding emotional, game design, feeling, and feedback-receiving knowledge. Regarding functional tests, this research invited a broad and wide range of participants ($n = 46$), like pre-service educators and social workers, as participants. Participants are of diverse backgrounds and have professional expertise related to primary education. They provided rigorous and comprehensive evaluations by viewing demo videos and lesson plans and designing teaching and learning materials. They can provide diverse suggestions on the desirability, feasibility, visibility, and ethics. This research finding demonstrated a positive relationship between the application and potential use of 3D educational games and the enhancement of primary school students' learning autonomy, capability, motivation, and interests. Indeed, primary school students used educational games with higher learning attention, capabilities, and consciousness. The educational games provided understanding of different connections, synthesizing, and transformation knowledge in the education settings. This also indicates a potential for creative and innovative pedagogical approaches. Eventually, this research is anticipated to provide pedagogical innovation perspectives with the professional community of different frontline educators, scholars, and practitioners and widen the general public.

Keywords: education games, engagement, game-based learning learning motivation, primary English language, virtual-based learning

iafor

The International Academic Forum
www.iafor.org

Introduction

Hong Kong primary school students constantly receive English language learning because Hong Kong almost promotes English as a main subject and English as a second language (ESL). Primary school students can always learn, revise, and study different, diverse, and wide ranges of English vocabulary; they always attempt organizations, sentence patterns, parts of speech (POS), and different vocabulary usage. However, it still provides several critical issues, including (i.) constrained student participation and engagement towards learning different vocabulary, noun phrases, professional terminology, and concepts, thereby impacting understanding of the structure within the class and the whole group level, and (ii.) not sufficient or recap repetition of higher frequency words in the conventional Hong Kong textbooks so that students have lower learning motivation regarding writing due to the length and not understanding the meaning of the vocabulary (Bai & Guo, 2021; Lam, 2019; Lee, 2011a), (iii) inadequate memorization and retention of specific terms and vocabulary, and (iv) applications of different vocabulary learning methods like brainstorming or recap should be creative, component, innovative, and vivid pedagogies (Bai et al., 2020; Lee, 2011b; Park & Wang, 2019; Sze, 2008). To employ the educational game, this 3D metaverse educational game is incorporated with different lesson plans and teaching and learning materials, like the scenarios, scenes (via instructions, prompts, and videos), or whole games to reinforce student engagement. Apart from appealing to students who participated, were attracted, and were interested, the educational games were divided into easy-control, manageable, and systematic teaching steps and different small tasks to facilitate primary school students learning sentence patterns, language grammar, and polishing different writing skills and tactics. Indeed, educational games can provide more facilitation of small foundation vocabulary learning tasks. Finally, the whole lesson plan and different tasks for knowledge construction and creation that provides students with keen knowledge and allow students to be more captivated in acquiring selected topic vocabulary, different terms and improvement for writing skills.

Research Background

With the ever-increasing trend of educators and teaching professionals, they have aroused different research interests to apply innovative pedagogies towards primary education after contributing post-COVID-19 educational impacts. Different scholars like Shiu (2024) explored different e-learning, online teaching, and the potential of developing educational games. By incorporating educational games and applications of primary English language, they provided an attractive and compelling context for teachers to design learning products that reinforce students' language proficiency, learning autonomy, competence, and motivation. The effective approach is to design and incorporate educational games into lesson plans and within and without classroom settings. It can enhance the learners' intrinsic motivation. This research paper utilized mixed research methods (qualitative and quantitative) and intervened with one 3D educational game created by the Unity Platform to make the immersive virtual classrooms and user-generated content. The education games suit the design of the Hong Kong Primary 3 English Curriculum, especially our research, which used the "Food and Fast Food" module as a main theme.

Platform and Digital Technology Application

The 3D educational games product used the Unity platform (<https://unity.com/cn>) to create. This platform is highly recommended to have the necessary and proficient coding knowledge and technical support skills. The Unity platform can not only assist in supporting the creation

of one's own three-dimensional (3D) spaces but also encourage designers to build different 3D immersive spaces for the wide purposes of education, learning, studying, and playing fun and interesting games. This platform is appropriate to incorporate and constantly upload 2D, 3D, and video content and finalize the work directly to design appealing and stunning interactive spaces. Additionally, Spatial.io (<https://www.spatial.io/>) (Spatial.io, n.d.) and the Unity Platform are advanced and sophisticated platforms that can formulate the virtual interface and create 3D immersive and captivating experiences for different users who readily meet, work, and interact. They are both the best and most recent platforms for creating different spaces as well and constructing meaningful learning experiences. Both Spatial.io and Unity provide an intuitive, ideal, typical, and unique, environment that increases communication and productivity. It is very visible and has the potential to use different educational games and leverage the power of augmented and virtual reality. Aside from the 3D educational game, I also proposed the link with the Padlet (<https://padlet.com/>) (Padlet, n.d.) and invited our P3 students to use the AI-generated function of adding images, check out the PowerPoint slide content, use the posting button to add writing, share comments, and receive constructive feedback from your classmates and groupmates (i.e., peer evaluation). Thus, using different digital technology techniques and software can provide a whole studying learning journey.

Research Questions

1. What design characteristics, features, and interfaces of 3D educational games most effectively assist primary 3 students' cognitive development of English writing?
2. How can game-based learning components and designs be aligned with instructional learning objectives to satisfy both educator and student learning needs?
3. What are Primary 3 students' perceptions, engagement, participation, and unique learning experiences when interacting with a 3D educational game?
4. What do the primary school students provide feeling and sharing towards 3D educational games?
5. What are the implications and precautions for designing a 3D English educational game with digital storytelling to strengthen Primary 3 students' English writing skills in Hong Kong?

Literature Review

English as a Foreign Language (EFL) and ESL (English as a Second Language)

Hong Kong's main education used the ESL (English as a Second Language) approach rather than English as a Foreign Language (EFL). The difference between instruction design (i.e., English Literature) and pedagogies is emphasized in the artistic, culturally rich texts (like the novels and poems) for acquiring literature analysis and appreciation. Instead of ESL (English as a Second Language), educate the English (grammar, structure) mechanism for communication and be more academic/instrumental. Therefore, Hong Kong education focuses on the learners living in an English-speaking place and provides integration to society (Englist, 2023; Hossain, 2024; Pabur et al., 2023). Additionally, the Hong Kong Education Bureau (EDB) thinks that Primary English as a Second Language (ESL) is imperative. The Hong Kong Education Bureau (EDB) uses the English Language Education Key Learning Area (KLA) and highlights developing students' language proficiency for study, work, and life purposes. The Hong Kong Education Bureau provided an updated English Education Curriculum (i.e., the 2025 Primary 1–6 English Education Guide) (Education Bureau, 2025).

It provides details regarding reading, writing, listening, speaking, grammar, and vocabulary (Education Bureau, 2021, 2024, 2025; Gray & Jones, 2015; Legislative Council of Hong Kong, 2019). Certainly, the difference between English as a secondary language (ESL) and English as a foreign language (EFL) is the complexity, fluent proficiency, and requirement of students' learning capability (enhancement of the language enrichment and cultural awareness) and educators' training and support. Students as learners and readers should use different vocabulary drills, exercises, grammar practice, comprehension activities, and literate language development (Baba, 2022; Collie & Slater, 1987; Khatib et al., 2011; McKay, 1982, 2001; Poly U, 2019; Rashid & Hui, 2022).

Educational Games, Game-Based Learning (GBL), and Gamification

In the scholar community, there are different discussions about education games, game-based learning (GBL), and gamification (Azawi et al., 2016; Hong et al., 2024). Educational games are defined as the solid structure of playing that provides rules, objectives, challenges, and difficulties for diverse use, like entertainment or education (Cheng et al., 2015). It can consider students may be beneficial to gain more computing programme skills, problem-solving skills and generic skills (Gundersen & Lampropoulos, 2025). Aligned with the educational game purpose, gamification employs various game elements (like points, badges, leaderboards, and challenges) in non-game contexts, including the use of education, to make interactive and immersive tasks, learning engagement, motivation, and outcomes. Gamification refers to the learning process as a whole in game literature. It firstly appeared in 2008 and became more essential in the 2010s (Chen & Fount, 2020; Deterding et al., 2011; Landers & Armstrong, 2017; Seaborn & Fels, 2015). Games are generally provided for the game characteristics, mechanics, or the process of playing games and gameful experiences in specific backgrounds and contexts. Deterding et al. (2011, p. 11) provided definitions of gamification as the “use of game elements in non-game contexts.” The game elements include levels, points, badges, leaderboards, avatars, quests, social graphs, or certificates (Krath et al., 2021; Zainuddin et al., 2020). In the education context, educational game design will incorporate clear instructions, prompts, scenarios, and reminders. Game design also needs to be aware of token economy and reward mechanisms. For instance, primary school students can also gain the certificate after games completion, encouragement, and assurance of the efforts. Also, Kapp (2012) and (2015) emphasized goals of designing the game, including the “game-based mechanics, aesthetics, and game-thinking to engage people, motivate action, promote learning, and solve problems” (p. 54). Overall, applying educational games can facilitate learning and enhance the learning outcome, like learning motivation and enrichment of language learning. Zichermann and Cunningham (2011, p. xiv), Gunawan (2025) and Wood and Reiners (2015) give a definition of gamification as “the process of game-thinking and game mechanics to engage and solve problems” It is essential to have clear game logic, and the mechanism of making educational games is more attractive and competitive. To integrate and synthesize different beneficial educational game designs and viewpoints, Seaborn and Fels (2015) provided the definition of gamification as “the intentional use of game elements for a gameful experience of non-game tasks and contexts” (p. 17). Certainly, there can be a positive relationship between gamification and reward mechanisms. For example, incorporating reward certificates can reinforce students' learning motivation and academic outcome. Therefore, it is highly recommended to use the basic design of educational games in Hong Kong's education system. Simultaneously, Deterding et al. (2011) and Krath et al. (2021) provided that gamification could provide broad concepts and game components in the authentic environment, including education changes. More in-depth and detailed evidence demonstrates the positive relationship between game-based

learning (GBL), positive affective outcomes (e.g., motivation, enjoyment, and flow), behavioral outcomes (e.g., participation and collaboration), and cognitive outcomes (e.g., knowledge acquisition, critical and creative thinking) (Bai et al., 2020; Boyle et al., 2016; Connolly et al., 2012; Koivisto & Hamari, 2019; Qian & Clark, 2016; Sailer & Homner, 2020; Triantafyllou et al., 2025; Van Gaalen et al., 2021; Vlachopoulos & Makri, 2017). Practice education examples are available (Al-Khresheh, 2025; Creative English Teacher, 2024).

Metaverse Learning

In the academic community, metaverse learning hands-on examples are the United States operated to use the MoEvGame and mobile health (mHealth) gamification iPad software system and decide the game and technology for children to access and connect motor functions (Mia et al., 2025). Another uses the old adults or elderly who use the Intelligent Rehabilitation Exergame System (IRES) to make appealing and interesting retro interactive exergames that comprise authentic and real-time surface electromyography evaluation. It can promote the elderly body's physical function and their standard (Chang et al., 2025). The user-friendly and interactive content is appreciated, with diverse age group members. Hong Kong Unity platform hands-on examples are applied to History Subjects. By incorporating STEAM education with Chinese culture and national education, students can apply Artificial Intelligence (AI) technology to participate in the 3D stereoscopic creation game "Treasure Hunt of Chinese Cultural Relics." The educational game takes players on a journey through time as archaeologists, transforming national education and knowledge of Chinese culture into a fun adventure game (HK01 News, 2022, 2026). Concurrently, A local educational company incorporates educational technology into academia, combining educational technology with gamified learning to break through the stereotype. Meditation practice is not boring for students and enhances their learning interests (HK01 News, 2022). Therefore, metaverse learning can bring people more compelling and stimulating learning interests (BBC, 2022).

Blended and Personalized Learning

Apart from game-based learning and gamification during playing the games, or metaverse games, when foreseeing the games in 3D (three-dimensional) formats. It is very essential to discuss other key aspects, like blended learning. During our proposed lesson plan design, the plan is advised to incorporate blended learning in learning English and include language acquisition, facilitating English knowledge acquisition. Additionally, it can incorporate various and interesting learning and teaching activities to facilitate more primary students' engagement and intrinsic learning motivation.

Categories and Incorporation of Assessment

According to the achievement of primary school students learning English, the whole research project is to apply several concepts like game-based learning (GBL), metaverse-based learning, and blended learning. Although comprising a different pedagogical approach, it highlights the essentials of assessment to access and evaluate students' performance. For instance, game-based learning (GBL) can assist more educational settings that include more learning methods, learning processes, information, and enhancement of abilities in games. Thus, different students participate as the players who can address puzzles and compete to win during learning (Lee et al., 2022). Game-based learning can aid in arousing primary

students' attention more effectively and efficiently and stimulate students' learning performance and learning ability. Finally, it can provide better recall of memory and material (Aksakal, 2015). Different assessments like metaverse games, spelling tasks, collaborative writing tasks, Padlet peer evaluation, self-assessment, and individual writing assessment. Additionally, Dorji (2022) discussed and mentioned that the supporting argument of allowing more education games in the classroom is actively enrolled in the consideration of self-assessment, self-awareness, self-monitoring, and reflective processes. Moreover, Kocadere and Çağlar (2018) also provided that gamifying physics instruction can positively have a significant impact on student attitudes regarding various subjects. Therefore, it is suitable to incorporate some of the assessment methods and tools in order to make the assessment or evaluation in a more accurate way and benefit the learning and teaching. Additionally, this paper also advised using the Metaverse for assisting in learning the spelling of some food and fast food vocabulary. It is essential to use the metaverse for writing assessment to ameliorate accessibility and flexibility for students to learn English writing. Students can access information to present their own ideas, thoughts, and organization of some content. For educational games, it can easily be convenient for participants to browse websites, online materials, and online dictionaries. The education metaverse also creates authentic and realistic scenarios that increase emotional engagement. As proposed, for the students and parents, they can choose to use flexible blended learning and a personalized learning experience that cultivates deeper language understanding and retention. Thus, it can improve students' assessment outcomes (Asmaroini et al., 2023; Li & Yu, 2023; Thango, 2024). Indeed, metaverse-based technology provides a new way for innovative English learning. Different educators may design more lessons and engagement activities to assess learners' outcomes. The commencement of the technology era may increase students' technology-based learning methods, engagement, enhancement of language proficiency, and fostering of different digital tool applications. Educational games can demonstrate the significance of language proficiency, digital skills, and advocacy of digital literacy. For the training of digital literacy, students may also navigate challenges posed by learning software and complicated processes. The education metaverse has lower costs and expenses (Li & Yu, 2023; Thango, 2024). Blended learning may also extend the discussion to micro and macro teaching and learning (Albiladi & Alshareef, 2019; Lam, 2022a, 2022b, 2024).

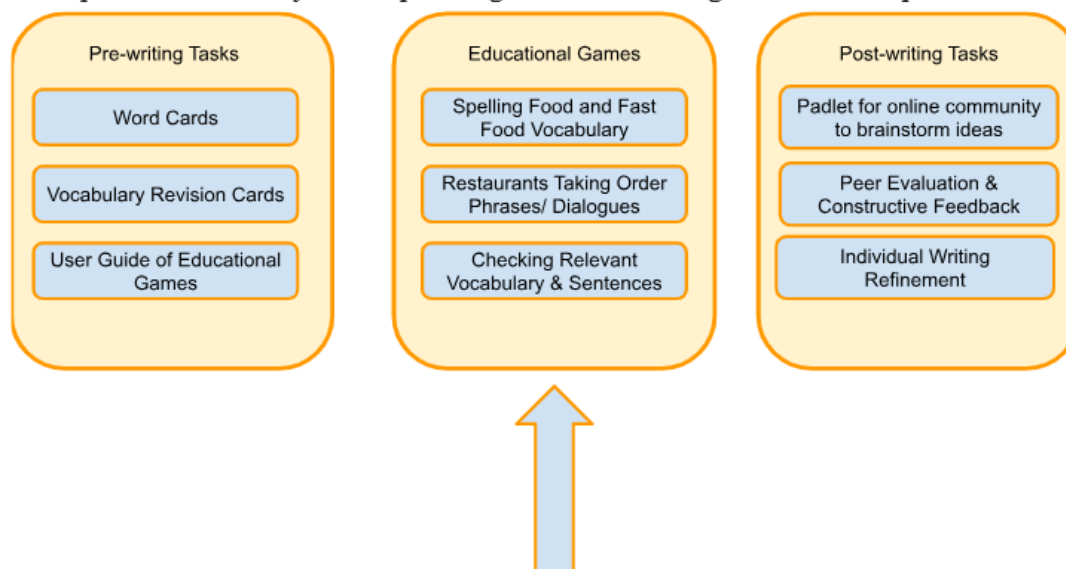
Another, educational games should also use the self-determination theory (SDT) to evaluate the effectiveness of student engagement. For example, it is essential to foster the satisfaction of three innate needs identified in self-determination theory (SDT), like autonomy, relatedness, and competence (Chiu, 2021).

Conceptual Framework

Figure 1

Research Conceptual Framework

Conceptual Framework for incorporating our educational games to lesson plan



Grounded in different theories of different educational games, game-based learning, and gamification, different instructions and designs integrate an overall nine elements showcased to promote engagement and learning (Krath et al., 2021; Lam, 2022a, 2022b). Nine elements are (i.) explicitly connected to have the lesson goals, objectives, students' capabilities, and how it's relevant to students' learning needs; (ii.) provided clearly tailor-made goal-setting that aligns with learner profiles and proficiency; and (iii.) quickly instantaneous and instant feedback embedded within gameplay. Moreover, education games can offer positive reinforcement and different encouragement strategies through learning rewards and progress indicators; (iv.) provide peer appreciation and evaluation strategies; (v.) apply more adaptive and diverse learning strategies to consider suitable difficulties and pacing; (vi.) facilitate different guided learning trajectories with scaffolding or instructions; (vii.) used streamlined, low-friction and pressure-free user experience to minimize extraneous cognitive load; (viii.) seized opportunities of using task-based learning sequence. This paper utilized Lam's (2022a, 2022b) conceptual framework and various intervention strategies to formulate our 3D educational games. This intervention applied an individual-group-individual sequence to structure comprehensive lesson design and task-based learning. These lesson plans will have a pre-task, a main task, and a post-task. The lesson of the pre-task incorporates the vocabulary review cards and an in-game user guide. Educators can provide instructions and introductions for educational games. Also, the main task is to make use of our 3D (three-dimensional) educational games. Moreover, the post-tasks should be aligned with the main tasks of spelling vocabulary tasks (with fill-in-the-blanks). It should have consolidation learning (like recapping what they learn and offering mini-tests to see learning results). It can have the transitions to educators who scaffolded writing. Further, in order to reinforce e-learning, we invited students to have the Padlet and e-learning, which can have collaborative learning and self-regulated learning. Padlet can have different co-writing and benefit from discussing how to write vocabulary, sentence patterns, and managing the whole writing. The recommended design purposefully aims to manage blended learning and self-regulated learning (with writing one's own personal version afterwards by gathering collaborative

work). It can capitalize on different learning tasks, like pre-learning tasks for videos, main educational games, Padlet, and different online tools for writing, with no limits within and without the classroom. Blended learning defines “fundamental redesign that transforms the structure of, and approach to, teaching and learning.” (Garrison & Vaughan, 2008; Poly U, n.d.) Yet, actual activity or instructions and hybrid mode with providing online learning materials may maximize learning outcomes. Blended learning and microlearning are applied. Overall, in an authentic teaching and learning environment, educators can integrate different pedagogies regarding learning objectives and students' needs to co-create a more effective learning environment that is flexible and tailor-made with diverse and various students' learning needs (Lam, 2022a, 2022b, 2024).

Figure 2

Screen for the Game Starts



Figure 3, 4

The First Instruction Videos, Introduce Your Role of Sam, Lion Images and Finds Friend Lily in the Ku Ku Planet

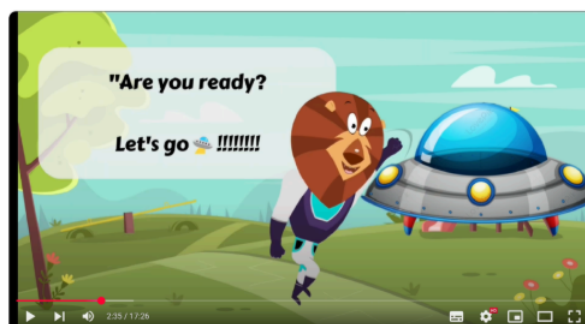
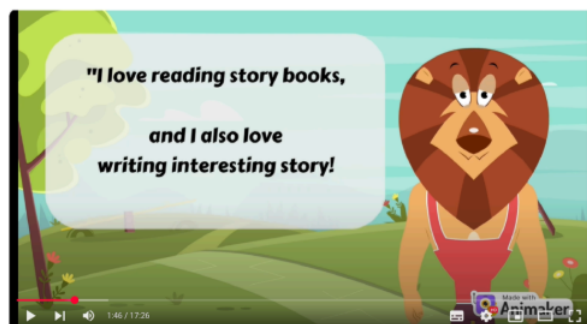


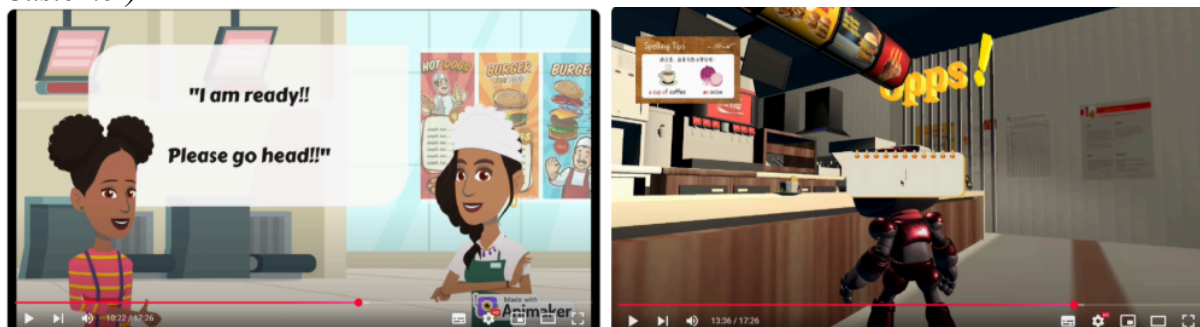
Figure 5

Introduction of Kuku King

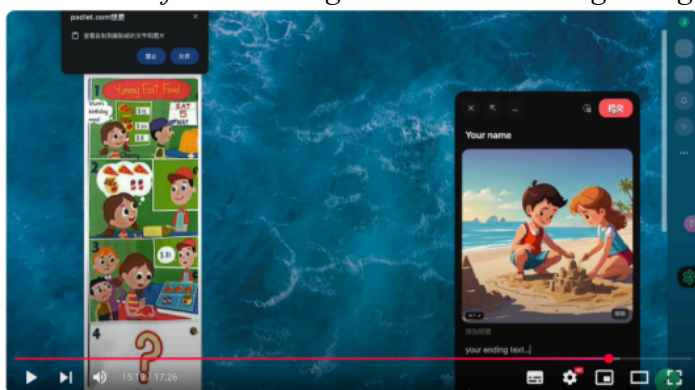


Figure 6, 7

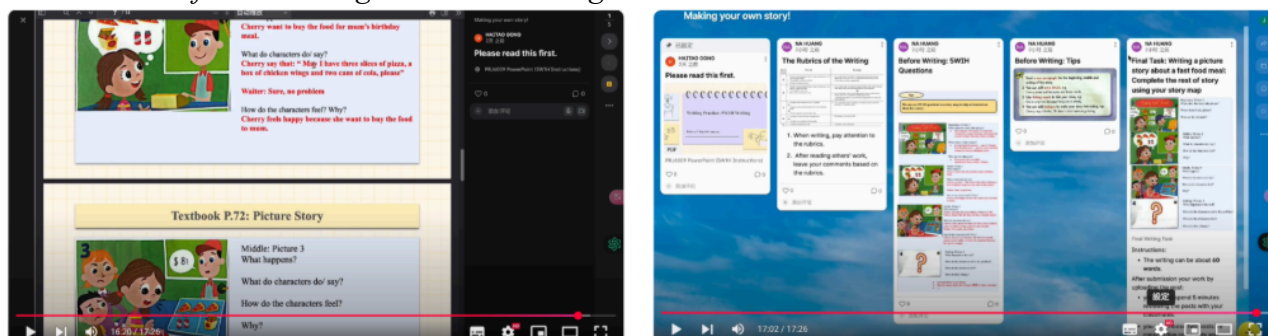
Kuku Restaurants Customer Conversation and Food Restaurants (for Giving Food to the Customer)

**Figure 8**

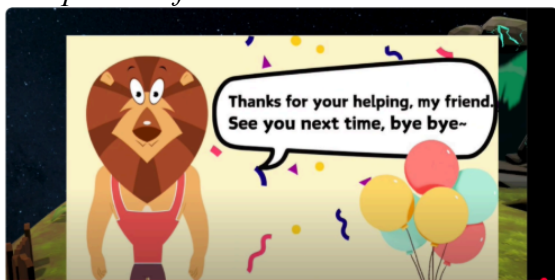
First Padlet for Gathering AI/ Website Findings Images

**Figure 9, 10**

Second Padlet for Gathering Students' Writing Work

**Figure 11**

Completion of Game



Methodology

Studying Research Methods

This research adopted experimental verification research methods, including combining research methods like qualitative and quantitative research methods. This single direction of the pilot study comprises participants' user tests ($n = 24$) of primary school students (i.e., worksheets as an evaluation) and how students respond. Also, it also incorporates some of the pre-service teachers, social worker or other professional discipline workers, participants ($n = 46$) through using the survey for the functional test with the questions guide in order to generally know the effectiveness of educational games (including educational games, user interface design, games function design, and instruction planning design). This research was conducted between January and March 2025 at one of Hong Kong Tai Po Children and Youth (C&Y) Community Centres.

Pre-pilot Study (Cross-Check Games Function)

To strengthen the rigor of the pilot, I divided it into two stages to complete the pilot study. Firstly, I have shared the preliminary game design with some professional pre-service teachers or professional students to get some initial advice, peer evaluation, and peer review. Their formative input informed revisions to game functions, interface elements, and instructional flow prior to the formal pilot.

Formal Pilot Study Procedures

To consider the ethical and moral considerations, the pilot study was approved verbally and formally by the lecturer of the Department of Curriculum and Instruction at the Education University of Hong Kong. Also, participants signed formal consent from the Tai Po Children and Youth Centre and provided informal consent to the research chief investigator (CI) where appropriate. Basically, considering the group of user participants are minors and children, this research used anonymous and pseudonymous labels (i.e., using the labeling as “Students A” and “Students B”) to protect their information that can disclose or identify their own personal particulars. Also, for the functional test, in order to ensure the security of personal particulars, the functional test will note and record the email address for checking the authenticity, convincingness, and trustworthiness of the interviewer. The functional test collected basic demographics and overall comments on game effectiveness, including user experience, interface design, functional features, and instructional design.

Data Collection

This research used two main evaluation methods, like the primary student user test. The design of worksheet-based evaluation captures usability, engagement, and learning-related responses. Also, we use the structured survey (i.e., functional test) with guided questions assessing the perceived effectiveness of the educational game's design dimensions (UI, functionality, and instructional planning), alongside open-ended suggestions.

Instruments and Measures

Implementation Stage: Intervention

Each selected and approved participant engaged in one 75-minute session. Totally, the session comprised a total of approximately 45–50 minutes for games and immersive experiences to participate in the VR immersive learning environment. For safety, participants were conducted and seated during all sessions. The equipment consists of a few computers and a visualizer. To ensure smooth adaptation to the digital environment, the facilitator followed a sequential process of learning, familiarization, and interaction during the VR learning session. To facilitate smooth adaptation to the digital context, the facilitator implemented a sequenced protocol with presentation notes that began with a brief orientation to learning objectives, followed by familiarization with devices, controls, and the user interface, then guided games interaction. Participants may not necessarily be familiar with it, Participants adaptation, engagement, and interaction with the system were systematically recorded as part of the research observation.

Results and Discussion

Educational Research

Testing Prototype During Educational Experiment

In order to provide detailed, wide, and solid evaluation and continuous improvement, I scheduled four types of tests and evaluations: pilot testing, AI-based checking (comments, suggestions, strengths, and weaknesses), conducting participants' user tests (including selected in-depth interviews), and functional testing. Overall, the educational experiment assessed the product's usability, engagement, and pedagogical effectiveness, and to identify actionable areas for refinement.

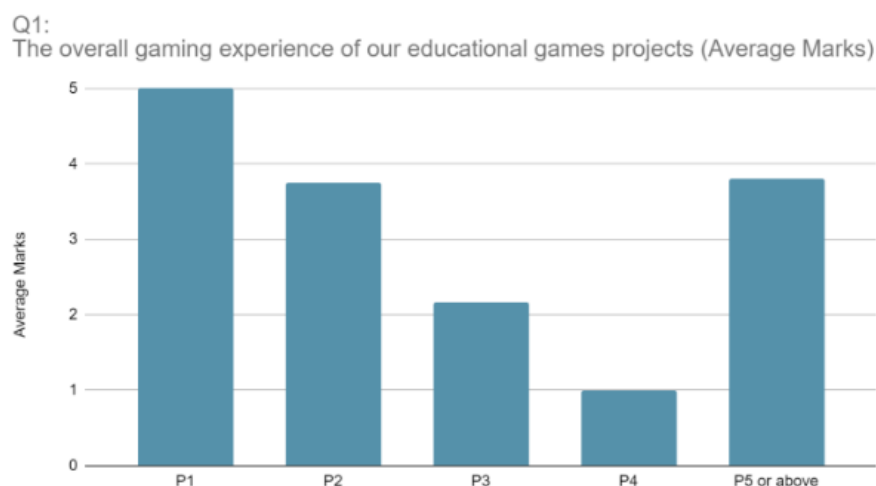
User Test

During the user test, I totally conducted it with primary school students ($n = 24$) in Tai Po at the Hong Kong Children and Youth Services Centre. I prepared PowerPoint slides to outline the project, explain how to do basic background content, and present our educational games' metaverse interface/images, videos, and prototype model and allow students to complete learning materials (i.e., writing tasks, Padlet, and innovative self-evaluation worksheets). Overall, it can enable comprehensive assessment and observe Padlet written work on educational games. Throughout the learning process, the user test conducted lasts for around 1.5 hours. During the learning process, the researcher, as an observer, is to discover students' learning motivations through clear playing game instructions. Although some students felt like spelling, texting, and writing experience were normal feelings, more students found the games fun and interesting. Uneven collaboration occasionally led to students feeling underutilized. Instructors mitigated this by giving clear instructions and assigning distinct roles. Additionally, observing the learning behavior, some students misspelled or couldn't spell the common words (e.g., mushroom, ham, apple) and asked peers for word meanings, indicating the game effectively functioned as a light "quiz" or recap for vocabulary learning. Yet, colorful and creative design can eliminate this situation, and students feel comfortable to work on. Regarding usability and overall design of educational games, primary students advised clearer conversation fonts, simpler vocabulary, and more attractive words and

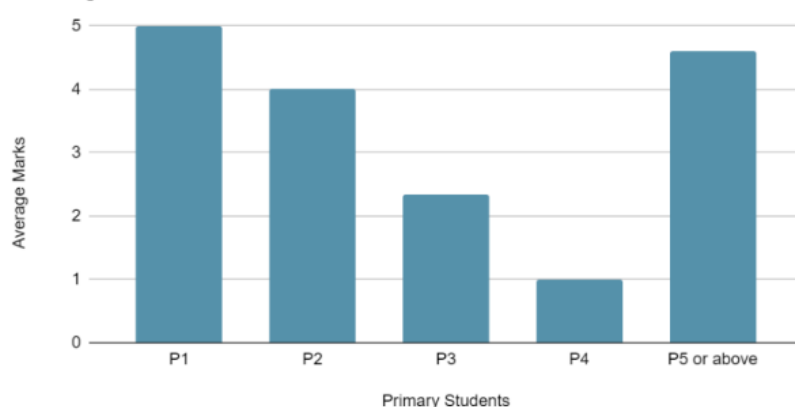
images. Students particularly appreciated the scenes, videos, and the Kuku King (a robot). Still, it is highly recommended that it address the need for clearer prompts and reminders after incorrect answers. It should have more activities and sentence writing. During the verbal qualitative research feedback, primary students may recommend conversations be more engaging and interactive. It is recommended to reduce the wordings and make Lily's response more clearly, explicitly, and specifically. Also, it can make Lily's responses more human instead of sometimes AI ideas. More choices of food and fast food are observed. Some technical support was included to improve mouse control clarity. To review detailed students' self-evaluation worksheets, (i.) Overall gaming experience: Mean 3.29 (65.8%), Median 4, Mode 5 (9/24), SD 1.67. (ii.) Also, Q2. How interesting the games are: Mean 3.58 (71.6%), Median 4.5, Mode 5 (12/24), SD 1.63. Moreover, (iii.) Q3. Learning effect of the games: Mean 3.38, Median 4, Mode 5 (10/24), SD 1.65. Overall, the interpretation of survey is the primary school students were generally satisfied, found the games interesting, and perceived meaningful learning benefits, though revisions are needed for stronger outcomes. Additionally, overall in observing different groups, like Q1 (overall experience): P1 average 5 out of 5; P2 average 3.75 out of 5; P5 or above primary school students average 3.8 out of 5. Also, during the other questions, Q2 (interest): P1 average 5 out of 5; P2 average 4 out of 5; P5+ average 4.6 out of 5. Moreover, Q3 (learning effect): P1 average 5 out of 5; P2 average 4.4 out of 5; P5+ average 3.38 out of 5. Apart from the proposed research groups may include overall age groups (grade and age) of primary school students, in order to consider the boundaries of suitable age groups games and considering different academic learning abilities, it still provides credible learning educational experiments to show particularly strong positive responses. Overall, this game is suitable for primary 3 students.

Figure 12, 13, 14

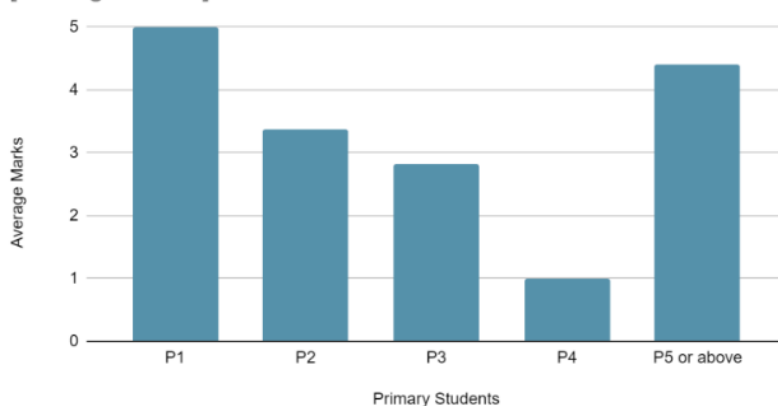
Overall Game Experience Evaluation



Q2: How interesting our educational games are. [Average Marks]



Q3. The learning effect of our educational game projects. [Average Marks]



Functional Test

In order to collect more concrete and specific research findings, we also collected functional test total participants ($n = 46$). The participants include Undergraduate or above students, especially those who are pre-service teachers and receiving education programme training. Also, some university teachers (i.e, lecturer), in-service educators and social workers also provide all-round quantitative research feedback as well. During the functional test, participants can review relevant lesson materials and videos of educational games in order to learn the operation and implementation procedures. Some were later invited for in-depth interviews. Q1. Overall prototype score (1–10): Mean 7.17, Median 7.5, Mode 8 (14/46), SD 1.79. Participants considered the game suitable for primary students, appealing, and recommendable, with room for refinement. Regarding some of generic skills and capabilities, Sensitivity: Mean 3.22 (64.4%), SD 0.67; Flexibility/feasibility: Mean 3.26 (65.2%), SD 0.68; Creative/innovative thinking: Mean 3.47 (69.4%), SD 0.54; Connecting/synthesizing/transforming to education: Mean 3.26 (65.2%), SD 0.70; Language proficiency: Mean 3.20 (64.0%), SD 0.71; Presentation of ideas: Mean 3.23 (64.6%), SD 0.81; Functions of product prototype: Mean 3.28 (65.6%), SD 0.71; Technology use/materials: Mean 3.26 (65.2%), SD 0.60; Suitability for Primary 3: Mean 3.22 (64.4%), SD 0.69 and Efficiency of evaluation: Mean 3.28 (65.6%), SD 0.58. Therefore, primary 3 students are normal, appropriate and together with lesson content, teaching materials and capabilities to handle the topic. Throughout the result, this research highlighted a few key points; for instance, it can provide game-based learning, educational gamification, and implement fun learning. Students like learning through games with little vocabulary.

Simultaneously, the prototype blends educational content with gameplay, making English learning enjoyable for Primary 3 students. Additionally, it can consider a few designs, like interactivity and immersion. 3D environments and character interactions (e.g., cute robots) can maintain students' learning motivation. Additionally, using creative and thoughtful design, colorful visuals, well-conceived characters, and platform integration (e.g., Padlet) enhances the accessibility and appeal of educational games and learning materials packages. Room for improvement is about how to make interactive user-generated content, user interface, and readability; increase font sizes; and improve text clarity for young child learners. Also, when designing educational games, it also considers the game structure and pace (including challenges and difficulties of the educational games). Additionally, some educators discovered that we should shorten dialogues and videos, use shorter sentences, and add more interactive checkpoints to sustain engagement. In addition, it can have aesthetic and visual elements. Some pre-service teachers claimed that background colors and considered alternative formats (e.g., 2D or visual novel format) where clarity is paramount. Implementing the above changes will likely improve usability, comprehension, and overall enjoyment for the target age group. For the open question, this functional test collects responses and perspectives on the immersive media for promoting English education, learning, and teaching. I noted one interviewee response: "It's pretty good. It feels like playing a game where you learn a lot of English-related knowledge. It uses strong game-based learning and educational game elements." The response summarizes how 3D educational games can provide learning engagement, motivation, drawing attention and interests, encouraging active participation, and keeping interactivity. Yet, it should consider the interactivity, differentiation (learning diversity), instructions, guidance, scaffolding, and risk of distraction. The academic and practical research is anticipated to apply mixed-method evaluation (quantitative + qualitative research methods) in order to demonstrate the accurate feedback and response.

Table 1

Results of Functional Test

	Mean	Median	Mode [Appeared Time]	SD	Range (Max and Min)
Sensitivity	3.22 (64.4%)	3	3 [22]	0.67	4
Flexibility/ Feasibility	3.26 (65.2%)	3	3 [22]	0.68	4
Creative/Innovative thinking	3.47 (69.4%)	3.5	4 [23]	0.54	4
Connecting, synthesising, transforming to education	3.26 (65.2%)	3	3 [23]	0.70	4
Language Proficiency	3.20 (64.0%)	3	3 [24]	0.71	4
Presentation of ideas	3.23 (64.6%)	3	4 [20]	0.81	4

Functions of Product Prototype	3.28 (65.6%)	3	3 [22]	0.71	4
Technology Use/ Technology Materials	3.26 (65.2%)	3	3 [27]	0.60	4
Suits to primary 3 students	3.22 (64.4%)	3	3 [25]	0.69	4
The efficiency of evaluation in the functional test	3.28 (65.6%)	3	3 [27]	0.58	4

Discussion

The technological and pedagogical affordances of immersive media are to provide safety and game-based environments for primary English language learning, especially vocabulary acquisition, motivation, and light formative assessment. The participants can receive immediate feedback, positive reinforcement, and overall learning motivation. The technological affordances of immersive platforms (e.g., situational authenticity, embodied interaction, narrative context) suggest potential for transferring vocabulary knowledge into use through task-based activities and micro-scenarios. Additionally, to consider teaching innovation and assessment, research demonstrates that immersive environments (e.g., embedded micro-assessments, adaptive prompts, performance analytics) have prospective benefits for formative feedback and learner self-regulation. However, implementation fidelity remains a critical determinant, including educators' instructions, guidance (process of scaffolding), and transparent assessment criteria.

How to Use the “Gamification” Concept in Our Instruction Design?

After discussing the use of 3D Unity Platform-designed educational games, it is highly recommended to cover the discussion on gamification, which demonstrates the efficiency and effectiveness of how to use the educational games, applied authentic assessment, and teaching and learning theory. For example, it used the assessment for learning (AFL) when using the educational games, different worksheets, Padlet for writing, etc. Sometimes, when we use collaborative writing work, it is another alternative to different assessments. Although it may reduce the assessment efficiency when considering individual contribution or performance, it still provides positive evaluation values, like collaboration, generic skills, or minimized learning differences. Also, it also used the assessment as learning in order to evaluate students' learning performance (i.e., language proficiency, language capabilities, especially comprehension of vocabulary, managing vocabulary use, writing language expression, etc.). The format of using the worksheet and individual writing performance are good for referencing. To face the educational technology advancement and revolution of educational transformation, concepts of gamification, applying different educational games, and implementing game-based learning are very common, especially after the COVID-19 pandemic. Gamification refers to the use of gameplay and emphasis to promote users (like participants and students) in the activity (Groh et al., 2012; Wood & Reiners, 2015). Also, from educators' perspectives, games should be incorporated with the instruction design. For example, it can achieve ideas of “players engaging in an artificial conflict, defined by rules, that results in a quantifiable outcome” (Salen & Zimmermann, 2003, p. 96). Also, gamification can provide a game mechanism, detail the game's working mechanism, and offer

a time of playing in a fun and enjoyable experience. For a simple understanding of gamification, it is a combination of components between building good interaction dynamics behaviors with the supporting key operation processes intention (Werbach & Hunter, 2012). Gamification indeed changes people's particular and specific activities. Also, it can provide you with supporting fun and greater engagement in doing different tasks or things. Gamification refers to the user or participants. The gamification and game mechanism (i.e., gamification) only exist to ensure the strong sense of happiness, enthusiasm, and niceness to play, which are game mechanisms in a gamified system that merely exist to ensure a strong sense of fun, passion, and play that is fixed within the system (Deloitte, 2012). It can also enhance the learning interest (i.e, breaking down our own boring and dull stereotypes of playing games within class time (HK01 News, 2022) and learning satisfaction (Sailer et al., 2017).

Gamification Remarks

- Instruction design of Educational Games
- Game Elements and Reward Mechanism
- Games Characteristics and Educators' Perspectives

Table 2

Checklist of Successful Incorporating Educational Games (Wood & Reiners, 2015)

Gamification Characteristics	Explanation
1. Badges: Successful and Achievement (or Accomplishment)	It can provide certificate and reward mechanism (i.e, token economy)
2. Leaderboards: Managing how to get a success	It can incorporate after the educational games and count the best quick finish time with correct rate face-to-face format
3. Quests or managing tasks (beware challenges) with the objectives (e.g., waypoints or milestones)	It is very important to provide appropriate and proper tasks with suitable difficulties.
4. Making as a competition	It can be set up as a competition if educators or social workers want to.
5. Virtual Goods, Gifts or Token Economy	Optional
6. Gifts/ Transaction	Optional
7. Level of difficulties	The difficulty setting should follow the general instructional lesson plan design and considering the learning diversity of students. Due to recap purposes, it is recommended the difficulties from easy to difficult.

8. Collaboration, cooperation, how to consider the team, individual or group format	It can make collaboration tasks.
9. Feedback	Padlet should be offered with the feedback. It can be provided by educators (or social workers, or parents if the game promotes home version). Feedbacks are given in the formal (like the self-assessment, peer evaluation or guidance checking), or verbal.
10. Ownership, contribution, team and group	Everyone participating should play the games as the contribution.
11. Progress, and progress bar	Optional
12. Stochastic elements, where randomness and chance provide a sense of uncertainty and fun	Optional

Implications to Educators and Social Worker (Recommendation)

It is recommended to apply blended learning, together with face-to-face and online teaching and learning. It can incorporate immersive media with traditional pedagogy and provide support materials (instructions, user guides, practice exercises) to reinforce learning. This research paper is a human-centered and practical research-based approach to explore more immersive learning environments and game-based learning in primary English education. To align with clear learning objectives and iterative design with games, the research can emphasize the accessibility, assessment, and teaching and learning in the Hong Kong Primary Education Curriculum. It is highly recommended that educators and social workers consider the flexible and comprehensive assessment evaluation. From a game designer's and planner perspective, games can be applied at home, and parents or adults can become instructors or facilitators to provide support without classroom settings. Simultaneously, teacher and learner capacity-building and attempts to develop technological innovation that translates into meaningful and measurable gains for diverse learners. Social workers can use it as a revision tool or discover students' learning capabilities issues and further support them.

Summary and Future Study

Eventually, educational games will indeed be a proactive, viable, and motivating approach to primary English language learning, with clear avenues for optimization. The original topic, sourced from the master capstone project, emphasized primary English education professional competencies, pedagogical implications, and future directions for research and practice. Rather than foregrounding individual experience, the discussion situates the work within broader discourses on digital learning, immersive media, and equitable access in primary education. The whole project process emphasizes real-world application, and participants' research outcome aligns with practice-oriented roles in education and social services, where evidence-based, scalable, and suitable solutions are increasingly valued.

More scholars want to discuss and explore more about cognitive and metacognitive skills, reducing extraneous cognitive load, fostering critical and creative thinking and analytical skills and helping students improve their concentration, problem-solving capabilities, emotional intelligence, psychological resilience, and self-discipline. Also, more creative and innovative education pedagogies and approaches can be incorporated.

Limitations

To consider different group dynamics, I think it is essential for the primary school students to be the main participants and care for the behavior and symbolic interactions during playing games. From a pre-social worker perspective, we would like to care whether students are fully engaged in the game (to achieve the learning goals and attain the standard of flow theory). Also, we can assess students' spiritual and mental health (how they perceive emotions and feelings and whether they can perform in a different and extreme way). Also, it is very essential to observe the game-playing nature and experience of the users. For example, whether they have a sense of curiosity or competitiveness. Whether they can have the group process, group cohesion, and distribution of the group member and role well. It is very important to have more encouragement in order to ensure the desired learning outcomes. Our design of Primary English games not only covers the use of educators and within lessons but also covers the use of parents and without classroom time. Therefore, I think it can see different relationships and rapport. I think it also considers how to operate and maintain relationships. Perhaps educational games combined with the digital storytelling, narratives, and storylines. It can have more engagement and participation in the games. It can encourage adequate opportunities for primary students to deliver and draft their own ideas. Additionally, it provides authentic and real-time feedback, allowing students to facilitate learning strategies (Bonk et al., 2002; Dalsgaard & Godsk, 2007; Garrison & Vaughan, 2008). To consider more absorbing, engaging, and immersive environments, the Unity Platform with coding 3D games should be customizable, related to diverse learning styles and preferences, and stimulating educational experiences. Eventually, it can provide self-efficacy, which promotes students' confidence and own abilities (Illi & Elhassouny, 2025; Li & Yu, 2023; Thango, 2024).

Acknowledgement

This research I would like to express my sincere gratitude to all the participants contribution to our research study. We thank all the people who contribute and wrote previous versions of this document. I also specially thank for Dr. Lam Lap Kwan Alex, Lecturer I, and Dr. Hengky “Hank” Susanto guest lecturer at Department of Curriculum and instruction, The Education University of Hong Kong for professional advice. Also, I am thank for Mr. Leung, Kin Sang Taddy from Student Affair Office (SAO), The Education University of Hong Kong and among EDUHK Learning Buddies Team Member, voluntary participants 2024/2025 and Tai Po Hong Kong Children and Youth Services (Jockey Club Tai Po Integrated Children and Youth Service Centre) Social Worker and Staff to coordinate the initial pilot study and practical advice. This research is also awarded as the Level 3 Creative Lesson Plan Design in Creative Teaching Review Program under the Creative Teachers Association CTA) Limited. This research also acknowledges awards.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author declares that this paper used Grammarly, Grammar-checking writing softwares/functions (like EDUHK ChatGPT, Grok AI, POE, perplexity.ai, and QuillBot) to have proofreading and refining the language used in the manuscript. The usage was limited to correcting grammatical, spelling errors and rephrasing statements for accuracy and clarity. The author further declares that, apart from Grammarly, no other AI or AI-generated technologies were used to generate content in writing the manuscript. The ideas, design, procedures, findings, analyses, and discussion are originally written and derived from careful and systematic conduct of the research.

Funding

This research study received no both external and internal funding.

Institutional Review Board Statement

Not applicable.

Participant Consent Statement

All participants gave and provided their verbal or formal consent and participated in the study voluntarily.

Data Availability Statement

The original contributions presented in this study are included in the article. Further inquiries can be directed to the corresponding author.

Conflicts of Interest

The author declares no conflicts of interest.

Disclaimer/Publisher's Note

The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of editorial institution and/or individual editors.

References

- Aksakal, N. (2015, May). Theoretical View to The Approach of The Edutainment. *Procedia - Social and Behavioral Sciences*, 186, 1232–1239. <https://doi.org/10.1016/j.sbspro.2015.04.081>
- Albiladi, W. S. & Alshareef, K. K. (2019, March). Blended Learning in English Teaching and Learning: A Review of the Current Literature. *Journal of Language Teaching and Research*. 10(2), 232–238. <http://dx.doi.org/10.17507/jltr.1002.03>
- Al-Khresheh, M. H. (2025, March 10). The Cognitive and Motivational Benefits of Gamification in English Language Learning: A Systematic Review. *The Open Psychology Journal*. <https://doi.org/10.2174/0118743501359379250305083002>
- Asmaroini, A. P., Trisofirin, M., & Shohenuddin. (2023). Internalisasi nilai-nilai Pancasila di Sanggar Belajar Sentul Malaysia. *Journal Pancasila Dan Kewarganegaraan*. [Internalization of Pancasila values at Sentul Learning Workshop Malaysia. *Journal Pancasila And Citizenship*]. 1(2), 50–64. <https://doi.org/10.24269/jpk.v8i2.7557>
- Azawi, R. A., Bulshi, M. A., Farsi, F. A. (2016, August). Educational Gamification Vs. Game Based Learning: Comparative Study. *International Journal of Innovation Management and Technology*, 7(4), 131–136. <https://doi.org/10.18178/ijimt.2016.7.4.659>
- Baba, J. (2022, December). Learning of English Literature: ESL Pre-Service Teachers' Perceptions and Challenges. *International Journal of Modern Languages and Applied Linguistics*, 6(4), 1–16. <https://doi.org/10.24191/ijmal.v6i4.19521>
- Bai, B., & Guo, W. (2021). Motivation and self-regulated strategy use: Relationships to primary school students' English writing in Hong Kong. *Language Teaching Research*, 25(3), 378–399. <https://doi.org/10.1177/1362168819859921>
- Bai, S., Hew, K. F., & Huang, B. (2020, June). Does gamification improve student learning outcomes? Evidence from a meta-analysis and synthesis of qualitative data in educational contexts. *Educational Research Review*, 30. <https://doi.org/10.1016/j.edurev.2020.100322>
- BBC. (2022, January 6). *6 Minute English: Welcome to the 'metaverse' (International Level)*. https://www.bbc.co.uk/learningenglish/features/6-minute-english_2022/ep-220106
- Bonk, C. J., Olson, T. M., Wisher, R. A. and Orvis, K. L. (2002). Learning from Focus Groups: An Examination of Blended Learning. *Journal of Distance Education*, 17, 97–118. <https://curtbonk.com/blend.pdf>
- Boyle, E. A., Hainey, T., Connolly, T. M., Gray, G., Earp, J., Ott, M., Lim, T., Ninaus, M., Ribeiro, C., & Pereira, J. (2016). An update to the systematic literature review of empirical evidence of the impacts and outcomes of computer games and serious games. *Computers & Education*, 94, 178–192. <https://doi.org/10.1016/j.compedu.2015.11.003>

- Britton, B. (2023, March 24). *Building in the Metaverse, with Spatial.io*.
<https://medium.com/@bbrit1424/building-in-the-metaverse-with-spatial-io-c82c65249b29>
- Bryn Mawr College. (2024, June 20). *Immersive Realities Initiative: Bringing extended reality technology to students and faculty*.
<https://guides.tricolib.brynmawr.edu/c.php?g=1335759&p=10414512>
- Chang, C. H., Wei, C. C., Lien, W. C., Yang, T. H., Liu, B., Lin, Y., Tan, P. T., & Lin, Y. C. (2025). The Usability and Effect of a Novel Intelligent Rehabilitation Exergame System on Quality of Life in Frail Older Adults: Prospective Cohort Study. *JMIR serious games*, 13, e50669. <https://doi.org/10.2196/50669>
- Chen, J., & Fong, D. (2020). A motivational story in Hong Kong: Generating goals for language learners and blended learning designers from a mixed-method learning analytics approach in English for academic purposes. In M. R. Freiermuth & N. Zarrinabadi (Eds.), *Technology and the psychology of second language learners and users* (pp. 363–382). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-34212-8_19
- Cheng, M. T., Chen, J. H., Chu, S. J., & Chen, S. Y. (2015). *The use of serious games in science education: A review of selected empirical research from 2002 to 2013*.
<https://doi.org/10.1007/s40692-015-0039-9>
- Chiu, K. F. T. (2021, November). Digital support for student engagement in blended learning based on self-determination theory. *Computers in Human Behavior*, 124.
<https://doi.org/10.1016/j.chb.2021.106909>
- Collie, J., & Slater, S. (1987). *Literature in the Language Classroom*. Cambridge University Press.
- Connolly, T. M., Boyle, E. A., MacArthur, E., Hainey, T., & Boyle, J. M. (2012). A systematic literature review of empirical evidence on computer games and serious games. *Computers & Education*, 59(2), 661–686.
<https://doi.org/10.1016/j.compedu.2012.03.004>
- Creative English Teacher. (2024, July 26). *Gamifying Literature: An Introduction*.
<https://creativeenglishteacher.com/blogs/news/gamifying-literature-an-introduction>
- Dalsgaard, C. & Godsk, M. (2007, February). Transforming Traditional Lectures into Problem-Based Blended Learning: Challenges and Experiences. *Open Learning*, 22(1), 29–42. <https://doi.org/10.1080/02680510601100143>
- Deloitte. (2012). *Global Outsourcing and Insourcing Survey*. Deloitte LLC.
<https://www.deloitte.co.uk/makeconnections/assets/pdf/global-outsourcing-and-insourcing-survey-2012.pdf>

- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Denying “gamification”. In *Proceedings of the 15th international academic MindTrek conference on envisioning future media environments - MindTrek '11* (pp. 9–15). <https://doi.org/10.1145/2181037.2181040>
- Dorji, T. (2022). The Effect of Simulation Games in Improving Grade XII Students’ Academic Performance in Economics: An Action Research. *Educational Innovation and Practice*, 5(1), 17–35. <https://doi.org/10.17102/5.2.eip.2022>
- Education Bureau. (2021, January 19). *Optimise the curriculum: Foster whole-person development and diverse learners*. https://www.edb.gov.hk/attachment/en/curriculum-development/renewal/taskforce_cur/TF_CurriculumReview_FinalReport_e.pdf
- Education Bureau. (2024). *Primary Education Curriculum Guide (2024) (Traditional Chinese)*. https://www.edb.gov.hk/attachment/tc/curriculum-development/major-level-of-edu/primary/curriculum-documents/Primary_Education_Curriculum_Guide/PECG%202024_full.pdf
- Education Bureau. (2025). *English Language Education Key Learning Area English Language Curriculum Guide (Primary 1 – 6)*. https://www.edb.gov.hk/attachment/en/curriculum-development/kla/eng-edu/Curriculum%20Document/Pri_ELCG_Primary_1-6_2025.pdf
- Englist. (2023, February 14). *English as a Second Language vs English Language Arts vs Academic Writing*. <https://englist.com/en/english-as-a-second-language-vs-english-language-arts-vs-academic-writing/>
- Garrison, D. R., & Vaughan, N. D. (2008). *Blended Learning in Higher Education: Framework, Principles, and Guidelines*. San Francisco, Jossey-Bass. https://www.researchgate.net/publication/277197718_Blended_Learning_in_Higher_Education_Framework_Principles_and_Guidelines
- Gray, C., & Jones, R. (2015). *Primary Longman express*. 3 (2nd ed.). Pearson Education Asia Ltd. https://www.pearson.com.hk/zh_HK/learning-and-teaching-resources/primary/english/express2e.html
- Groh, A. M., Roisman, G. I., van Ijzendoorn, M. H., Bakermans-Kranenburg, M. J., & Fearon, R. P. (2012). The significance of insecure and disorganized attachment for children's internalizing symptoms: a meta-analytic study. *Child development*, 83(2), 591–610. <https://doi.org/10.1111/j.1467-8624.2011.01711.x>
- Gunawan, I. D. (2025, July). Gamification in Teaching English to Young Learners: A Review of Recent Studies. *Journal of English Education Program*. 6(2). https://www.researchgate.net/publication/395284660_Gamification_in_Teaching_English_to_Young_Learners_A_Review_of_Recent_Studies
- Gundersen, S. W., & Lampropoulos, G. (2025). Using Serious Games and Digital Games to Improve Students’ Computational Thinking and Programming Skills in K-12 Education: A Systematic Literature Review. *Technologies*, 13(3), 113. <https://doi.org/10.3390/technologies13030113>

- HK01 News. (2022, November 30). *STEAM Education | Research Indicates VR Combined with Mindfulness Training May Help Students Reduce Stress and Improve Exam Performance. (Traditional Chinese)*.
https://www.hk01.com/article/832780?utm_source=01articlecopy&utm_medium=referral
- HK01 News. (2026, January 7). *Chinese Culture Mobile Game Launched The Hong Kong Management Association K S Lo College Promotes Gamified Learning to the General Public. (Traditional Chinese)*.
https://www.hk01.com/article/60306174?utm_source=01articlecopy&utm_medium=referral
- Hong, Y. J., Saab, N. & Admiraal, W. (2024, April). Approaches and game elements used to tailor digital gamification for learning: A systematic literature review. *Computers & Education*, 212, 105000. <https://doi.org/10.1016/j.compedu.2024.105000>
- Hossain, K. I. (2024, December). Literature-based language learning: Challenges, and opportunities for English learners. *Ampersand*, 13, 100201.
<https://doi.org/10.1016/j.amper.2024.100201>
- Illi, C. & Elhassouny, A. (2025, January). *Edu-Metaverse: A Comprehensive Review of Virtual Learning Environments*.
https://www.researchgate.net/publication/388914535_Edu-Metaverse_A_Comprehensive_Review_of_Virtual_Learning_Environments
- Kapp, K. (2012, January). *The gamification of learning and instruction: Game-based methods and strategies for training and education*. Pfeiffer.
https://www.researchgate.net/publication/273947281_The_gamification_of_learning_and_instruction_Game-based_methods_and_strategies_for_training_and_education_San_Francisco_CA_Pfeiffer
- Kapp, K. (2015, January 5). *2014 Reflections on Gamification for Learning*.
<https://karlkapp.com/2014-reflections-on-gamification-for-learning/>
- Khatib, M., Rezaei, S. & Derakhshan, A. (2011, March). *Literature in EFL/ESL Classroom*. Canadian Center of Science and Education. *English Language Teaching*, 4(1).
<https://files.eric.ed.gov/fulltext/EJ1080411.pdf>
- Kocadere, S. A., & Çağlar, Ş. (2018). Gamification from player type perspective: A case study. *Journal of Educational Technology & Society*, 21(3), 12–22.
<https://www.jstor.org/stable/26458503>
- Koivisto, J., & Hamari, J. (2019). The rise of motivational information systems: A review of gamification research. *International Journal of Information Management*. 45, 191–210. <https://doi.org/10.1016/j.ijinfomgt.2018.10.013>
- Krashen, S. (1985). *The Input Hypothesis: Issues and Implications*. Longman, London.

- Krath, J., Schürmann, L. & Korflesch, H. F. O. (2021, December). Revealing the theoretical basis of gamification: A systematic review and analysis of theory in research on gamification, serious games and game-based learning. *Computers in Human Behavior*, 125. <https://doi.org/10.1016/j.chb.2021.106963>
- Lam, L. K. A. (2022a). *The Development of an English Language Teaching Package – Trials, Feedback and their Implications for a Blended Learning Programme*. Nadia Chan Haichia. Diocesan Boys' School Primary Division. https://www.hkedcity.net/goelearning/sites/default/files/upload/6184a40aaee1be9022ffa39b/1636082834_1626141549_LTE%20Online_Mr%20Alex%20Lam%20and%20Ms%20Nadia%20Chan_%E6%B7%B7%E5%90%88%E5%BC%8F%E6%95%99%E5%AD%B8%E5%9C%A8%E8%8B%B1%E8%AA%9E%E6%95%99%E5%AD%B8%E4%B8%8A%E7%9A%84%E6%87%89%E7%94%A8%E5%92%8C%E7%99%BC%E5%B1%95%EF%BC%9A%E6%9C%89%E9%97%9C%E6%95%99%E5%AD%B8%E8%A8%88%E5%8A%83%E3%80%81%E6%95%99%E5%B8%AB%E5%9B%9E%E9%A5%8B%E5%92%8C%E8%AA%B2%E7%A8%8B%E6%84%8F%E7%BE%A9_clean.pdf
- Lam, L. K. A. (2022b). *Blended Learning in English Writing Teaching: A Case with e-Portfolios in A Primary School*. Learning and Teaching Expo 2022. https://www.hkedcity.net/goelearning/sites/default/files/upload/63abfcf8aee1be172564f1e2/1680059244_K12-D1-05_Blended%20Learning%20in%20English%20Writing%20Teaching%20%E2%80%94%94%20A%20Case%20with%20e-Portfolios%20in%20a%20Primary%20School.pdf
- Lam, L. K. A. (2024, March). *Blending 'Micro' Into 'Macro': The Right Doses for Effortless Learning*. <https://www.edcity.hk/home/en/edpost/%E6%B7%B7%E3%80%8C%E5%BE%AE%E3%80%8D%E6%96%BC%E3%80%8C%E5%AE%8F%E3%80%8D%E6%95%99%E5%AD%B8%E6%9B%B4%E5%BE%97%E5%BF%83%E6%87%89%E6%89%8B/>
- Lam, R. (2019). Teacher assessment literacy: Surveying knowledge, conceptions and practices of classroom-based writing assessment in Hong Kong. *System*, 81, 78–89. https://www.researchgate.net/publication/330529341_Teacher_assessment_literacy_Surveying_knowledge_conceptions_and_practices_of_classroom-based_writing_assessment_in_Hong_Kong
- Landers, R. N., & Armstrong, M. B. (2017, June). Enhancing instructional outcomes with gamification: An empirical test of the Technology-Enhanced Training Effectiveness Model. *Computers in Human Behavior*, 71, 499–507. <https://doi.org/10.1016/j.chb.2015.07.031>
- Lee, I. (2011a). Formative Assessment in EFL Writing: An Exploratory Case Study. *Changing English*, 18(1), 99–111. <https://doi.org/10.1080/1358684X.2011.543516>
- Lee, I. (2011b). *Issues and challenges in teaching and learning EFL writing: The case of Hong Kong*. *Foreign language writing instruction: Principles and practices*. 118–137. https://www.researchgate.net/publication/291023819_Issues_and_challenges_in_teaching_and_learning_EFL_writing_The_case_of_Hong_Kong

- Lee, Y., Hwang, G., & Chen, P. (2022). Impacts of an AI-Based Chabot on College Students' After-Class Review, Academic Performance, Self-Efficacy, Learning Attitude, and Motivation. *Educational Technology Research and Development*, 70, 1843–1865. <https://doi.org/10.1007/s11423-022-10142-8>
- Legislative Council of Hong Kong. (2021, January 19). *Legislative Council Panel on Education Review Report of the Task Force on Review of School Curriculum*. <https://www.legco.gov.hk/yr20-21/english/panels/ed/papers/ed20210119cb4-365-1-e.pdf>
- Li, M., & Yu, Z. (2023, January 23). A systematic review on the metaverse-based blended English learning. *Frontiers in psychology*, 13, 1087508. <https://doi.org/10.3389/fpsyg.2022.1087508>
- McKay, S. (1982). Literature in the ESL Classroom. *TESOL Quarterly*, 16(4), 529–536. <https://doi.org/10.2307/3586470>
- McKay, S. (2001). Literature as Content for ESL/EFL. In M. Celce-Murcia (Ed.), *Teaching English as a Second or Foreign Language*. Heinle & Heinle. https://www.academia.edu/36244291/Celce_Murcia_ed_Teaching_English_as_a_Second_or_Foreign_Language_pdf
- Mia M. R., Ahamed S. I., Nemanich S. (2025). *Gamified mHealth System for Evaluating Upper Limb Motor Performance in Children: Cross-Sectional Feasibility Study*. JMIR Serious Games. 13. <https://games.jmir.org/2025/1/e57802>
- Pabur, H. E., Ali, M. I., Tatipang, D. P. (2023, October). The Use of Literature in English as a Foreign Language Teaching and Learning Process: The Relationship and Suggested Techniques to be Used in EFL Classrooms. *Edumaspul - Jurnal Pendidikan*, 7(2), 2660–2670. https://www.researchgate.net/publication/382868560_The_Use_of_Literature_in_English_as_a_Foreign_Language_Teaching_and_Learning_Process_The_Relationship_and_Suggested_Techniques_to_be_Used_in_EFL_Classrooms
- Padlet. (n.d.). *The official website of Padlet Platform*. <https://padlet.com/>
- Park, M., & Wang, L. (2019). Instructional design of technology-enhanced process writing for secondary EFL learners in Hong Kong. *Context-Specific Computer-Assisted Language Learning*, 122–136.
- Poly U. (n.d.). *Overview of Blended Learning*. https://www.polyu.edu.hk/edc/explore-a-topic_old/blended-and-online-lnt/overview-of-blended-learning/
- Poly U. (2019). *Children's Literature in English Language Teaching for Primary Students in Hong Kong (CLELT)*. <https://scolarhk.edb.hkedcity.net/sites/default/files/media/PS05.pdf>
- Qian, M., & Clark, K. R. (2016). Game-based learning and 21st century skills: A review of recent research. *Computers in Human Behavior*, 63, 50–58. <https://doi.org/10.1016/j.chb.2016.05.023>

- Rashid, H., & Hui, W. (2022). Discuss the benefits of using literature with ESL students and the various approaches. *International Journal of Social Science. Innovation and Educational Technologies (Online)*, 3(11), 123–129.
https://www.issjournal.com/Makaleler/364050338_123-129.pdf
- Sailer, M., Hense, J. U., Mayr, S. K., & Mandl, H. (2017, April). How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. 69. *Computers in Human Behavior*, 371–380.
<https://doi.org/10.1016/j.chb.2016.12.033>
- Sailer, M., & Homner, L. (2020). The gamification of learning: A meta-analysis. *Educational Psychology Review*, 32(1), 77–112.
https://www.researchgate.net/publication/335189630_The_Gamification_of_Learning_a_Meta-analysis
- Salen, K. & Zimmerman, E. (2003, October 1). *Rules of Play: Game Design Fundamentals*. The MIT Press.
https://dl.acm.org/doi/10.5555/1215723?__cf_chl_tk=YOQoWJBFjKGKWIrVF8MOyuy.4yovfzUdSYISQBQb_YA-1767929348-1.0.1.1-jXV3aMYsXOYrcrKQtRSCtmby2pCZlZUHmkAYqnXiJsA
- Seaborn, K., & Fels, D. I. (2015). Gamification in theory and action: A survey. *International Journal of Human-Computer Studies*, 74, 14–31.
<https://www.sciencedirect.com/science/article/abs/pii/S1071581914001256>
- Shiu, W. H. C. (2024, February 27). Teacher learning in Hong Kong: primary English language teachers' cognitions about online teaching to survive or thrive during COVID-19. *Teachers and Teaching*, 30(7–8), 1097–1125.
<https://doi.org/10.1080/13540602.2024.2328017>
- Spatial.io (n.d.). *The official website of Spatial.io Platform*. <https://www.spatial.io/>
- Sze, P. (2008). Online collaborative writing using wikis. *The Internet TESL Journal*, 14(1), 1–5. <http://iteslj.org/Techniques/Sze-Wikis.html>
- Thango, A. B. (2024). *The Future of Education: Writing Exams in the Metaverse at South African Universities*. IntechOpen. <https://doi.org/10.5772/intechopen.112003>
<https://www.intechopen.com/chapters/87347>
- Triantafyllou, S.A., Georgiadis, C. & Sapounidis, T. (2025). Gamification in education and training: A literature review. *International Review of Education*. 71, 483–517.
<https://doi.org/10.1007/s11159-024-10111-8>
- Unity (n.d.). *The official website of Unity Platform*. <https://unity.com/cn>
- Van Gaalen, A. E. J., Brouwer, J., Schönrock-Adema, J., Bouwkamp-Timmer, T., Jaarsma, A. D. C., & Georgiadis, J. R. (2021). *Gamification of health professions education: a systematic review*. *Advances in health sciences education: theory and practice*, 26(2), 683–711. <https://doi.org/10.1007/s10459-020-10000-3>

- Vlachopoulos, D., Makri, A. (2017). The effect of games and simulations on higher education: a systematic literature review. *International Journal of Educational Technology in Higher Education*, 14(22). <https://doi.org/10.1186/s41239-017-0062-1>
- Werbach, K., & Hunter, D. (2012). *For the Win: How Game Thinking Can Revolutionize Your Business*. Wharton Digital Press.
https://www.researchgate.net/publication/273946893_For_the_Win_How_Game_Thinking_can_Revolutionize_your_Business
- Wood, L. C. & Reiners, T. (2015). Gamification. In M. Khosrow-Pour (Ed.), *Encyclopedia of Information Science and Technology* (3rd ed., pp. 3039–3047). Information Science Reference. https://www.researchgate.net/publication/265337179_Gamification
- Zainuddin, Z., Chu, S. K. W., Shujahat, M., & Perera, C. J. (2020). The impact of gamification in learning and instruction: A systematic review of empirical evidence. *Educational Research Review*, 30. <https://doi.org/10.1016/j.edurev.2020.100326>
- Zichermann, G., & Cunningham, C. (2011). *Gamification by Design: Implementing Game Mechanics in Web and Mobile Apps*. O'Reilly Media.

Contact email: u3662168@connect.hku.hk