Teaching GBL Principles to Japanese Students of Education in an EFL Setting

Andrew Gallacher, Stephen Case and Jay Palarino
Faculty of Education, University of Teacher Education Fukuoka, Munakata City, Japan

andrewgallacher@fwu.ac.jp
stephen.v.case@gmail.com
jay.palarino.ilc@gmail.com

Abstract: A growing body of evidence shows that game-based learning (GBL) has become an invaluable tool for educators. Despite this fact, Japanese teacher training programs routinely ignore its inclusion. Aiming to address this issue, an innovative content language and integrated learning (CLIL) curriculum was developed in order to teach Japanese students of education the basics of GBL within their English communication classes. This paper presents a comprehensive account of the curriculum's development, the rationale behind it, and explores preliminary evidence regarding students' attitudes towards using GBL principles in their prospective teaching careers following course completion. A total of 147 students with English communication classes were included in the study, ranging from Common European Framework of Reference (CEFR) levels B2 to C1. Although exploratory in nature, early evidence suggests that after having undergone the course, students recognized the value of GBL principles and considered them useful for their future careers as educators. From an English as a Foreign Language (EFL) perspective, instructors observed that the method of teaching described herein fostered a livelier, more enthusiastic, and interactive learning environment compared to traditional EFL classrooms. These findings imply that GBL and game design principles might be useful to include in teacher-training programs, both in Japan and elsewhere.

Keywords: Content and Language Integrated Learning (CLIL), Game Based Learning (GBL), Task Based Learning (TBL), Games and Gaming, English as a Foreign Language (EFL), English as a Medium of Instruction (EMI), Curriculum development

1. Introduction

Due to the rapid development and adoption of digital technology over the last half decade, education has undergone unprecedented change (Saykili, 2019). New online platforms have enabled a more personalized and interdisciplinary approach towards learning (Walkington & Bernacki, 2020; Kopnina, 2020), which has led to a shift in the liberal arts in the direction of "global citizenship" and "sustainability" (Estelles & Fischman, 2020) as well as an increased focus on STEAM (Science, Technology, Engineering, Arts and Mathematics) subjects (Li et al., 2020). Meeting these changes in demand have been challenging for educators who are now expected to offer more to their students with fewer resources (Bottiani et al., 2019). This has inspired teachers to explore new pedagogical strategies such as task and project-based learning (Grossman et al., 2019), as well as various forms of multilingual instruction (Hu, 2023).

In Japan, these trends have now emerged in EFL classrooms, with many schools moving away from traditional forms of EFL teaching towards using English as a medium of instruction (EMI) within more complex content language and integrated learning (CLIL) curricula (Ikeda et al., 2021). An early example of this is Sophia University's *English for Academic Purposes (AEP)* program, which was first implemented in 2008 (2021). Today, most Japanese universities offer some form of CLIL-based "enrichment" within their curricula through either a "soft" or "hard" approach, where the former prioritizes instruction of the language elements over content (such as the case with Sophia University's *AEP* program), while the latter focuses almost exclusively on content with English being the medium of instruction (I.E. Japanese students studying biology in English). Generally speaking, in Japan, "soft" CLIL programs are directed towards lower-level EFL learners, whereas "hard" CLIL courses are designed with advanced EFL learners and/or international students in mind (2021).

Other inventive strategies currently being used to meet the demands of modern Japanese EFL learners include various forms of gamification and other game-based learning techniques (Freiermuth, 2022; Thanyawatpokin, 2022). Although this has been met with mixed reviews (Zhang etal., 2023), it is certain that Japan's enthusiasm for games and gaming shows no sign of decline (FreakOut Pte. Ltd., 2021). Thus, it is logical to expect continued demand for these techniques within educational settings in the future. In fact, early studies have shown that the majority of Japanese university students are receptive to the use of some form of gaming within their classes (Bolliger et al., 2015; Reinhardt, 2017).

2. Background

2.1 University of Teacher Education Fukuoka

This study was conducted at the University of Teacher Education Fukuoka (UTEF) in southern Japan, during the 2019 academic year. UTEF is committed to the promotion of educational research and the development of future teachers. Upon entry into the university, UTEF students have a clear goal of becoming nursery, elementary, junior or senior high school teachers. Although their subjects of specialty differ, they are all required to obtain four English credits before completing their degree. One of these mandatory courses is a first-year "English Communication" class. Often these classes employ traditional four-skills-based EFL methods of instruction, which can be rather repetitive for students who have previously undergone six years of secondary English education that utilize the same approach. Additionally, by the time they enter UTEF, most of these students have already obtained a level of English proficiency adequate for their career goals within the Japanese education system. In recognizing this situation, the authors of this study saw an opportunity to provide their students with more by drawing upon their wealth of knowledge and experience in both game design and education.

2.2 Game-Based Learning

Game-Based Learning (GBL) is an educational approach that incorporates gameplay strategies, rules, and social experiences into the learning context. It has gained significant attention in recent years due to the growing popularity of games and gaming, as well as its compatibility with various learning theories, including: Cognitive Learning Theory (Anderson, 1995), Constructivist Theory (Vygotsky, 1978), Social Learning Theory (Bandura, 1977), Socio-Constructivist Theory (Rogoff, 1990), Experiential Theory (Kolb, 1984), and Multiple Intelligence Theory (Gardner, 1983). This versatility allows GBL to engage cognitive processes such as problem-solving and decision-making (Gee, 2007), which empower learners to construct their own understanding (Squire, 2006). It fosters collaboration, communication, and competition, promoting social interaction and enhancing motivation (Clark et al., 2016). GBL creates immersive experiences that facilitate experiential learning and caters to diverse learning styles and intelligences (Plass, 2015). By incorporating GBL into teaching practices, educators can establish dynamic and effective learning environments, elevating student engagement and improving learning outcomes.

2.3 Game Based Learning as an Educational Tool

Within the field of education, there is a growing recognition of GBL as a powerful tool. Extensive research consistently demonstrates its ability to enhance engagement, provide opportunities for repetitive practice, heighten motivation, and deliver overall enhanced learning experiences (Adipat et al., 2021; Burguillo, 2010; de Freitas, 2018; Kapp, 2012 a & b; Lee et al., 2011; Nicholson, 2015; Randel et al., 1992). GBL has also been found to integrate effectively within task-based learning (TBL) frameworks, which are commonly used by EFL educators (York et al., 2018). Furthermore, contemporary game mechanics, including GMT games, wargames, and euros, show significant potential for educational purposes both in EFL contexts (2018) and beyond. This potential is exemplified by the use of GMT games in training intelligence officers (Ruhnke, 2017, 2018, 2020).

Unfortunately, despite the mounting evidence in support of the effectiveness of GBL, many attempts to incorporate games in the classroom still fall short due to the simplistic and repetitive nature of the games implemented (Blumenthal, 2009) or the dismissive belief that games are somehow "not serious" and therefore inappropriate in academic settings (Huizinga, 1955). This reflects an even broader issue, namely that educators have a limited understanding of the vast potential offered by modern gaming (Vlachopoulos et al., 2017). To address this issue, there is a pressing need to update the educational toolkit of students of education by introducing them to modern GBL principles and contemporary game design.

2.4 Selection of Game Design Principles

The selection of game design principles chosen for inclusion in the course curriculum was greatly influenced by Boller and Kapp's book, "*Play to Learn: Everything you Need to Know About Designing Effective Learning Games*" (2017). The book offers valuable insights, strategies, and practical guidance for creating engaging and impactful educational games. It covers various aspects of instructional game design, including game mechanics, learning objectives, assessment, and evaluation. The reason for choosing the principles outlined in Boller et al.'s book was their clarity and conciseness. Given the additional cognitive load on students who were learning through a second language, it was crucial for the researchers not to overcomplicate the instruction of GBL principles and game mechanics, which can often be complex. Boller et al.'s breakdown of these concepts provided a suitable

model that struck a balance between comprehensibility and complexity, ensuring an effective and manageable approach to teaching GBL principles and game mechanics within the curriculum design.

2.5 Bloom's Taxonomy and Curriculum Design

The CLIL-based course was designed to incorporate GBL principles to enhance the learning experience of Japanese students studying education in their second language (L2). To achieve this, a revised version of Bloom's Taxonomy (Bloom et al., 1956; Anderson et al. 2002) was used as a hierarchical framework for classifying learning objectives based on complexity and difficulty (see *Figure 1)*.

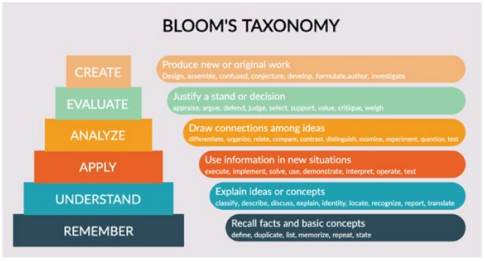


Figure 1: Bloom's Taxonomy

The decision to utilize Bloom's Taxonomy in the curriculum design was influenced by Krathwohl and Anderson's argument, that skills should take precedence over content, with content serving as a means to teach skills (2001). This aligns with the teaching philosophies of CLIL, which emphasize higher-order thinking skills found in the upper levels of the taxonomy. By incorporating the revised version of Bloom's Taxonomy, the curriculum aimed to strike a balance between evaluative and assessment-based questions and tasks, enabling students to engage in various levels of thinking while exploring and acquiring information.

In the classroom, a range of activities were implemented to apply the taxonomy effectively. Students were provided with opportunities to create original work, justify decisions, analyze connections among ideas, apply information in new contexts, explain concepts, and recall facts and basic concepts through gameplay. Additionally, students were asked to learn, play, and critique a selection of modern games that were carefully chosen to illustrate different aspects of game design. These activities correspond to different levels of Bloom's Taxonomy, allowing students to engage in diverse cognitive processes and utilize language effectively.

3. Methodology

3.1 Participants

The study included a participant sample of 147 students majoring in education at the University of Teacher Education Fukuoka. Among the participants, 107 first-year students enrolled in the course as a mandatory subject required for graduation, while 40 second-year students chose to take the course as an elective. The course was offered twice during the academic year, spanning both the spring and fall semesters of 2019. A detailed distribution of participants across these categories is provided in *Table 1*.

Table 1: Distribution of Participants

	1st year	2nd year	TOTAL
Spring	53	21	74
Fall	54	19	73
TOTAL	107	40	147

3.2 Content Selection

Within the board game community, there exist 191 recognized game mechanics (Board Game Geek, 2023), each offering a multitude of applications, variants, and opportunities for diverse themes and combinations. To mitigate the cognitive load on students who are already challenged by the CLIL-based design of the course, meticulous attention was devoted to the selection of mechanics explored throughout the program. These mechanics, along with the corresponding games used to illustrate them, were introduced in a progressive manner, gradually increasing in complexity (See *Figure 3a*). Consequently, the accompanying GBL principles and the related vocabulary and language necessary for their discussion also advanced in difficulty.

Individual lessons were based around a game (or a number of games) with a similar theme, design and/or mechanic. After teaching, learning and playing each game within a task-based learning (TBL) structure, students were asked to evaluate (using *Figure 3b*), then create their own variants of each game using the mechanics presented. The evaluations were collected and marked by the teachers for 1) language accuracy (grammar, punctuation, spelling, etc.) and 2) demonstration of content knowledge (how well they understood the mechanic introduced). The course culminated in a final project-based assignment, where groups of students were required to utilize game mechanics and GBL principles of their choosing in order to produce an original educationally-focused game, designed to teach subject-specific material to a designated level of learners (E.g. 8th grade Roman history).

Students were given four weeks to develop their games, moving through the individual stages of idea generation, content research, creation and play testing before finally presenting their games, complete with instructions and all the components required for game play (in English), to the class for both peer and teacher evaluation using a predetermined rubric (see *Figure 2*). The course was meticulously designed to simulate the real-life scenario that these students will encounter after graduation, as they embark on their teaching careers and begin facing the challenge of finding novel and captivating approaches to engage their future students.

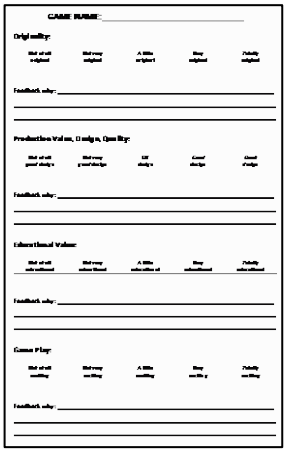


Figure 2: Evaluation Rubric

3.3 Materials Design

The **syllabus** (*Figure 3a*) was designed to guide students with no prior game knowledge, towards making informed choices regarding their own game designs whilst also considering their pedagogical implications. Weekly in-class content, including handouts, videos, games and instructions, were used in support of this goal. ***Game Evaluation Sheets*** (*Figure 3b*) were used to foster critical thinking skills regarding: 1) recognition and assessment of game mechanics, and 2) their potential use for instruction of educational content. Nearing the end of the course, ***Project Planning Sheets*** (*Figure 3c*) were distributed to students in aid of designing their final assignments by providing them with a framework for their ideas. Finally, ***Student Surveys*** (*Figure 3d*) were designed and administered to collect feedback regarding students' perceptions of games and the utilization of GBL principles for educational purposes. Samples of each handout can be seen in *Figure 3* below.

Figure 3a: Syllabus

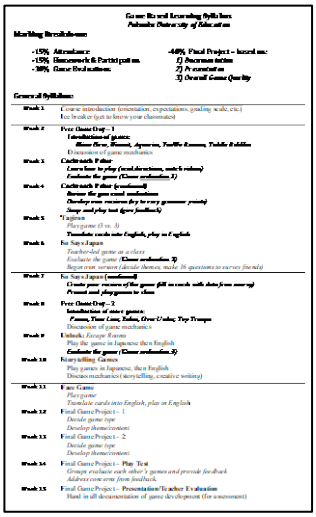
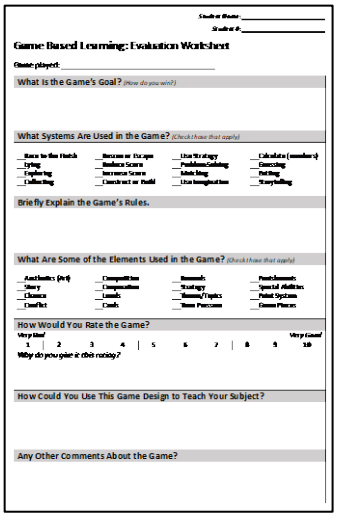


Figure 3b: Game Evaluation Sheet



Game Based Learning: Evaluation Worksheet

What Is the Game's Goal? *(How do you win?)*

What Systems Are Used in the Game? *(Check/chose that apply)*

Briefly Explain the Game's Rules.

What Are Some of the Elements Used in the Game? *(Check/chose that apply)*

How Would You Rate the Game?

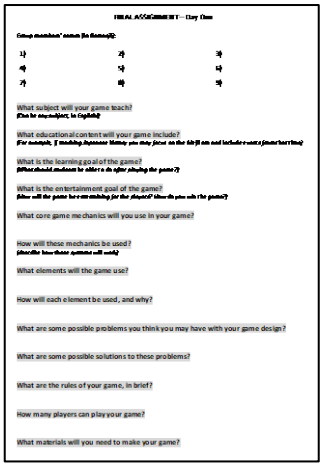
Very Bad 1 2 3 4 5 6 7 8 9 10 Very Good

Why do you give it this rating?

How Could You Use This Game Design to Teach Your Subject?

Any Other Comments About the Game?

Figure 3c: Project Planning Sheet



FINAL ASSIGNMENT – Day One

What subject will your game teach?

What educational content will your game include?

What is the learning goal of the game?

What is the entertainment goal of the game?

What core game mechanics will you use in your game?

How will these mechanics be used?

What elements will the game use?

How will each element be used, and why?

What are some possible problems you think you may have with your game design?

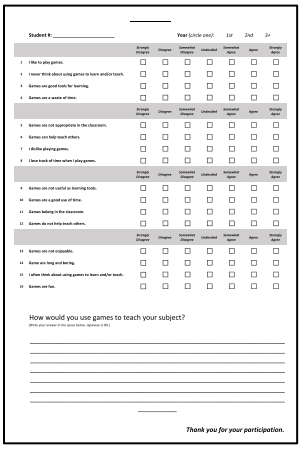
What are some possible solutions to these problems?

What are the rules of your game, in brief?

How many players can play your game?

What materials will you need to make your game?

Figure 3d: Student Survey



How would you use games to teach your subject?

Thank you for your participation.

Figure 3: Materials

Overall, the materials and course content integrated into a pedagogical framework that closely adhered to Bloom's Taxonomy. Students progressed step by step through the hierarchy. Beginning at the foundational levels (remember and understand) in absorbing teacher-fronted instructions and utilizing handouts that explained various GBL and game design principles. Then transitioning to the intermediate levels (apply and analyze) by actively participating in games and subsequently evaluating them using the *Game Evaluation Sheets*. Finally, reaching the highest levels (evaluate and create) by navigating the multifaceted process of developing their own games. This approach was applied on a weekly basis within individual lessons, and carried through to their final projects.

4. Analysis

Exploratory analysis of early-stage data was undertaken in order to determine how students perceived the utility of the course's GBL content for their future teaching careers. This examination focused on 1) the students' written responses to the following question from the *Student Survey* (*Figure 3d*): "How would you use games to teach your subject?" As well as on 2) instructor feedback and 3) the quality of work produced by students for their final task-based assignment. It was anticipated that if the students genuinely believed that GBL and game design principles could positively impact their teaching careers, they would convey this sentiment within their written responses. Manifestations of this belief (or lack thereof) were thought to take one, or a combination of, the following forms:

1. **Understanding:** Students demonstrate a clear understanding of the effectiveness of GBL and game design principles, as in the following example: *"I want children to know the importance of having their own thoughts. So, I want to use creative games like Cat & Chocolate. I think this example is applicable to all subjects."*
2. **Synthesis:** Students provide practical examples or use cases to illustrate how GBL and game design principles can be effectively applied in teaching, for example: *"I want to teach social studies to my students. If I use games in social studies, I want to use quiz style games. For example, What is the color of Brazil's flag? What is the main food of Italy? What are the traditional clothes of Korea? The person who answers get points."*
3. **Articulation:** Students directly articulate their belief that GBL and game design will enhance their future careers in education, for instance: *"I want to think about games in the classroom again. At first, I didn't think that GBL for students was appropriate, but after this class, I strongly agree to using games in the classroom. I think the arrangement of games is a better teaching tool than textbooks. Remembering words, calculations, teaching skills and enforcing team play suits GBL. Thank you for teaching GBL. I will use if for education and change boring classes to interesting, exciting classes."*
4. **Negative:** Students express an obvious dislike of the course and/or its' content, give an indiscernible answer that demonstrated a lack of engagement with the course material, or there is a complete omission of response. For example: *"I don't want to use games, because playing games in class is not good or enjoyable."*

These four categories served as labels for coding students' written responses, enabling researchers to gain a more comprehensive understanding of how students perceived the usefulness of GBL and game design in their future careers in education. In addition, instructors met after weekly sessions to review their classroom observations related to student engagement levels, inadvertently comparing the new GBL curriculum to traditional methods of EFL instruction that had previously been employed. Finally, researchers also took pictures of the games students created as part of their final assignments, and used them to assess the extent to which student groups successfully applied the principles taught throughout the course.

5. Results

Table 2 depicts the overall distribution of responses based on the categories of analysis described previously. Most students were able to demonstrate in their written responses their **understanding** of the principles taught throughout the course, their ability to **synthesize** that information, and/or directly **articulate** their valuing of GBL and game design with regards to education. In nearly all cases, individual responses expressed some combination of all three characteristics, thus the discrepancy between the number of participants and coded responses. Students that found the course content to be inappropriate were few, with most **negative** responses being coded as such due to indiscernible or omitted answers. Overall, these results indicate that the vast majority of participants found GBL principles as being valuable to their future careers as educators.

Table 2: Student Responses by Category

		Understanding	Synthesis	Articulation	Negative
Spring	**1st year**	15	14	14	4
	2nd year	17	16	16	5
Fall	**1st year**	20	20	22	7
	2nd year	25	23	28	7
TOTAL		77	73	80	23

Instructor-based class observations consistently reported higher levels of student engagement compared to previously used teaching methods, both on a weekly basis and throughout the final month-long task-based assignment. Additional evidence of students' enthusiasm for Game-Based Learning (GBL) surfaced in the exceptional quality of work submitted for the final assessment. Although a few student groups opted for basic roll-and-move or quiz-type project designs, the majority exceeded teacher expectations by producing content of nearly publishable quality. Figure 4 illustrates two examples of rather sophisticated game designs.

Figure 4: Examples of Final Projects

From an EFL perspective, the course offered a substantial amount of language content, encompassing topics, vocabulary and grammar, ranging from everyday conversational items used during gameplay, to more technical aspects of grammar presented within instruction manuals, to academic level vocabulary used to explain the pedagogy underlying the course. The curriculum's task and project-based format provided opportunities for students to practice all aspects of language, including: listening, speaking, reading, and writing. Authentic interaction facilitated the vast majority of language acquisition, which was evidenced by native-like interaction during gameplay. However, one drawback to the course was its lack of accountability, as there was no way to assess the extent of students' retention of the material.

6. Discussion

Upon completion of the course, the overwhelming majority of participants expressed their understanding of GBL concepts, demonstrated their application through synthesis, and/or articulated their importance in educational settings. These findings highlight the considerable value that GBL principles hold for Japanese students of education, and therefore refute the common misconception that games do not belong in the classroom. The impact of GBL on student learning and engagement was evident through the high-quality work showcased in students' final projects as well as instructor observations. Although there were some instances of overly simplistic work, the vast majority of assignments exceeded teacher expectations, thereby indicating the potential for GBL to nurture creativity and problem-solving skills.

Furthermore, the authenticity of in-class gameplay interactions played a pivotal role in language development, increasing perceived levels of English fluency without the need for explicit instruction. The social aspects of GBL also contributed positively to student motivation and language fluency, by creating a stimulating learning environment which many of these future educators said they hope to someday recreate. While the benefits of GBL in EFL are evident, the course's drawback was the lack of a clear method for assessing long-term retention of content. To address this limitation, alternative assessment strategies, such as formative assessments and follow-up evaluations, could be considered. Additionally, educators and curriculum designers should carefully integrate GBL principles with traditional language learning methods to ensure a comprehensive and effective language acquisition process.

Moreover, the findings of this study have implications beyond the specific context of Japanese EFL students in education. Given the positive results and alignment with language learning theories, educators in various EFL contexts can adopt GBL to enhance language acquisition and student engagement. This study underscores the importance of incorporating GBL principles into teacher preparation programs to equip future educators with innovative and effective pedagogical approaches. As the field of GBL continues to evolve, further research can explore its impact in diverse educational settings and contribute to a deeper understanding of its potential benefits for language learning and beyond.

7. Conclusion

In conclusion, this research has explored the integration of game-based learning (GBL) principles into an English as a Second Language (EFL) curriculum for Japanese students of education. The study's preliminary findings suggest that GBL offers significant value for these students, both as EFL learners and future educators. This was shown through the participants' ability to express their understanding of GBL concepts and their potential application in educational settings, as well as the positive impact this curriculum had on student learning and engagement, evidenced by the high-quality final projects' students produced and instructor observations. These findings highlight GBL's unique ability to nurture creativity, problem-solving skills, and language fluency—all essential tools for educators.

Despite the study identifying a limitation in assessing long-term retention of content, the overall positive outcomes emphasize the importance of incorporating GBL and modern game design concepts into EFL classrooms and teacher preparation programs. Beyond the specific context of this study, GBL holds promising implications for EFL education globally, offering innovative and effective pedagogical approaches to meet the demands of modern classrooms. As educators continue to explore GBL's potential, further research will contribute to a deeper understanding of its benefits for language learning and beyond.

Future considerations involve enhancing the student surveys with more detailed and specific measurement items to gain deeper insights into the specific aspects of Game-Based Learning (GBL) that participants found beneficial for their future careers. Findings based on such improvements would greatly aid the claims made in the present study, which is exploratory in nature and design. Possible areas to explore in the future include student reception, impact on learning outcomes and engagement, as well as GBL's ability to foster authentic forms of interaction. To ensure reliable results, it is recommended to conduct surveys twice per semester—pre and post-intervention—to measure changes in student perceptions over time more effectively.

Regarding EFL content, future curriculums with a similar design would gain significant advantages from enhanced support for language elements. This support could include vocabulary lists, encountered grammatical patterns, useful gameplay phrases, and more. While some of these language components naturally emerge in task/project-based pedagogical approaches, identifying recurring language items and incorporating them into the course structure could potentially accelerate students' acquisition of this new language.

References

Adipat, S., Laksana, K., Busayanon, K., Asawasowan, A., & Adipat, B. (2021). Engaging students in the learning process with game-based learning: The fundamental concepts. *International Journal of Technology in Education*, 28(1), 1-13.

Anderson, J. R. (1995). *Cognitive psychology and its implications (4th ed*.). W. H. Freeman and Company, New York.

Anderson, L. W., Krathwohl, D. R. (Eds.). (2001). *A Taxonomy for Learning, Teaching, and Assessing: A revision of Bloom's Taxonomy of Educational Objectives.* New York: Longman.

Bandura, A., & Walters, R. H. (1977). *Social learning theory (Vol. 1).* Prentice Hall: Englewood cliffs.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals. Vol. Handbook 1: Cognitive Domain.* New York: David McKay Company.

Blumenthal, P. (2009). The use of games and simulations in second language teaching: A review of the literature. *Simulation & Gaming*, 40(4), 624-641.

Boller, S., & Kapp, K. M. (2017). *Play to Learn: Everything you Need to Know About Designing Effective Learning Games.* ATD Press.

Bolliger, D. U., Mills, D., White, J., & Kohyama, M. (2015). Japanese students' perceptions of digital game use for English-language learning in higher education. *Journal of Educational Computing Research*, 53(3), 384-408. https://doi.org/10.1177/0735633115600806

Bottiani, J. H., Duran, C. A. K., Pas, E. T., & Bradshaw, C. P. (2019). Teacher stress and burnout in urban middle schools: Associations with job demands, resources and effective classroom practices. *Journal of School Psychology*, 77, 36-51. https://doi.org/10.1016/j.jsp.2019.10.002

Burguillo, J. C. (2010). Using game theory and competition-based learning to stimulate student motivation and performance. *Computers & Education*, 55(2), 566-575.

Clark, D. B., Tanner-Smith, E. E., & Killingsworth, S. S. (2016). Digital games, design, and learning: A systematic review and meta-analysis. *Review of Educational Research*, 86(1), 79-122.

de Freitas, S. (2018). Serious games and 21st-century skills: A review of the evidence. In D. Williamson (Ed.), *Serious games: Games that educate, train, and inform* (pp. 27-51). New York, NY: Routledge.

Estelles, M., & Fischman, G. E. (2020). Who needs global citizenship education? A review of the literature on teacher education. *Journal of Teacher Education*, 72(2), 223-236. https://doi.org/10.1177/0022487120920254

Freiermuth, M. R., & Ito, M. (2022). Battling with books: The gamification of an EFL extensive reading class. *Simulation & Gaming*, 53(1), 22-55. https://doi.org/10.1177/10468781211061858

FreakOut Pte. Ltd. (2021, September 22). The latest trends of Japan's game market - 3rd largest in the world. *Insight at FreakOut*. Retrieved June 18, 2023, from https://insight.freakout.net/the-latest-trends-of-japans-game-market-which-is-3rd-largest-in-the-world/

Gardner, H. (1983). *Frames of Mind: A Theory of Multiple Intelligences*. New York: Basic Books.

Gee, J.P. (2007). Good Video Games and Good Learning: Collected Essays on Video Games, *Learning and Literacy*. Peter Lang, New York.

Grossman, P., Dean, C. G. P., & Kavanagh, Z. (2019). Preparing teachers for project-based teaching. *Phi Delta Kappan*, 100(7), 43-48. https://doi.org/10.1177/0031721719841338

Kopnina, H. (2020). Education for the future? Critical evaluation of education for sustainable development goals. *The Journal of Environmental Education*, 51(4), 280-291. DOI: 10.1080/00958964.2019.1710444.

Hu, H. (2023). Teaching Language and Content in Multicultural and Multilingual Classrooms: CLIL and EMI Approaches: Edited by María Luisa Carrió-Pastor and Begoña Bellés-Fortuño. *LEARN Journal: Language Education and Acquisition Research Network*, 16(1), 753–758. Retrieved from https://so04.tci-thaijo.org/index.php/LEARN/article/view/263462

Ikeda, M., Izumi, S., Watanabe, Y., Pinner, R., & Davis, M. (2021). *Soft CLIL and English Language Teaching: Understanding Japanese Policy, Practice and Implications*. London, Routledge. https://doi.org/10.4324/9780429032332

Kapp, K. M. (2012a). *The gamification of learning and instruction: Game-based methods and strategies for training and education*. San Francisco, CA: Pfeiffer.

Kapp, K. M. (2012b). Games, gamification, and the quest for learner engagement. *Talent Development*, 66(6), 64-68.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.

Krathwohl, D. R. (2002). *A Revision of Bloom's Taxonomy: An Overview. Theory Into Practice*, 41(4), 212-218. Routledge.

Lee, J. J., & Hammer, J. (2011). Gamification in education: What, how, why bother? *Academic Exchange Quarterly*, 15(2), 1-5.

Li, Y., Wang, K., Xiao, Y., et al. (2020). *Research and trends in STEM education: A systematic review of journal publications*. IJ STEM Ed, 7(1), 11. https://doi.org/10.1186/s40594-020-00207-6.

Nicholson, S. (2015). A recipe for meaningful gamification. In T. Reiners & L. Wood (Eds.), *Gamification in education and business* (pp. 1-20). Springer.

Plass, J. L., Homer, B. D., & Kinzer, C. K. (2015). Foundations of Game-Based Learning. *Educational Psychologist*, 50(4), 258-283.

Randel, J. M., Morris, B. A., Wetzel, C. D., & Whitehill, B. V. (1992). The effectiveness of games for educational purposes: A review of recent research. *Simulation & Gaming*, 23(3), 261-276.

Reinhardt, J. (2017). Digital Gaming in L2 Teaching and Learning. In C. A. Chapelle & S. Sauro (Eds.), *The Handbook of Technology and Second Language Teaching and Learning*. https://doi.org/10.1002/9781118914069.ch14

Rogoff, B. (1990). *Apprenticeship in Thinking. Cognitive Development in Social Context*. New York: Oxford University Press.

Ruhnke, V. (2017). *Labyrinth: The War on Terror*. GMT Games.

Ruhnke, V. (2018). *COIN: A Game of Revolution*. GMT Games.

Ruhnke, V. (2020). *Undaunted: Normandy*. GMT Games.

Saykılı, A. (2019). Higher Education in The Digital Age: The Impact of Digital Connective Technologies. *Journal of Educational Technology and Online Learning*, 2(1), 1-15. DOI: 10.31681/jetol.516971.

Squire, K. (2006). From Content to Context: Videogames as Designed Experience. *Educational Researcher*, 35(8), 19–29. http://www.jstor.org/stable/4124789

Thanyawatpokin, B., & Vollmer, C. (2022). Language learner identity and games and gamification in the language learning classroom: Observations from the Japanese context. In R. Al-Mahrooqi & C. J. Denman (Eds.), *ndividual and contextual factors in the English language classroom* (pp. 283-299). Springer.

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(1), 22. https://doi.org/10.1186/s41239-017-0062-1

Vygotsky, L. S., & Cole, M. (1978). *Mind in society: Development of higher psychological processes*. Harvard University Press.

Walkington, C. & Bernacki, M.L. (2020). Appraising research on personalized learning: Definitions, theoretical alignment, advancements, and future directions. *Journal of Research on Technology in Education*, 52(3), 235-252. DOI: 10.1080/15391523.2020.1747757.

York, J. & deHaan, J. W. (2018). A Constructivist Approach to Game-Based Language Learning: Student Perceptions in a Beginner-Level EFL Context. *International Journal of Game-Based Learning (IJGBL), 8*(1), 19-40. http://doi.org/10.4018/IJGBL.2018010102

Zhang, S., & Hasim, Z. (2023). Gamification in EFL/EFL instruction: A systematic review of empirical research. *Frontiers in Psychology*, 13. https://doi.org/10.3389/fpsyg.2022.1030790