ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

Development and Validation of Game-Based Learning Materials to Improve Spelling Proficiency and Vocabulary of Grade 3 Pupils in English

Shyra A. Gepiga[1]; Aldrin John J. Estonanto[2]

[1]Saint Louise de Marillac College of Sorsogon, Inc. Burgos Street, Talisay Sorsogon City, Philippines
[2]Ph. D., Saint Louise de Marillac College of Sorsogon, Inc. Burgos Street, Talisay Sorsogon City, Philippines

Publication Date: 2026/09/12

Abstract: This study examined the development and validation of game-based learning materials designed to improve the spelling proficiency and vocabulary skills of Grade 3 pupils in English. Grounded in the principles of learner engagement and interactive pedagogy, the study recognized the potential of educational games as effective instructional tools for enhancing literacy development. Conducted in one of the public elementary schools in Bulan, Sorsogon, the research explored teachers' pedagogical practices, pupils' learning preferences, and the effectiveness of game-based learning materials in fostering spelling and vocabulary acquisition. A mixed-methods approach was employed, utilizing focus-group discussions, interviews, validation surveys, and pretest-posttest assessments. Data were gathered from pupils, teachers, and master teachers to determine preferred learning strategies, extent of utilization of instructional methods, learner engagement, and the validity, reliability, and effectiveness of the developed materials. Findings revealed that teachers commonly employed sound teaching, flashcards and charts, word practice and repetition, spelling rules and word patterns, quizzes, story-based learning, context clues, word-definition discussions, and word games. Sound teaching and spelling quizzes obtained the highest utilization ratings (WM = 5.00), while story-based learning likewise achieved a weighted mean of 5.00, indicating a very high extent of use. Results further suggested a preference for interactive and repetitive instructional approaches over rule-based methods. The developed game-based learning materials incorporated tactile-manipulative activities, blended pedagogy, developmental appropriateness, teamwork, and motivational game elements. Validation results demonstrated excellent quality, with an overall validity mean of 4.96 (SD = 0.20) and reliability mean of 4.88 (SD = 0.34). Moreover, significant improvements were observed in pupils' spelling and vocabulary performance following the intervention. The findings underscore the importance of developing age-appropriate, curriculum-aligned, and engaging game-based learning materials to enhance English literacy skills and promote meaningful learning experiences among elementary pupils.

Keywords: *Development, Validation, Spelling Proficiency, Content Validity, Reliability, Effectiveness, Vocabulary, Learners' Engagement and Motivation.*

How to Cite: Shyra A. Gepiga; Aldrin John J. Estonanto (2026) Development and Validation of Game-Based Learning Materials to Improve Spelling Proficiency and Vocabulary of Grade 3 Pupils in English. *International Journal of Innovative Science and Research Technology*, 11(9), 85-106. https://doi.org/10.38124/ijisrt/26sep022

I. INTRODUCTION

In the context of 21st-century education, it can be difficult for teachers to modify their methods of teaching knowledge acquisition because young students are more likely to use technology. As a consequence, it opens the way for game-based learning resources, which have been applied to pupils by a variety of educators, particularly Grade 3 educators. Primary school pupils—especially those in Grade 3—become the focal point of preparation so that they have better vocabulary retention and spelling skills when they move on to the intermediate stages. Given that pupils' proficiency in English depends on the total amount of terms they are familiar with, English vocabulary and spelling are crucial. Mohamad et al (2020) acknowledged the notion of 21st-century learning, which includes technology aspects in the process of teaching and learning to increase Generation Z students' views.

According to English for International Communication (TOEIC), there has been a recorded decrease in Filipinos' proficiency in English, one of the competencies established by DepEd. Students should be at the center of the learning process so they may actively participate in it in order to

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

increase the likelihood that their English proficiency will improve (Armea et al., 2022). It underlines that the pupils are the center of education, and the primary goal of the educational system is to improve the quality of their learning, particularly to see progress in the English knowledge they have learnt that happens in school.

Thus, a number of novel approaches have been put forth, such as digital game-based learning techniques (Ibharim et al., 2015). This necessitates the creation and validation of both online and offline learning resources to improve students' English vocabulary and spelling. More beneficial impacts have been covered in recent studies, particularly with regard to how digital games can be created and applied in educational settings (Noor Azli Mohamed Masrop et al., 2015). Every young learner is familiar with digital games, which they typically use to play random online games. However, this time, the goal is to incorporate fun while learning through the use of digital games and some learning materials to improve their English proficiency, as it has a crucial impact on their learning, looking for the true meaning of digital games and the benefits they may provide.

Additionally, teachers need to be conscious of their students' enthusiasm for learning various instructional materials (Carredo et. al., 2022). There isn't a single teaching method that works for everyone, so educators should think about using a variety of approaches. A number of factors should be taken into account when teaching young learners English as a foreign language, such as making learning enjoyable and organic, starting with what the students already know to encourage association, and prioritising sounds over written symbols in the initial stages of language instruction (Septida, 2020). Since every student has a different learning style, it may be possible to address each student's special and valuable educational demands. It affects their individual differences, and teachers are asked to particularly address those needs while teaching vocabulary and spelling, which is crucial to supporting their English acquisition.

Beyond this, educational games are more stimulating than traditional instruction, an analysis of research on their application in educational settings revealed that they improved students' involvement and learning success. (Al-Azawi et al., 2016). Games are utilized to ignite students' interest and excitement while simultaneously enhancing their academic achievement. Also, the use of games in language arts was particularly successful when the objectives were well-defined. If games are appropriate and carefully selected, they can be included in lesson stages because they help students remember material in a fun and enjoyable way (Wichadee & Pattanapichet, 2018). Given the diversity of learners, there must be pertinent objectives for them. To ensure that students actively participate in every lecture and discussion, teachers must always exercise caution when choosing the exercises they will employ.

Furthermore, teachers need to know what motivates and attracts their students before implementing games-based learning in English classes. By knowing what interests our students, teachers may create engaging and inspiring English lessons (Lastari, Mustafa & Nur'Aini, 2020). Learners' participation is crucial to their engagement to the lesson. Also, Ocampo (2018) believed that in order to address a situation, teachers need first to understand their pupils' interests, motivation level, learning style, and tactics. Teachers should use the appropriate teaching tools, methods, and approaches. During class discussions, students whose learning styles are met through engaging play and enjoyable activities showed increased attention, diligence, and resolve. (Hall, 2017). Therefore, in this instance, the use of games is more successful than the conventional method of teaching (Backlund & Hendrix, 2013). Teaching by recognizing the learners' wants is the most effective technique or strategy to successfully satisfy the sufficiency they possess. Additionally, promote interactive exercises to enhance their vocabulary and spelling.

Moreover, according to Lorenz (2015), when it comes to memory and strategic planning, video game players are higher than non-gamers. Then, according to Jotham Msane (2020), it was mentioned that pupils who enjoy playing video games are more likely to be successful programmers. Other questioned instructors indicated differently that they used teaching phonic from phonic workbook and never teach phonic in isolation (Fernandes, 2017). Numerous impacts have been served by game-based learning to young learners.

Also, Usman (2016) said that young learners of English are young learners who learn English. They are elementary school-age children who receive English lessons as local content in their schools. Ana (2018) argues that young students are students who learn English as a foreign language for the first six to seven years of elementary school. In his journal paper "Using Games as a Tool in Teaching Vocabulary to Young Learners," Bakhsh (2016) defines young pupils as primary school students between the ages of five and twelve. According to Bakhsh (2016) stated that students in the younger generation were struggling in their virtual environment. Their teacher can misunderstand their fantasies. They like to play and collaborate in groups. The younger generation like to talk first without understanding what they are saying. They pick up knowledge from behavioral observations as well as theories. For people who place a high value on praise, it serves as motivation. English teachers must be more inventive when creating lessons to keep young students engaged because of these traits.

Likewise, according to Montero et. al. (2022) in certain situations, pupils who are digital natives could find it difficult to adapt to conventional teaching methods. Innovative teachers in the field of teaching English as a foreign language employ games as a way to capture students' interest in learning, particularly for younger children.

In addition, children in primary school, particularly those in rural areas, have a restricted vocabulary. (Ibharim,

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

Yatim, & Masran, 2015). Spark said that (as cited in Lee et al., 2019), spelling skill is the ability to relate the knowledge of phonological processing and letter correspondences, in the sounds that map onto letters. A solid vocabulary foundation is necessary to master English and to become proficient in spelling and writing. Students must actively improve their vocabulary in all areas—speaking, listening, reading, and writing—because it is essential to language development. Writing, in particular, is crucial to the learning process, as it demands systematic and continual practice (Phochaiyarat, 2018). This study aims to develop and validate game-based learning materials to improve the spelling proficiency and vocabulary of grade 3 pupils in English.

➢ *Problem Statement*

Grade 3 pupils often struggle with spelling and vocabulary, and existing instructional approaches may not sufficiently engage them. There is a lack of validated, practical, and classroom-ready game-based learning materials designed to address these skills. This study aimed to develop and evaluate such materials to enhance pupils' English proficiency. Specifically, it investigated the following research questions:

- How do teachers improve spelling proficiency and vocabulary retention among Grade 3 pupils?
- What is the extent of utilization of the different methods in improving spelling proficiency and vocabulary retention?
- What game-based learning materials may be developed as an innovative approach to improve spelling proficiency and vocabulary retention among Grade 3 pupils in English?
- What are the insights of teachers after using the developed game-based learning materials?
- How valid, reliable, and effective are the developed game-based learning materials in assessing and enhancing spelling and vocabulary skills?
- What possible guidelines can be proposed in using game-based learning materials?

II. METHODOLOGY

➢ *Research Design*

This study utilized an action research design, mixed method- embedded to systematically develop and validate the game-based learning materials, aiming to improve the spelling proficiency and vocabulary retention of grade 3 pupils at Bulan North Central School- A.

The researcher conducted interviews with the Grade 3 teachers, identifying their experiences regarding the game-based learning materials, including the specific activities employed to the learners as well as the teaching methods used and the challenges faced during their implementation of ways to improve spelling and vocabulary. Guiding the need to use game-based learning materials to sufficiently meet the learners' needs in education, and to know their ideal game-based learning materials. There is a focus group discussion used for learners to identify their ideal game-based materials, crucial to this study, and to seek ideas on their preferences. Also, a validation survey will be conducted among the Master Teachers to gather information regarding the validity, reliability, and effectiveness of the game-based learning materials before the implementation. Followed by the pre-test, five spelling tests and five vocabulary tests (online and offline), and post-test were also utilized to assess their proficiency in spelling and vocabulary. The use of online game-based learning materials, which revealed the motivation and engagement of the learners while using the methods of learning, such online games named Kahoot. The pre-test and post-test are implemented to better look at the progress and improvements of the learners before and after use. Also, the guidelines or manual that will be a key to replicating the learning materials, if it has a bearing on the learning process of the learners.

➢ *The Respondents*

The informants of this study were selected based on their direct involvement in the teaching and learning of English at the Grade 3 level. They consist of the following:

Seventeen Grade 3 pupils from Bulan North Central School-A are the primary users of the developed game-based learning materials. They are involved mainly in the try-out and evaluation of the materials in terms of engagement, motivation, and effectiveness in improving spelling proficiency and vocabulary. Four Grade 3 teachers for the interview and five Grade 3 pupils served as informants on the conduct of the focus group discussion. Their role was to give insight into the game-based learning materials and their preferences. Five Master Teachers served as validators to assess whether there is an alignment with the curriculum, appropriateness for the learners' level, and relevance to the learning competencies.

Table 1 Informants of the Study

Informants	Number of Informants
Teachers of BNCS – A	4
Grade 3 Pupils of BNCS – A	17
Master Teacher	5
Total	26

➢ *Research Instruments*

This study utilized a focus group discussion protocol with seventeen pupils. Teachers' interviews focused on gathering information regarding their experiences and the present activities and methods they use for teaching spelling and vocabulary to pupils. The FGD protocol for pupils mainly focuses on their ideas and preferences in the game-based learning materials. It also used a validation survey to test the validity, effectiveness, and reliability of the game-based learning materials conducted by the five Master Teacher, including the pre- and post-test that were based on the table of specifications before the implementation, to meet the standard and must be based on the Grade 3 English curriculum of the pupils. The validation of the game-based learning materials was done through a checklist. The checklist evaluated and assessed the game-based learning

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

materials to know whether they were valid, reliable, and effective when used on seventeen Grade 3 pupils. With the help of master teachers, they were the ones to use the instrument to identify and give feedback on the game-based materials' content validity, reliability, and effectiveness.

➢ *Data Collection Procedures*

The procedure followed by the researcher starts with the signing of a letter of consent to the Dean of the Graduate School, followed by the sending of a letter requesting permission from the Schools Division Superintendent of Sorsogon Province to conduct this study. After the approval was granted, proceed to the visitation to the preferred school to send another letter to the principal at the same time, including the letter approved by the SDS. And then, followed by the conduct of interviews for teachers and FGD for pupils with permission or consent from the parents, as well as the validation questionnaire for the master teachers, to identify whether the game-based learning materials are effective or not. And then, the pre-test and post-test, implementation of five spelling and vocabulary tests, which are the learning materials and the online game named Kahoot. For SOP1, the researcher used the interview guide for the teachers to identify their teaching methods, experiences, perspectives, and struggles in teaching spelling and vocabulary, such as activities and their strategies.

For Grade 3 pupils, the researcher used the FGD protocol to identify their preferences and ideas regarding the creation of learning materials to constitute in improving their spelling and vocabulary. For SOP2, the researcher used the interview to determine the extent of utilization for teachers regarding their methods in instructing spelling and vocabulary to their Grade3 pupils. For SOP3, the researcher used the interview guide containing questions about their suggestion on what may be developed as game-based learning materials to improve the spelling proficiency and vocabulary of the learners. For SOP4, the researcher used the interview guide that focuses on the inaisghts of teacher after using the game-based learning materials. For SOP5, the researcher used a validation survey about the content validity, reliability, and effectiveness. For SOP6, the researcher used the interview for teachers solely answer the proposed possible game-based learning material or guidelines to add in the study. Braun and Clark (2006) steps on Thematic Analysis were used as to create a theme, and for statistical the researcher utilized Jamovi, but for the discussion, the researcher's original interpretation.

➢ *Data Analysis Method*

Both qualitative and quantitative methods were employed to analyze the data collected from pre-and post-test, interviews, focus-group discussions, and validation surveys.

➢ *Qualitative Data Analysis*

Thematic Analysis– Responses from Grade 3 English teachers and pupils were coded and thematically analyzed to identify recurring themes related to the needs, challenges, and suggestions for game-based learning materials. The researcher performed the deep thematic analysis using the steps according to Braun & Clarke (2006). Braun and Clarke (2006) outlined six clear steps in conducting thematic analysis. First, researchers familiarized themselves with the data by reading and re-reading transcripts while noting initial ideas. Second, they generated initial codes by systematically identifying and labeling meaningful features across the dataset. Third, they searched for themes by grouping related codes into broader patterns of meaning. Fourth, they review themes to ensure they accurately represent the data, refining or merging them as needed. Finally, they defined and name themes clearly before producing the report, which weaves together the analysis with supporting evidence and theoretical insights. For SOPs 1, 2, 3, 4, and 6, the results were themed according to the responses of the teachers and pupils. Braun and Clark (2006) steps in thematic analysis searched in ClaudeAI were utilized, but in the discussion, it's from the researcher's original interpretation.

III. RESULTS AND DISCUSSION

➢ *Methods of Teachers for Improving Spelling and Vocabulary Retention for their Grade 3 Pupils in English*

Table 2 How Teachers Improve Spelling and Vocabulary Retention according to Teacher Informants

THEMES	CATEGORIES	CODES	INITIAL CODES
By Sound Teaching	Listening	Sounds	"breaking the word into its individual sounds" (T1)
			"I say each sound separately /f/-/o/-x/" (T1)
			"word family, like pen, ten/ log, fog, bog" (T1)
By Use of flashcards and charts	Kinesthetic	Visual Materials	"write words using various materials to build muscle memory" (T4)
			"Flashcards and charts" (T3)
			"build muscle memory and visual association" (T4)
By Word Practice/ Repetition	Repetition	Learning by Copying Words	"copy the word three times or more until they memorize the spelling of the word" (T1)
			"Repetition of sight words" (T2)
			"Spelling quizzes" (T2)
			"Games because pupils enjoy and remember it better" (T3)

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

			"Repetition and practice" (T3)
By Teaching Spelling Rules and Word Patterns	Spelling Rules	Spelling guide	"specific spelling rules (e.g., 'i before e', or doubling consonants)" (T4)
			"Explicit instruction context" (T4)
By Quizzes and Independent Writing	Assessment	Quiz result	"They spell the words correctly in quizzes" (T3)
			"participate actively in class discussions" (T1)
	Learners' performance	Independent writing use	"Correct use in independent writing" (T4)
			"Their ability to apply the learned words correctly and consistently" (T4)
			"ability to apply the learned words correctly and consistently" (T4)
Word games, such as Word Puzzle	Game-based learning	Word games	"I used word games such as word puzzles for my pupis.(T1)
Memorization of word definitions Discussion of the word and its definition	Memorization Techniques Meaning-based learning	Memorizing words and definitions Discussion of word and meaning	"I tell them to memorize the word and its definition.(T2) " I discuss the word and its definition to my learners.(T4)
Story-based learning	Story-centered teaching	Learning through stories	"I usually use story-based learning. (T4) (T4)
Context Clues	Meaning through sentence context	Contextual understanding	"I use context-clues"(T3)

- *By Sound Teaching*

Sound Teaching is fundamental as it serves as the bridge to start and completely know the words to spell and to be familiarized with. Taking this as a foundation will enhance the level of proficiency in spelling and vocabulary to appropriately teach the pupils specifically one of the teacher informant's responded that "This is the method/strategy that I found most effective for my struggling learners", like "Breaking the word into its individual sounds", "I say each sound separately /f/-/o/-x/" , and "segmenting or sounding out words and phonemes for identification", and "word family, like pen, ten/ log, fog, bog". This indicates Moats' (2020) idea of language literacy by explicit segmentation and decoding (e.g., "-f/-o/-x/)". This is the main focus of Teacher 1 informant's ideas and ways of teaching, as the approach truly works well. Through this, it highlighted the need to be familiarized with phonological awareness for learners as a method, since it becomes the foundation of literacy.

- *By Use of Flashcards and Charts*

In this theme, teacher informants 1, 3 and 4 utilized Use of flashcards and charts in teaching that serves as the tool to teach spelling and vocabulary, including the activities that involves that activation of senses to learn best in a classroom during instruction.As Teacher informant no. 1 wrote "copy the word three times or more until they memorize", Teacher Informant no. 4 also "write words using various materials to build muscle memory." while Teacher informant no.3 uses "Flashcards and charts" and added by Teacher informant no. 4 answered that, "build muscle memory and visual association". Also, Teacher informant no. 3 focuses on the enjoyment that learner could feel as they play game activities while learning spelling and vocabulary. According to research, these methods could either strengthen systematic phonics or make up for poor phonological abilities (Birsh & Carreker, 2018). By examining this, it can help both the need for reinforcement to be average learners. Also, these can strengthen the senses of each individual as learners have various ways of learning, which can let them explore their capacity to study and gain knowledge through the senses that have been utilized. And identify their ability to adapt to grasp the instruction given to them by the teachers.

- *By Word Practice/ Repetition*

Word Practice/ Repetition as the other common tactic of teaching spelling and vocabulary, as this can build retainment to the memory of the pupils. This also includes varied activities that enhance the enjoyment of the learner while learning. Teacher informant no. 1 "copy the word three times or more until they memorize" and "copy the word three times or more until they memorize the spelling of the word". Similarly, teacher no.2 "Repetition of sight words" and Spelling quizzes". While teacher no. 3 "Games because pupils enjoy and remember it better","because pupils enjoy and remember it better" and "Repetition and practice". Putman and Walker (2021) highlighted that repeated exposure to words through retrieval practice, such as spelling quizzes, repeated writing activities, and recall exercises, significantly improves vocabulary acquisition and long-term retention. By examining this, it can enhance the spelling and vocabulary and strengthen the muscles in the brain to reach its potential through exercise and be able to adjust or gain enough learning. Repetition is the most basic yet required continuous practice to finally learn those words. So, it can also help build consistency and courage to learn the word.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

- *By Teaching Spelling Rules and Word Patterns*

The other common pedagogy is Teaching Spelling Rules and Word Patterns as teaching spelling and vocabulary, requiring constant rules to follow and the correct spelling or arrangement of the words to learn. As from teacher informants no, 1, "word family, like pen, ten/ log, fog, bog", and from the Teacher no.4 "specific spelling rules (e.g., 'i before e', or doubling consonants and Explicit instruction context". The method consistent with developmental spelling theory (Bear et al., 2019), allowing pupils to use transferable skills.. Through this, it can be beneficial to learn for learners the spelling and vocabulary as this orthographic pattern and rule instruction can be a bridge to improve the level of literacy acquired by the learners.

- *By Quizzes and Independent Writing*

All the teachers' methods have differences when it comes to mastery, their test to application, and reflection has a major impact on the aspect of considering the mastery of the teachers to teach, and for pupils to learn. Teacher informant no. 3 "They spell the words correctly in quizzes" and Teacher informant no. 1, "participate actively in class discussions" Teacher informant no.4 "Correct use in independent writing", "Their ability to apply the learned words correctly and consistently" and "ability to apply the learned words correctly and consistently". Kaur (2022), who emphasized that formative assessment practices, including quizzes, classroom participation, and writing tasks, provide meaningful evidence of learners' mastery and ability to apply language knowledge in authentic contexts. Through this, it can support the learners to develop independent learning and ability to learn well by using the mastery and retention of the learners of the words to write and spell the word correctly and gain more words to use in their writing and speaking.

- *Word Games (Word Puzzle)*

Game-based learning through word puzzles provides pupils with an interactive and enjoyable way to strengthen spelling and vocabulary. By embedding learning in play, teachers foster motivation and active participation. Word puzzles challenge learners to decode, arrange, and recognize words, which enhances orthographic awareness and retention. As Teacher 1 noted, "I used word games such as word puzzles for my pupils,". A study by Hamzah Fanani and colleagues (2020) found that game-based learning activities, including word puzzles and vocabulary games, significantly improved elementary pupils' vocabulary mastery, engagement, and motivation. The researchers concluded that incorporating play into language instruction promotes active participation and enhances retention through repeated exposure and problem-solving tasks. This approach not only sustains engagement but also addresses diverse learning needs by offering differentiated levels of difficulty. Research supports that game-based strategies yield significant gains in literacy because they combine repetition with problem-solving in a low-stress environment.

- *Memorization of Word Definitions*

Memorization techniques remain a traditional but effective method for vocabulary acquisition. Teacher 2 emphasized, "I tell them to memorize the word and its definition," highlighting the reliance on rote learning. A systematic review by Stuart Webb and Paul Nation (2021) emphasized that deliberate vocabulary learning strategies, including memorization of word-definition pairs, remain effective for developing initial vocabulary knowledge and recall accuracy. However, they noted that rote memorization is most beneficial when combined with opportunities for repeated exposure and contextual use. While memorization ensures immediate recall, its limitation lies in shallow processing—students may remember definitions but struggle to apply them in authentic contexts. Nevertheless, when paired with reinforcement activities, memorization can serve as a foundation for deeper learning. It is particularly useful for spelling drills and standardized assessments where accuracy of recall is prioritized.

- *Discussion of the Word and Its Definition*

Meaning-based learning through discussion allows learners to connect words with conceptual understanding. Teacher 4 shared, "I discuss the word and its definition to my learners," underscoring the importance of dialogic teaching. Margaret G. McKeown et al. (2019) found that interactive discussions surrounding target vocabulary enhanced students' ability to explain, apply, and transfer word meanings across contexts. This strategy moves beyond rote memorization by encouraging learners to articulate meanings, ask questions, and relate words to prior knowledge. Discussions foster critical thinking and contextual application, making vocabulary more meaningful and transferable. Compared to memorization alone, discussion deepens comprehension and supports long-term retention.

- *Story-Based Learning*

Story-Based Teaching situates vocabulary within narratives, making words memorable through characters, plots, and emotional resonance. Teacher 4 explained, "I usually use story-based learning," which reflects a constructivist approach where learners derive meaning from context. A study by Susan B. Neuman and Tanya S. Wright (2020) found that story-based instruction provides meaningful contexts that support vocabulary acquisition, comprehension, and language development among elementary learners. Stories provide authentic exposure to vocabulary, enabling pupils to infer meanings and apply words in real-life situations. This method enhances both comprehension and creativity, as learners not only acquire words but also practice using them in storytelling, role-play, and writing. Story-based learning is particularly effective in multilingual classrooms, as it bridges cultural relevance with linguistic development.

- *Context Clues*

Contextual understanding through sentence clues equips learners with strategies to independently derive meaning. Teacher 3 stated, "I use context-clues," emphasizing the skill of inferring word meanings from

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

surrounding text. A study by William E. Nagy and colleagues (2020) found that explicit instruction in using context clues significantly improved learners' ability to infer meanings of unfamiliar words and enhanced overall reading comprehension. This approach develops reading comprehension and empowers learners to tackle unfamiliar vocabulary without immediate teacher support. Context clues promote autonomy, critical thinking, and adaptability, as pupils learn to analyze syntax, semantics, and discourse patterns. Compared to memorization, this method builds flexible word knowledge that can be applied across subjects and texts.

➢ *Extent of Utilization of the Different Teaching Methods of Teachers*

Table 3 Extent of Utilization of Different Methods to Improve Spelling Proficiency of Grade 3 Pupils

Teaching Methods	Weighted Mean	Standard Deviation	Interpretation	Rank
Sound Teaching	5	0	Very High Extent	1.5
Use of F+lashcards and charts	3.25	0.5	Moderate Extent	4
Word Practice and Repetition	4.5	0.577	Very High Extent	3
Teaching Spelling Rule and Word Pattern	3	0	Moderate Extent	5
Spelling quizzes	5	0	Very High Extent	1.5

Table 4 presents the extent of utilization of different methods used by teachers to improve the spelling proficiency of Grade 3 pupils. The findings revealed that Sound Teaching and Spelling Quizzes both obtained the highest weighted mean of 5.00 with a standard deviation of 0, interpreted as "Very High Extent." This indicates that teachers consistently use phonics-based instruction and spelling assessments in teaching spelling skills. The result implies that teachers believe learners develop better spelling proficiency when they are exposed to sound-letter relationships and regular practice through quizzes. The zero standard deviation further suggests that the respondents had similar perceptions regarding the importance of these methods in classroom instruction. Meanwhile, Word Practice and Repetition obtained a weighted mean of 4.50 and a standard deviation of 0.57735, also interpreted as "Very High Extent." This finding suggests that repetitive spelling activities are highly practiced because repetition strengthens memory retention and spelling mastery among young learners. Repeated exposure to words helps pupils become more familiar with correct spelling patterns and improves their writing accuracy. On the other hand, the Use of Flashcards and Charts obtained a weighted mean of 3.25 with a standard deviation of 0.50, interpreted as "Moderate Extent," while Teaching Spelling Rules and Word Patterns received the lowest weighted mean of 3.00 with a standard deviation of 0, also interpreted as "Moderate Extent." These results imply that visual aids and rule-based instruction are utilized less frequently compared to interactive and repetitive strategies.

Table 4 Extent of Utilization of Different Methods to Improve Vocabulary of Grade 3 Pupils

Teaching Methods	Weighted Mean	Standard Deviation	Interpretation	Rank
Story-based learning	5	0	Very High Extent	1
Discussion of the word and its definition	3	0	Moderate Extent	4
Context-clues	4.5	0.577	Very High Extent	2
Memorizing word definitions	4	1.154	High Extent	3
Word games, such as Word Puzzle	2.25	0.5	Moderate Extent	5

Table 3 shows the extent of utilization of different methods used to improve the vocabulary of Grade 3 pupils. Among the strategies, Story-Based Learning ranked first with a weighted mean of 5.00 and a standard deviation of 0, interpreted as "Very High Extent." This indicates that teachers highly utilize storytelling activities because they provide meaningful and engaging contexts for vocabulary learning. Through stories, pupils are exposed to unfamiliar words in authentic situations, which enhances comprehension and vocabulary acquisition. Similarly, Context Clues obtained a weighted mean of 4.50 and a standard deviation of 0.57735, interpreted as "Very High Extent," suggesting that teachers encourage learners to determine word meanings through surrounding textual information.

Furthermore, Memorizing Word Definitions obtained a weighted mean of 4.00 with a standard deviation of 1.154701, interpreted as "High Extent." This implies that teachers still recognize memorization as an important vocabulary-building strategy, particularly for retaining definitions of unfamiliar words. However, Discussion of the Word and Its Definition only obtained a weighted mean of 3.00 with a standard deviation of 0, interpreted as "Moderate Extent," indicating limited use of interactive vocabulary discussions in classroom instruction. Lastly, Word Games such as Word Puzzle received the lowest weighted mean of 2.25 with a standard deviation of 0.50. Although the table interpreted it as "Very High Extent," the numerical value suggests low utilization compared to other methods, indicating a possible inconsistency in the interpretation scale used in the study. Overall, the findings show that teachers strongly favor contextualized, repetitive, and interactive approaches in improving the spelling proficiency and vocabulary skills of Grade 3 pupils in English.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

➢ *Game-Based Learning Material Developed as an Innovative Approach to Improve Spelling Proficiency and Vocabulary Retention among Grade 3 Pupils in English*

Table 5 Game-Based Learning Material Suggested by Teacher Informants.

THEMES	CATEGORIES	CODES	INITIAL CODES
Tactile-Manipulative Learning Materials	Physical Manipulation	Object-based learning	"Technology integration, pencil and pen, and story-based learning." (T2) "Textbooks and digital learning materials." (T1) "Printed modules, posters, flashcards." (T3) "Writing tools and surfaces, reference materials, printed worksheets." (T4)
Blended Teaching Methods	Technology as an Enhancement Tool	Technology as tool Digital support	"Textbooks and digital learning materials." (T1) "ICT tools and books." (T2) "I strongly prefer using a blended approach that prioritizes the hands-on, physical learning materials and interactive classroom games while using technology as a supplementary resource. And the primary reason for these preferences is the developmental stages of the pupils." (T4)
Developmentally appropriate	Age-Appropriate Material	Grade-level alignment Age-stage awareness	"Age-appropriate considerations because struggling learners need simple, safe, motivating and confidence-building with clear instructions, relatable content materials. Words to be must be within their reading and cognitive level." (T1) "Age-appropriate consideration so the game match the grade level skill." (T3)
Teamwork through Games	Collaboration	Peer-to-peer engagement	"Using flashcard games, word search, and jumbled letters because they highly motivate the learners and encourage collaboration and participation among the teachers." (T1)
Game-Based Motivational oppopDesign	Games as motivators	Learners' engagement	"Others are confused when patterns are similar like ea- ee, ai-ay, ow-oa, etc. while some are excited to work showing strong participation." (T1) "They are excited and willing to learn." (T2) "They enjoy fun and game-based learning activities while getting bored in long drills." (T3) "They respond with enthusiasm." (T4)

- *Tactile-Manipulative Learning Materials*

Tactile manipulative learning materials are sets of resources used in improving learning by the pupils, and these are the medium to immediately understand the instructions given by the teachers. As teacher informant 2 answered, "Technology integration, pencil and pen, and story-based learning.", then teacher 1 answered, "Textbooks and digital learning materials." Also, teacher 3 wrote that, "Textbooks and digital learning materials." As well as teacher teacher 4 answered that, "Writing tools and surfaces, reference materials, printed worksheets." A study by Susan B. Neuman and Tanya S. Wright (2020) found that young learners acquire vocabulary more effectively when instruction incorporates multisensory and hands-on materials, such as printed texts, writing tools, flashcards, and manipulatives. The researchers emphasized that concrete resources support learners' understanding by linking abstract language concepts to physical experiences. Through this, it can be a tool to immediately learn the lesson, and is essential to enhance the spelling and vocabulary of each pupil who needs reinforcement. These manipulative learning materials are used for hands-on activities to actively encourage the learners to improve their literacy.

- *Blended Teaching Method*

Blended Teaching Method this method seen technology as a new set of help or additional support, not as a hindrance to learning, although this usually focuses on the traditional and tactile process of teaching. This blended method has huge benefits that can be a bridge to enhance the teaching and learning process of the learners and teachers. As Teacher 1 answered, " ICT tools and books," and Teacher 2 answered, "textbooks and digital technology materials." And Teacher 4 answered, "I strongly prefer using a blended approach that prioritizes the hands-on, physical learning materials and interactive classroom games while using technology as a supplementary resource. And the primary reason for these preferences is the developmental stages of the pupils." A meta-analysis by Robert M. Bernard et al.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

(2021) found that blended learning approaches, which integrate face-to-face instruction with digital tools, produce significantly better learning outcomes than either traditional or fully online instruction alone. Through this, it can be a medium to be a better teacher in teaching the learners on spelling and vocabulary, as this teaching method is based on real teaching world experiences and can be a source of inspiration as to create a game-based learning materials applicable to the young learners.

- *Developmentally Appropriate*

Developmentally appropriate is about prioritizing the needs and level of cognition or mental capacity of the learners and aligning them to teach them well. As teacher 1 answered, "Age-appropriate considerations because struggling learners need simple, safe, motivating and confidence-building with clear instructions, relatable content materials. Words to be must be within their reading and cognitive level." And Teacher 3 added, "Age-appropriate consideration so the game match the grade level skills." The NAEYC (2020) emphasized that age-appropriate instructional materials promote engagement, confidence, and learning by ensuring that activities match learners' developmental capacities and individual differences. Through this, it can be a way to meet those needs in their diverse learning style. And to appropriately teach them the methods of teaching. By guiding them, and setting goals in their development and reaching them.

- *Teamwork Through Games*

Games always encourage enjoyment or fun, and all those in peer aspects tickle collaboration, including learning, which can be a way to immensely enhance movement through activities. As Teacher 1 answered, "Using flashcard games, word search, and jumbled letters because they highly motivate the learners and encourage collaboration and participation among the teachers." James Paul Gee (2019) argued that educational games create collaborative learning spaces where learners construct knowledge through social interaction and shared problem-solving. Through this, it can be a valid reason to add games in a classroom during discussion so that it could enhance fun and collaboration while learning, as these are all educational.

- *Game-Based Motivational Design*

Game-based motivational design is the way to catch the attention of the learners and choose to be engaged in learning while having fun with the games presented by the teachers. As teacher 1 answered, "Others are confused when patterns are similar like ea- ee, ai-ay, ow-oa, etc. while some are excited to work showing strong participation." While Teacher 2 answered that, "They are excited and willing to learn." Then, Teacher 3, "They enjoy fun and game-based learning activities while getting bored in long drills." Also, teacher 4, "They respond with enthusiasm." A systematic review by Zeynep Taşpınar et al. (2022) found that gamified learning environments significantly increase learners' motivation, engagement, and academic performance by promoting autonomy, competence, and enjoyment. Through this, the designs can be a method to attract attention and enjoy the games by participating in them.

For summarization, Game-based learning materials can enhance Grade 3 pupils' spelling proficiency and vocabulary retention by integrating tactile-manipulative resources, blended pedagogy, developmental appropriateness, collaboration, and motivational design. These dimensions, grounded in educational theories and teacher insights, provide a comprehensive framework for creating engaging, age-appropriate, and effective literacy instruction.

Therefore, the researcher developed a game-based learning material that is based on the suggested responses of the Grade 3 teachers and pupils, which is a spelling and vocabulary test learning material, and created a content game-based spelling and vocabulary test in an educational game named Kahoot. According to Yieng & Abdul Aziz (2022) – Their study, A Systematic Literature Review on Using Game-Based Learning to Enhance English Vocabulary and Spelling for Primary School Pupils, highlights how interactive, game-based approaches improve literacy outcomes by fostering engagement and retention.

➢ *Insight of Grade 3 Teachers when Game-Based Learning Materials are Utilized for Developing Spelling and Vocabulary*

Table 6 Insights of the Teachers After Using the Game-Based Learning Materials

THEMES	CATEGORIES	CODES	INITIAL CODES
Positive emotional engagement	Enthusiasm and Excitement	Excitement expression	"They enjoy fun and game-based learning activities while getting bored in long drills." (T2) "They respond with enthusiasm." (T4)
High engagement in class	Sustained interest in games	Fun activity engagement	"They enjoy fun and game-based learning activities while getting bored in long drills". (T2)
Various Engagement Patterns Within Classrooms	Positive and Negative Responses	Individual differences	" Individual differences Because some pupils learn fast while others need repetition". (T3) "Individual learning differences Managing a wide spectrum of foundational skills, processing differences, and engagement levels in a single classroom." (T4)

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

- *Positive Emotional Engagement*

Learners are usually seen with a high emotional investment, and showing enthusiasm, excitement, and some affective responses that make the whole environment. Those enthusiasms can manifest motivation for pupils to be willing to be ready or prepared to learn. As Teacher 2 answered, "They enjoy fun and game-based learning activities while getting bored in long drills", and as Teacher 4 answered, "They respond with enthusiasm." Pleasure and enjoyment in learning activities further sustained affective satisfaction, reinforcing the idea that positive emotions are central to meaningful engagement. It aligns with Hui and Mahmud (2023), who reported that game-based learning enhances learners' affective outcomes by fostering enjoyment, motivation, and positive emotional experiences, thereby increasing students' readiness and active participation in learning activities. Through this, emotional arousal and fun while learning has a major impact on the learning process of each pupil, especially on their readiness and active engagement with their education.

- *High Engagement in Class*

Activities must be strongly connected or dependent on the game-based tasks given, and it produces high level of interest and participation. Learners are showing preferences for interactive fun learning activities that encourage motivation and enjoyment throughout the learning process. While repetitive drills led to boredom or disengagement. As Teacher 2 answered, "They enjoy fun and game-based learning activities while getting bored in long drills". It support the study of Fotaris et al. (2021), which demonstrated that game-based learning activities significantly improve elementary pupils' motivation and engagement by providing interactive and enjoyable learning experiences that sustain participation. Through this, it gives awareness that balanced instructional strategies are crucial for fun and interactive elements to minimize disengagement and encourage participation.

- *Various Engagement Patterns Within Classrooms*

Individual differences are always present in any classroom among all pupils as they are diverse, containing positive and negative responses or patterns that manifest in their performance. So, it is important that they have shaped engagement even with varied foundational skills. As Teacher 3 answered, "Individual differences because some pupils learn fast while others need repetition". It is consistent with Ziernwald et al. (2022), who emphasized that differentiated instruction addresses individual differences in mixed-ability classrooms by adapting teaching strategies to learners' varying readiness levels, thereby promoting meaningful engagement among diverse learners. Through this, it underscores the crucial approaches needed to respond to the diverse engagement patterns.

➢ *Validity of the Developed Game-Based Learning Materials*

Table 7 Validity of the Game-Based Materials as Evaluated by Experts

INDICATORS	**Mean**	**SD**	**Interpretation**
1. The content of the game-based learning materials is connected with the Grade 3 English curriculum.	4.80	0.45	Very High Validity
2. The activities are age-appropriate and align to the learning level of Grade 3 pupils.	5.00	0.00	Very High Validity
3. The instructions of the games are easy to follow.	5.00	0.00	Very High Validity
4. The design and layout are visually eye-catching and suitable for young learners.	5.00	0.00	Very High Validity
5. The materials have clear alignment with the learning objectives.	5.00	0.00	Very High Validity
Overall	**4.96**	**0.20**	**Very High Validity**

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

Table 8 Reliability of the Game-based Learning Materials as Evaluated by Experts

INDICATORS	Mean	SD	Interpretation
1. Grade 3 pupils produce consistent results when using the materials.	4.60	0.55	Very High Reliability
2. Throughout the application of the materials, maintain the difficulty level balanced and consistent.	4.80	0.45	Very High Reliability
3. It shows fairness in the scoring system of the games.	5.00	0.00	Very High Reliability
4. Pupils can repeat the activities with consistent results.	5.00	0.00	Very High Reliability
5. The instructions are applied uniformly across all games.	5.00	0.00	Very High Reliability
Overall	**4.88**	**0.34**	**Very High Reliability**

Table 9 Effectiveness of the Game-based Learning Materials

INDICATORS	Mean	SD	Interpretation
1. The pupils showed improvement in spelling after using the game-based learning materials.	5	0.00	Very High Effectiveness
2. The pupils showed improvement in vocabulary retention after using the game-based learning materials.	4.8	0.45	Very High Effectiveness
3. The pupils are enjoying and engaging while using the game-based learning materials.	5	0.00	Very High Effectiveness
4. The pupils' motivation to participate in spelling and vocabulary activities increases.	5	0.00	Very High Effectiveness
5. The materials foster active learning.	5	0.00	Very High Effectiveness
Overall	**4.96**	**0.20**	**Very High Effectiveness**

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

Table 10 Performance of Grade 3 Pupils in Spelling and Vocabulary Before and After Using Game-based Learning Materials as Intervention

Competency Area	**Pretest**		**Posttest**	
	Mean	**SD**	**Mean**	**SD**
Spelling	15.58	4.17	27.92	2.78
Vocabulary	14.33	5.38	29.08	1.08

Table 11 Tests of Normality of Spelling Pretest VS Spelling Posttest of Pupils

Tests of Normality

			statistic	p
Pre spelling	Post spelling	Shapiro-Wilk	0.952	.665
		Kolmogorov-Smirnov	0.108	.999
		Anderson-Darling	0.207	.828

Table 12 Significant Difference between Spelling Pretest VS Spelling Posttest of Pupils as Measured Using Parametric Paired t-Test

Paired Samples T-Test

			statistic	df	p		Effect Size
Pre spelling	Post spelling	Student's t	−8.58	11.0	< .001	Cohen's d	−2.48

Note. H_a $\mu_{\text{Measure 1 - Measure 2}} \neq 0$

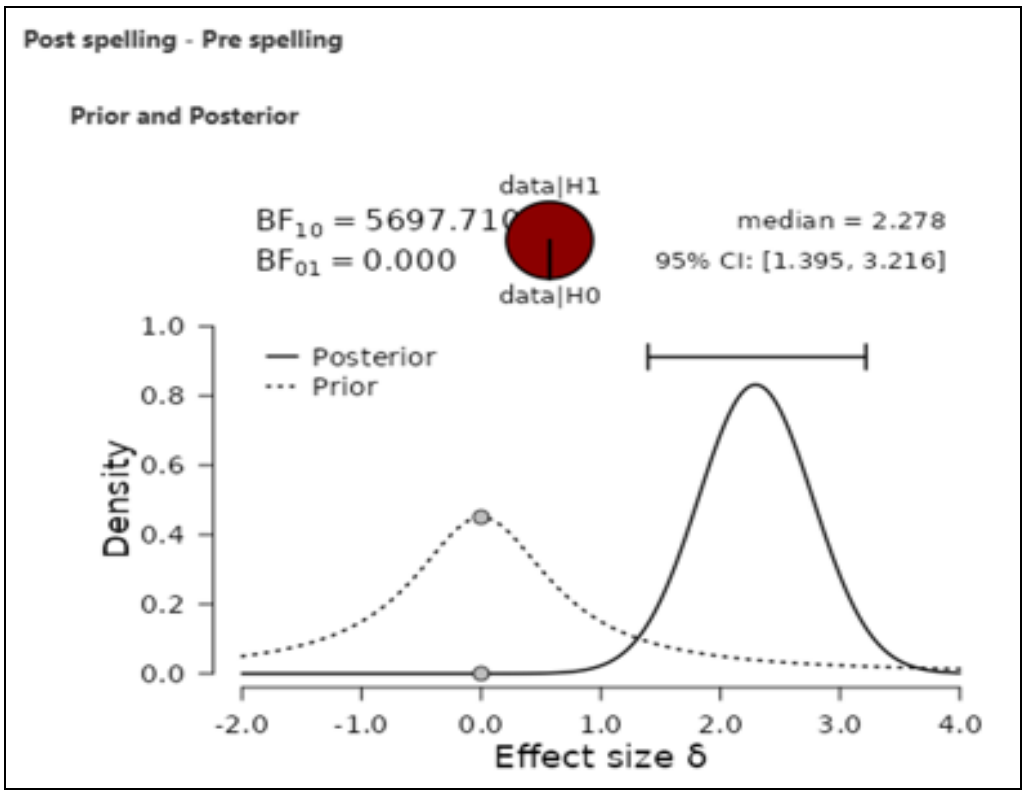

Fig 1 Prior VS Posterior Inferential Plot Analysis of Intervention Effect of Game-based Learning Materials to Spelling Posttest-Pretest of Pupils Using Bayesian Paired t-Test

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

Table 13 Tests of Normality for Vocabulary Pretest VS Posttest of Pupils

Tests of Normality

			statistic	p
post vocabulary	Pre vocabulary	Shapiro-Wilk	0.960	.784
		Kolmogorov-Smirnov	0.174	.861
		Anderson-Darling	0.324	.474

Table 14 Significant Difference between Vocabulary Pretest VS Posttest of Pupils as Measured Using Parametric Paired t-test

Paired Samples T-Test

			statistic	df	p		Effect Size
Pre vocabulary	post vocabulary	Student's t	−9.33	11.0	< .001	Cohen's d	−2.69

Note. H_a $\mu_{Measure\ 1 - Measure\ 2} \neq 0$

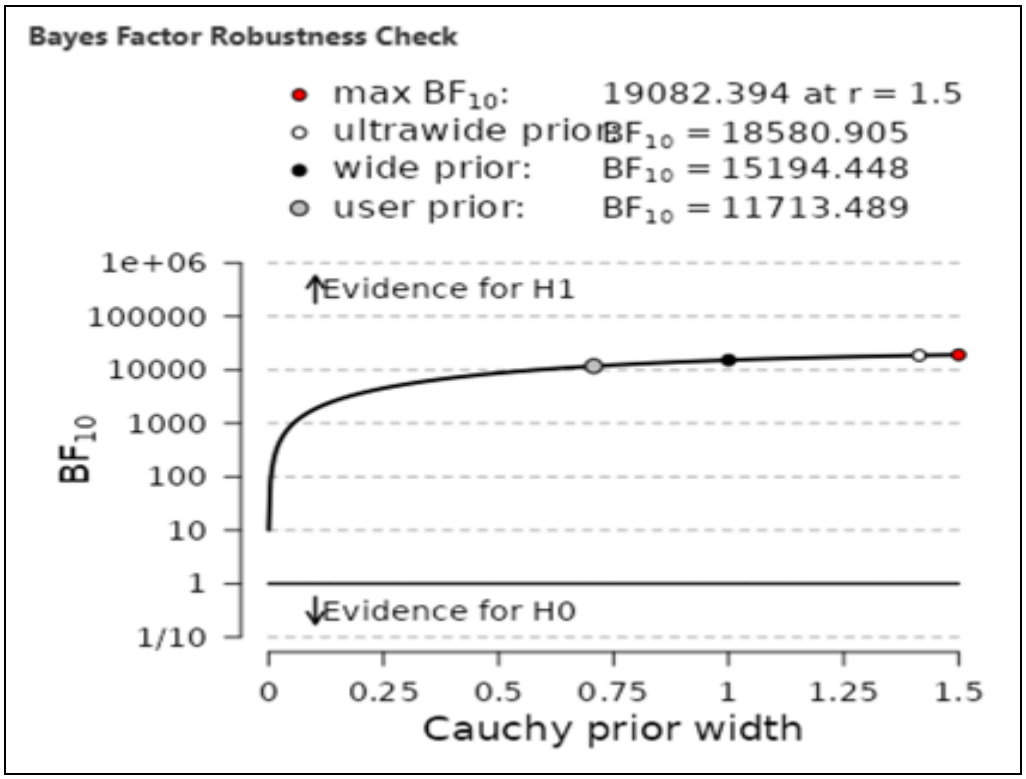

Fig 2 Bayes Factor Inferential Plot Analysis of Intervention Effect of Game-based Learning Materials to Vocabulary Posttest-Pretest of Pupils Using Bayesian Paired t-test

The game-based learning materials were rated very highly on all evaluation indicators, with mean scores ranging from 4.80 to 5.00 and an overall mean of 4.96 (SD = 0.20), indicating excellent alignment with the Grade 3 English curriculum, age appropriateness, clarity of instructions, visual design, and learning objectives. The evaluation by the experts revealed consistently high reliability of the instructional materials, with an overall mean score of 4.88 (SD = 0.34), including perfect scores for fairness, repeatability, and uniform instructions. The evaluation of the game-based learning materials' effectiveness and student reception yielded exceptionally positive results across all measured indicators. As shown in Table 1, the overall mean score was 4.96 (SD = 0.20), indicating an outstanding level of perceived efficacy and engagement. Based on the descriptive statistics, pupils' performance seemingly improved from pretest to posttest in both spelling (M = 15.58 to 27.92) and vocabulary (M =

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

14.33 to 29.08) on 30-item assessments following the game-based learning intervention. This improvement in pretest vs posttest will be statistically tested using Wilcoxon Rank test. Then, on multiple normality tests (Shapiro-Wilk: W = 0.952, p = .665; Kolmogorov-Smirnov: D = 0.108, p = .999; Anderson-Darling: A = 0.207, p = .828) confirmed that the spelling scores were normally distributed both before and after the intervention. Since the data results show normality of data, parametric paired t-test is more appropriate instead of non-parametric Wilcoxon rank. The paired-samples t-test revealed a statistically significant increase in spelling scores from pre-test (M = 15.58, SD = 4.17) to post-test (M = 27.92, SD = 2.78), t(11) = -8.58, p < .001, with a very large effect size (Cohen's d = -2.48). The Bayesian paired-samples t-test provided extreme evidence for the effectiveness of the game-based learning intervention (BF_{10} = 5697.710), with a posterior median increase in effect size of δ = 2.278, 95% CI [1.395, 3.216], indicating a large and positive effect on spelling scores from pre- to post-test. The multiple tests of normality (Shapiro-Wilk: W = 0.960, p = .784; Kolmogorov-Smirnov: D = 0.174, p = .861; Anderson-Darling: A = 0.324, p = .474) confirmed that the vocabulary scores were normally distributed for both pre- and post-intervention measurements. The paired-samples t-test on vocabulary scores indicated a statistically significant increase from pre-test to post-test following the use of game-based learning materials (t(11) = -9.33, p < .001, Cohen's d = -2.69). The robustness factor analysis for the Bayesian paired t-test on spelling scores showed that evidence for the alternative hypothesis (H1) remained extreme and consistent across a range of Cauchy prior widths, with the maximum BF_{10} = 19082.394 at r = 1.5, with values 18580.905 (ultrawide), 15194.448 (wide), and 11713.489 (user prior), confirming the strong positive effect of the game-based learning intervention.

➢ *The Possible Game-Based Learning Material or Guidelines in Developing Game-Based Learning Materials*

Table 15 Features of the Guidelines in Developing Game-Based Learning Material as Recommended by Teacher Informants

THEMES	CATEGORIES	CODES	INITIAL CODES
Developmental Alignment	**1a: Age-Stage Cognitive Alignment**	Grade-level skill alignment Reading level appropriateness	*"Age-appropriate considerations because struggling learners need simple, safe, motivating and confidence-building with clear instructions, relatable content materials. Words to be must be within their reading and cognitive level.* (T1) *"Age-appropriate consideration so the game match the grade level skill."* (T3)
Integrate Assessment	**Seamless Assessment**	Continuous assessment	"*Assessment Integration."* (T2) *"Assessment integration, when creating educational games for grade 3 spelling and vocabulary, robust assessment integration should be a core design principle, not an afterthought: the assessment must be seamless, unobstrusive, and provide actionable data for both the teacher and the student."* (T4)
Teacher Professional Development	**Technology Literacy**	Digital game literacy ICT skill development	*"Training Requirements to enhance ICT skills of the teacher."* (T2) *"Training Requirements, they*

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

- *Developmental Alignment*

In developmental alignment, it means that aligning the materials or teaching methods to the development of the learners, ensuring that it is relevant to the capacity of the learners to understand and the level of skills they can portray, and then the specific alignment of competency that they can acquire. This can be a foundation or source for the active participation and motivation of the learners. As Teacher informant no.3 answered, "Age-appropriate consideration so the game match the grade level skill." And also, teacher informant no. 1 answered, "Age-appropriate considerations because struggling learners need simple, safe, motivating and confidence-building with clear instructions, relatable content materials. Words to be must be within their reading and cognitive level." Instructional design must align with learners' developmental stages while ensuring equity and engagement. T aligns with align with Guan et al. (2022), who emphasized that successful game-based learning in primary education requires instructional materials and activities to be developmentally appropriate and aligned with learners' cognitive abilities, prior knowledge, and grade-level competencies. This can be a tool for designing engaging and motivational learning materials that are based on the development of learners appropriately.

- *Integrate Assessment*

Integrate assessment, can build and uplift learner performance, as assessment results are the basis for understanding what has been done and what can be done to meet the needs reinforced by the evaluation. This integration is a primary thing to prioritize and should never be neglected because it can support learning and student achievement. As Teacher 2 answered, "Assessment Integration." And also, Teacher 4 answered, "Assessment integration, because when creating educational games for grade 3 spelling and vocabulary, robust assessment integration should be a core design principle, not an afterthought: the assessment must be seamless, unobtrusive, and provide actionable data for both the teacher and the student." Badrinarayan (2024) reinforced that assessment systems must provide dual-purpose data—supporting both teacher decision-making and student progress monitoring. Through this, it can support the needs for purposeful learning and continuous instructional design for the learners.

- *Teacher Professional Development*

Teachers' competence must be given priority as this is the tool for effective implementation of the knowledge to the learners. As Teacher 2 answered, "Training Requirements, to enhance ICT skills of the teacher." And also Teacher 3 answered, "Training Requirements, they need guidance on how to use game properly." Maaranen et al. (2025) found that targeted training in digital pedagogy enhances teachers' confidence and ICT skills, while Cornér et al. (2025) emphasized the importance of modeling healthy technology use and promoting digital wellness. Through this, it can be an eye opener for the needs for teacher development so that they may possibly pass the learnings forward for the learners, and it includes being a the responsible digital citizen.

- *Technical Support*

Technical support as the major need of the implementation, vital for teaching and learning process. As Teacher 1 answered, "Technical support, for me, teachers must be well-trained on how to use digital games, educational platforms, or other game creation tools effectively." As well as, Teacher 4 answered, "Technical support, when it comes to technical support, the aspect of implementing e-based learning materials in the Grade 3 classroom, teachers need immediate, reliable, and accessible systems to minimize disruptions and maximize instructional time." Ntorukiri, Kirugua, and Kirimi (2022) identified inadequate infrastructure as a major barrier to ICT integration in education, while Espinosa et al. (2023) emphasized that responsive support systems and policies are necessary to ensure continuity of learning in the Philippine context. Similarly, Arante and Bascon (2025) demonstrated that the adequacy and functionality of ICT infrastructure directly influence online learning outcomes, while Selwyn (2016) argued that technology integration succeeds only when systemic support minimizes disruptions and protects instructional time. Through this, technical support is always intertwined with the success of implementation, as the teachers will give instructions for learners to acquire and adapt them when it comes to digital technology using game-based learning.

In summary, Game-based learning materials for Grade 3 spelling and vocabulary development must be grounded in developmental appropriateness, equity, and engagement, ensuring that instructional design aligns with learners' cognitive capacities, cultural backgrounds, and motivational needs.

IV. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

➢ *Findings*

- Grade 3 teachers improve pupils' spelling through sound teaching, use of flashcards and charts, word practice/repetition, teaching spelling rules and word patterns, and by quizzes and independent learning, while for vocabulary, the commonly utilized teaching methods include word games, memorization of word definitions, discussion of word meanings, story-based learning, and context clues.
- The methods used to improve spelling proficiency were sound teaching and spelling quizzes obtained the highest weighted mean of 5.00, interpreted as very high extent, while story-based learning also received a weighted mean of 5.00 in vocabulary improvement, indicating that teachers highly utilized phonics-based instruction, assessment activities, and contextualized learning approaches in teaching Grade 3 pupils. Furthermore, word practice and repetition (WM = 4.50) and context clues (WM = 4.50) were also utilized to a very high extent, whereas teaching spelling rules and word patterns (WM = 3.00) and discussion of words and their definitions (WM = 3.00) were only utilized to a moderate extent, showing that teachers favored interactive and

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

repetitive strategies over rule-based and discussion-centered methods in enhancing pupils' spelling and vocabulary skills.
- The game-based learning materials, combined with tactile activities, blended teaching methods, and age-appropriate strategies, motivated Grade 3 pupils and improved their spelling proficiency and vocabulary retention.
- The game-based learning materials increased Grade 3 pupils' enthusiasm and classroom engagement in learning spelling and vocabulary despite individual differences in learning styles and abilities.
- The developed game-based learning materials were rated very highly with an overall validity mean of 4.96 (SD = 0.20) and reliability mean of 4.88 (SD = 0.34), while pupils' spelling scores improved from M = 15.58 to 27.92 and vocabulary scores from M = 14.33 to 29.08, with statistically significant results in both spelling $t(11) = -8.58$, $p < .001$, $d = -2.48$ and vocabulary $t(11) = -9.33$, $p < .001$, $d = -2.69$ after the game-based learning intervention.
- The study identified four (4) important features in developing game-based learning materials: developmental alignment, integrated assessment, teacher professional development, and technical support, which emphasize the need for age-appropriate activities, continuous assessment, teacher ICT training, and accessible technical assistance.

➢ *Conclusions:*

- Grade 3 teachers employ diverse and effective instructional methods in teaching spelling and vocabulary, integrating phonics-based, visual, repetitive, contextual, and interactive strategies that support pupils' literacy development.
- The Grade 3 teachers highly utilized phonics-based, repetitive, assessment-driven, and contextualized teaching strategies, such as sound teaching, spelling quizzes, story-based learning, word practice and repetition, and context clues, as effective approaches in improving pupils' spelling proficiency and vocabulary skills.
- Game-based learning serves as an innovative and engaging approach that enhances pupils' participation, collaboration, and retention of spelling and vocabulary skills in English.
- The use of game-based learning materials creates a more engaging and enjoyable learning environment that supports pupils' active participation and interest in spelling and vocabulary development.
- The developed game-based learning materials are highly valid, reliable, and effective in significantly improving Grade 3 pupils' spelling proficiency and vocabulary retention, as supported by strong statistical and Bayesian evidence.
- Game-based learning materials become more effective for Grade 3 pupils when they are suited to the learners' developmental level, include proper assessment, and are supported by trained teachers and reliable technical support.

➢ *Recommendations:*

- Interactive and game-based learning activities alongside phonics-based, visual, repetitive, contextual strategies be implemented to improve pupils' spelling proficiency and vocabulary development.
- A more balanced and diversified set of instructional strategies, particularly game-based, rule-based, and discussion-centered activities, to further strengthen pupils' spelling and vocabulary development be incorporated by teachers.
- Teachers develop and integrate more age-appropriate and interactive game-based learning materials to increase learners' motivation, participation, and mastery of spelling and vocabulary.
- Teachers continue utilizing and improving game-based learning materials while considering individual learning differences to ensure that all pupils remain motivated and actively engaged in class activities.
- Teachers and schools adopt and continuously enhance game-based learning materials in English instruction to further improve pupils' spelling and vocabulary skills while maintaining high levels of engagement and learning effectiveness.
- Teachers and schools develop and use game-based learning materials that are appropriate to pupils' grade level, include regular assessment activities, provide teacher training in ICT, and ensure technical support for effective classroom implementation.

REFERENCES

[1]. Al-Azawi, R., Al-Faliti, F., & Al-Blushi, M. (2016). Educational gamification: Engagement in learning. *International Journal of Emerging Technologies in Learning (iJET)*, 11(7), 65–79. https://doi.org/10.3991/ijet.v11i07.5455

[2]. Ana, M. (2018). Young learners and English as a foreign language: Early stages of acquisition. *Journal of Language Teaching and Research*, 9(3), 512–520.

[3]. Arante, J. M., & Bascon, R. A. (2025). ICT infrastructure adequacy and its impact on Online learning outcomes in Philippine higher education. *Asia Pacific Journal of Education and Technology*, 41(2), 77–95.

[4]. Armea, R., et al. (2022). Student-centered learning and English proficiency development in the Philippines. *Philippine Journal of Education*, 97(2), 45–60.

[5]. Backlund, P., & Hendrix, M. (2013). Educational games—Are they worth the effort? A Literature survey of the effectiveness of serious games. *International Journal of Computer Games Technology*, 2013, 1–11. https://doi.org/10.1155/2013/785892

[6]. Badrinarayan, S. (2024). Instructionally relevant assessment systems: Designing Actionable data for

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

teachers and learners. *Journal of Educational Measurement and Evaluation*, 61(1), 45–62.

[7]. Bai, S., Hew, K. F., & Huang, B. (2020). A systematic review of gamification in education: Toward a framework for design and evaluation. *Educational Research Review*, 30,100326. https://doi.org/10.1016/j.edurev.2020.100326

[8]. Bakhsh, S. A. (2016). Using games as a tool in teaching vocabulary to young learners. *English Language Teaching*, 9(7), 120128.https://doi.org/10.5539/elt.v9n7p120

[9]. Bandura, A. (1977). *Social learning theory*. Prentice Hall.

[10]. Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.

[11]. Baydas, O., & Cicek, I. (2019). The effect of gamification on students' academic achievement: A meta-analysis study. *Educational Sciences: Theory & Practice*, 19(2), 5–22. https://doi.org/10.12738/estp.2019.2.001

[12]. Bear, D. R., Invernizzi, M., Templeton, S., & Johnston, F. (2019). *Words their way: Word study for phonics, vocabulary, and spelling instruction* (7th ed.). Pearson.

[13]. Bernard, R. M., Borokhovski, E., Schmid, R. F., Tamim, R. M., & Abrami, P. C. (2021). A meta-analysis of blended learning and technology use in higher education: From the general to the applied. *Journal of Computing in Higher Education, 33*(3), 623–651. https://doi.org/10.1007/s12528-020-09272-8

[14]. Bernard, R. M., Borokhovski, E., Schmid, R. F., Tamim, R. M., & Abrami, P. C. (2021). Ameta-analysis of blended learning and technology use in higher education: From the general tothe applied. Journal of Computing in Higher Education, 33(2), 1–28. https://doi.org/10.1007/s12528-021-09267-3

[15]. Beck, I. L., McKeown, M. G., & Kucan, L. (2013). *Bringing words to life: Robust vocabulary instruction* (2nd ed.). Guilford Press.

[16]. Bicen, H., & Kocakoyun, S. (2018). Perceptions of students for gamification approach: Kahoot as a case study. *International Journal of Emerging Technologies in Learning (iJET)*, 13(2), 72–93. https://doi.org/10.3991/ijet.v13i02.7467

[17]. Biemiller, A. (2003). Vocabulary development and instruction: A prerequisite for school learning. In C. A. Stone, E. R. Silliman, B. J. Ehren, & K. Apel (Eds.), *Handbook of language and literacy: Development and disorders* (pp. 436–470) Guilford Press.

[18]. Birsh, J. R., & Carreker, S. (2018). *Multisensory Teaching of Basic Language Skills* (4th ed.). Baltimore, MD: Paul H. Brookes Publishing.

[19]. Blau, I., & Shamir-Inbal, T. (2017). Re-designed flipped learning model in an academic course: The role of co-creation and co-regulation. *Computers & Education*, 115, 69–81. https://doi.org/10.1016/j.compedu.2017.07.014

[20]. Blunt, R. (2007). Does game-based learning work? Results from three recent studies. *Interdisciplinary Journal of E-Learning and Learning Objects*, 3(1), 205–216.

[21]. Böckle, M., Novak, J., & Bick, M. (2017). Towards adaptive gamification: A synthesis of current developments. *Proceedings of the 25th European Conference on Information Systems(ECIS)*, 1–17.

[22]. Bruner, J. (1986). *Actual minds, possible worlds*. Harvard University Press.

[23]. Bruner, J. S. (1966). *Toward a theory of instruction*. Harvard University Press.

[24]. Cambridge University Press. (n.d.). *Proficiency*. In *Cambridge Dictionary*. Retrieved January 5, 2026, from https://dictionary.cambridge.org

[25]. Carredo, J., et al. (2022). Instructional materials and learner engagement in English classrooms. *Journal of Education and Practice*, 13(4), 77–85.

[26]. Chen, C.-H., Shih, C.-C., & Law, V. (2021). Affective states in digital game-based learning: Thematic evolution and social network analysis. *Frontiers in Psychology, 12*, Article 695648. https://doi.org/10.3389/fpsyg.2021.695648

[27]. Chou, Y. K. (2017). *Actionable gamification: Beyond points, badges, and leaderboards*. Octalysis Media.

[28]. Cornér, S., Kaarakainen, M.-T., & Vainikainen, M.-P. (2025). *Teachers' digital well-being and healthy technology use in schools*. *Computers & Education, 211*, 104998. https://doi.org/10.1016/j.compedu.2024.104998

[29]. Cornér, S., Maaranen, K., & Kostiainen, E. (2025). Modeling healthy technology use in Teacher education: Digital wellness and balanced pedagogy. *Teaching and Teacher Education*,132, 104219.

[30]. Csikszentmihalyi, M. (1997). *Finding flow: The psychology of engagement with everyday life*. Basic Books.

[31]. Csikszentmihalyi, M. (2014b). *Flow and the foundations of positive psychology*. Springer. https://doi.org/10.1007/978-94-017-9088-8

[32]. Daniel D. Sjoberg, Margie Hannum, Karissa Whiting and Emily C. Zabor (2020). gtsummary: Presentation-Ready Data Summary and Analytic Result Tables. [R package]. Retrieved from https://CRAN.R-project.org/package=gtsummary .

[33]. Dicheva, D., Dichev, C., Agre, G., & Angelova, G. (2015). Gamification in education: A systematic mapping study. *Educational Technology & Society*, 18(3), 75–88.

[34]. Ding, Y., & Fan, J. (2022). Effects of multimodal vocabulary instruction on vocabulary acquisition and retention among elementary learners. *Frontiers in Psychology, 13*, Article 845763. https://doi.org/10.3389/fpsyg.2022.845763

[35]. Ding, Y., & Fan, J. (2022). Effects of multimodal vocabulary instruction on vocabulary acquisition among elementary learners. Education Sciences, 12(, 531. https://doi.org/10.3390/educsci12080531

[36]. Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving students' learning with effective learning techniques: Promising directions from cognitive and educational psychology. *Psychological Science in the Public*

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

Interest, 14(1), 4–58. https://doi.org/10.1177/1529100612453266

[37]. Espinosa, A., Dizon, R., & Cruz, M. (2023). ICT support systems and policy implementation in Philippine schools: Ensuring continuity of learning. *Philippine Journal of Educational Technology*, 29(3), 112–130.

[38]. Fanani, H., Supriadi, D., & Wahyuni, S. (2020). The effectiveness of word puzzle games in improving elementary students' vocabulary mastery. *International Journal of Instruction, 13*(4), 567–582. https://doi.org/10.29333/iji.2020.13435a

[39]. Fernandes, A. (2017). Teaching phonics: Practices and challenges in primary classrooms. *International Journal of English Language Teaching*, 5(2), 33–42.

[40]. Fernández-Oliveras, M., Oliveras, M. L., & Oliveras, J. (2021). Gamification in science education: A systematic review. *Journal of Science Education and Technology*, 30(2),123–135.

[41]. Fiş-Erümit, S., & Karakuş Yılmaz, T. (2022). Gamification in education: A systematic Review and implications. *Education and Information Technologies*, 27(1), 125. https://doi.org/10.1007/s10639-021-10718-0

[42]. Firke, S. (2019). janitor: Simple Tools for Examining and Cleaning Dirty Data.. [Rpackage]. Retrieved from https://CRAN.R-project.org/package=janitor .

[43]. Fotaris, P., Mastoras, T., Leinfellner, R., & Rosunally, Y. (2021). Climbing up the leaderboard: An empirical study of applying gamification techniques to a computer programming class.

[44]. Electronic Journal of e-Learning, 19(2), 94–110. Fotaris, P., Mastoras, T., Leinfellner, R., & Rosunally, Y. (2021). Enhancing students' motivation and engagement through digital escape rooms. *Computers & Education*, *166*, Article 104156. https://doi.org/10.1016/j.compedu.2021.104156

[45]. Freeman, G., et al. (2017). Gamification as a learning methodology in primary education. *International Journal of Educational Research*, 82, 1–10.

[46]. Gay, G. (2010). *Culturally responsive teaching: Theory, research, and practice* (2nd ed.). New York: Teachers College Press.

[47]. Gee, J. P. (2019). *What video games have to teach us about learning and literacy* (2nd ed.).

➢ *Palgrave Macmillan*

[48]. Goehle, G. (2013). Gamification and mathematics education. *Mathematics Teacher*, 106(6), 378–384.

[49]. Gooch, D., Vasalou, A., Benton, L., & Khaled, R. (2016). Using gamification to motivate students with dyslexia. *CHI Conference on Human Factors in Computing Systems*, 969 980. https://doi.org/10.1145/2858036.2858231

[50]. Göksün, D. O., & Gürsoy, G. (2019). Comparing success and engagement in gamified Learning experiences via Kahoot and Quizizz. *Computers & Education*, 135, 15–29. https://doi.org/10.1016/j.compedu.2019.02.015

[51]. Graves, M. F. (2006). *The vocabulary book: Learning and instruction*. Teachers College Press.

[52]. Guan, C., Mou, J., & Jiang, Z. (2022). Artificial intelligence innovation in education: A twenty-year data-driven historical analysis. International Journal of Innovation Studies, 6(4), 134–147. https://doi.org/10.1016/j.ijis.2022.09.001

[53]. Guan, X., Sun, C., Hwang, G.-J., Xue, K., & Wang, H. (2022). Applying game-based learning in primary education: A systematic review of journal publications from 2010 to 2020. *Interactive Learning Environments*. Advance online publication. https://doi.org/10.1080/10494820.2022.2091611

[54]. Hall, J. (2017). Play-based learning and student engagement in language classrooms. *Journal of Early Childhood Literacy*, 17(4), 523–540.

[55]. Hall, T., Strangman, N., & Meyer, A. (2003). Differentiated instruction and implications for UDL implementation. National Center on Accessing the General Curriculum. Retrieved from http://www.cast.org

[56]. Hallifax, S., Serna, A., Marty, J. C., Lavoué, É., & Lavoué, É. (2019). Adaptive gamification in education: A literature review of current trends and developments. *Proceedings of the European Conference on Technology Enhanced Learning (EC-TEL)*, 294–307. https://doi.org/10.1007/978-3-030-29736-7_22

[57]. Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does gamification work? — A literature review of empirical studies on gamification. *Proceedings of the 47th Hawaii International Conference on System Sciences (HICSS)*, 3025–3034.https://doi.org/10.1109/HICSS.2014.377

[58]. Hayes-Larson E, Kezios KL, Mooney SJ, Lovasi G. (2019). Who is in this study, anyway? Guidelines for a useful Table 1.. J Clin Epidemiol.. link , 114, 125-132.

[59]. Heinzen, E Sinnwell, J Atkinson, E Gunderson, T Dougherty, G (2018). arsenal: An Arsenal of 'R' Functions for Large-Scale Statistical Summaries. [R package]. Retrieved from https://CRAN.R project.org/package=arsenal Hill, J. (2015). The effects of gamification on student motivation and engagement. *Journal of Instructional Research*, 4, 13–22. Högberg, J., Hamari, J., & Wästlund, E. (2019). Gameful experience: Understanding gamification through intrinsic motivation. *Computers in Human Behavior*, 92, 307 317. https://doi.org/10.1016/j.chb.2018.11.028

[60]. Hornby, A. S. (2006). *Oxford advanced learner's dictionary of current English* (7th ed.). Oxford University Press.

[61]. Horwitz, S. R., et al. (2022). Gamification and academic performance: A meta-analysis. *Educational Psychology Review*, 34(3), 987–1012. https://doi.org/10.1007/s10648-021-09605-9

[62]. Hui, H. B., & Mahmud, M. S. (2023). Influence of game-based learning in mathematics education on students' cognitive and affective domains: A systematic review. *Frontiers in Psychology, 14*,

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

Article 1105806. https://doi.org/10.3389/fpsyg.2023.1105806

[63]. Hui, T. K., & Mahmud, R. (2023). The effects of game-based learning on students' motivation and engagement: A systematic review. Education and Information Technologies, 28(9), 11237–11258. https://doi.org/10.1007/s10639-023-11630-4

[64]. Hursen, C., & Bas, G. (2019). Use of gamification applications in science education. *International Journal of Emerging Technologies in Learning (iJET)*, 14(1), 4– 23. https://doi.org/10.3991/ijet.v14i01.8894

[65]. Ibharim, N., Yatim, N., & Masran, M. (2015). Digital game-based learning for Vocabulary development among primary school students. *International Journal of Education and Research*, 3(12), 321–330.

[66]. Jagušt, T., & Botički, I. (2019). Adaptive gamification for learning: Considering individual differences. *Interactive Learning Environments*, 27(7), 930–944. https://doi.org/10.1080/10494820.2018.1546748

[67]. JASP Team (2018). JASP. [Computer software]. Retrieved from https://jasp-stats.org

[68]. Johnson, D. W., & Johnson, R. T. (2009). An educational psychology success story: Social interdependence theory and cooperative learning. *Educational Researcher*, 38(5), 365–379. https://doi.org/10.3102/0013189X09339057

[69]. Karakoç, B., et al. (2022). Gamification in higher education: A systematic review. *Education Sciences*, 12(2), 87. https://doi.org/10.3390/educsci12020087

[70]. Kaur, P. (2022). Formative assessment practices and language learning outcomes in elementary classrooms. *Language Testing in Asia, 12*(1), 28–43. https://doi.org/10.1186/s40468-022-00185-9

[71]. Kazuki, Y. (2019). tableone: Create 'Table 1' to Describe Baseline Characteristics. [Rpackage]. Retrieved from https://CRAN.R-project.org/package=tableone .

[72]. Klock, A. C. T., Gasparini, I., & Pimenta, M. S. (2020). Tailored gamification: Concepts, applications, and future directions. *Computers in Human Behavior*, 107, 106209. https://doi.org/10.1016/j.chb.2020.106209

[73]. Koivisto, J., & Hamari, J. (2014). Demographic differences in perceived benefits from gamification. *Computers in Human Behavior*, 35, 179–188. https://doi.org/10.1016/j.chb.2014.03.007

[74]. 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

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

[76]. Lameras, P., & Moumoutzis, N. (2015). Learning mathematics through serious games: A case study. *Simulation & Gaming*, 46(4–5), 512–537.

[77]. Lastari, N., Mustafa, M., & Nur'Aini, L. (2020). Game-based learning in English classrooms: Motivating young learners. *Indonesian Journal of English Language Teaching*, 15(1), 45–58.

[78]. Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.

[79]. Lee, J., Spark, A., & Kim, H. (2019). Phonological processing and spelling development in EFL learners. *Journal of Applied Linguistics*, 40(2), 211–229.

[80]. Liu, M., & Chu, H. (2021). Gamification for problem-solving and higher-order thinking skills. *Educational Technology Research and Development*, 69(3), 141–160.

[81]. Lorenz, M. (2015). Video games and cognitive skills: Memory and strategic planning advantages. *Computers in Human Behavior*, 48, 181–189.

[82]. Maaranen, K., Cornér, S., & Kostiainen, E. (2025). Teacher educators' professional development in digital pedagogy: Building confidence and ICT skills. *European Journal of Teacher Education*, 48(1), 1–18.

[83]. Manzano-León, A., et al. (2021). Gamification as motivation in education: A systematic review. *Education and Information Technologies*, 26(2), 1–25. https://doi.org/10.1007/s10639-020-10352-6

[84]. Marpaung, N., & Situmeang, R. (2021). Enhancing students' vocabulary through authentic materials and multimedia. *Journal of English Language Studies*, 6(1), 45–56. https://doi.org/10.30870/jels.v6i1.12345

[85]. Martín-del-Pozo, M., et al. (2019). Gamification in primary education: Challenges And opportunities. *Education Sciences*, 9(3), 1–15.

[86]. Marzano, R. J., & Pickering, D. J. (2005). *Building academic vocabulary: Teacher's manual*. Association for Supervision and Curriculum Development (ASCD).

[87]. Masrop, N. A. M., et al. (2015). Digital games in education: Benefits and applications. *International Journal of Interactive Mobile Technologies (iJIM)*, 9(3), 37–45.

[88]. Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press.

[89]. McKeown, M. G., Beck, I. L., & Sandora, C. (2019). Effects of rich and interactive vocabulary instruction on elementary students' word learning. *The Elementary School Journal, 120*(2), 276–298. https://doi.org/10.1086/705989

[90]. Moats, L. C. (2019). *Teaching reading is rocket science: What expert teachers of reading should know and be able to do* (2nd ed.). American Federation of Teachers.

[91]. Moats, L. C. (2020). Speech to print: Language essentials for teachers (3rd ed.). Paul H. Brookes Publishing. National Association for the Education of Young Children. (2020).

[92]. Developmentally appropriate practice in early childhood programs serving children from birth through age 8 (4th ed.).

[93]. Mohamad, M., et al. (2020). 21st-century learning and technology integration for Generation Z. *Journal of Education and Learning*, 14(2), 112–120.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

[94]. Montero, R., et al. (2022). Digital natives and challenges in traditional classrooms. *Journal of Language Education and Research*, 18(1), 55–70.
[95]. Montessori, M. (1964). *The Montessori method*. Schocken Books. (Original work Published 1912)
[96]. Morey, R. D., & Rouder, J. N. (2018). BayesFactor: Computation of Bayes Factors for Common Designs. [R package]. Retrieved from https://cran.rproject.org/package=BayesFactor .
[97]. Msane, J. (2020). Video games and programming success among learners . *African Journal of Education and Technology*, 12(3), 88–95.
[98]. Mylonas, A., et al. (2021). Gamification in non-game contexts: A systematic review. *Computers in Human Behavior Reports*, 4, 100–118.
[99]. Nagy, W. E., Townsend, D., Lesaux, N. K., & Schmitt, N. (2020). Teaching students to use context clues for vocabulary acquisition and reading comprehension. *Reading Research Quarterly*, *55*(S1), S111–S127. https://doi.org/10.1002/rrq.341
[100]. Nagy, W. E., & Townsend, D. (2012). Words as tools: Learning academic vocabulary As language acquisition. *Reading Research Quarterly*, 47(1), 91–108. https://doi.org/10.1002/RRQ.011
[101]. Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge University Press.
[102]. National Association for the Education of Young Children. (2020). *Developmentally appropriate practice: A position statement of the National Association for the Education of Young Children*. https://www.naeyc.org/resources/position-statements/dap
[103]. Nedergård, H. (2016). Gamification in education: Student satisfaction and engagement. *Nordic Journal of Digital Literacy*, 11(3), 123–140.
[104]. Neuman, S. B., & Wright, T. S. (2020). The power of storybooks and hands-on experiences in early vocabulary development. *The Reading Teacher, 74*(2), 127–136. https://doi.org/10.1002/trtr.1931
[105]. Neuman, S. B., & Wright, T. S. (2020). The magic of words: Teaching vocabulary in the early childhood classroom. American Educator, 44(3), 4–13.
[106]. Ntorukiri, J., Kirugua, J., & Kirimi, P. (2022). ICT infrastructure challenges in universities: Implications for teaching and learning. *International Journal of Education and Development using ICT*, 18(1), 45–59.
[107]. Nunes, T., & Bryant, P. (2009). *Children's reading and spelling: Beyond the first steps*. Wiley Blackwell.
[108]. Ocampo, R. (2018). Learner motivation and teaching strategies in English classrooms. *Philippine ESL Journal*, 21(1), 34–49.
[109]. Oliveira, W., et al. (2019). Flow experience in gamification: A systematic review. *Computers in Human Behavior*, 99, 335–345. https://doi.org/10.1016/j.chb.2019.05.038
[110]. Oliveira, W., et al. (2020). Socializers vs competitors: Understanding player types in gamified learning. *British Journal of Educational Technology*, 51(4), 1236–1252. https://doi.org/10.1111/bjet.12910
[111]. Ordiz, A. (2017). Gamification in primary education: A case study in Spain. *Revista deEducación*, 375, 45–67.
[112]. Orji, R., et al. (2014). Tailoring persuasive health games to gamer type. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 2467–2476. https://doi.org/10.1145/2556288.2557396
[113]. Papert, S. (1980). *Mindstorms: Children, computers, and powerful ideas*. Basic Books.
[114]. Parra-Gonzalez, M. E., et al. (2020). Active learning in primary education through gamification. *Sustainability*, 12(2), 1–12. https://doi.org/10.3390/su12020592
[115]. Parra-Gonzalez, M. E., et al. (2021). Enhancing flipped classroom with gamification: Case study using EdPuzzle. *Education and Information Technologies*, 26(3), 321–340. https://doi.org/10.1007/s10639-020-10352-6
[116]. Pearson, L. B. (1992). *Development: Hybrid concept of social, political, and economic transformation*. United Nations University Press.
[117]. Perfetti, C. A., & Stafura, J. Z. (2014). Word knowledge in a theory of reading comprehension. *Scientific Studies of Reading*, 18(1), 22–37.https://doi.org/10.1080/10888438.2013.827687
[118]. Phochaiyarat, P. (2018). Writing practice and vocabulary development in EFL learners. *Journal of Language and Education*, 4(2), 67–75.
[119]. Plump, C. M., & LaRosa, J. (2017). Using Kahoot! in the classroom to create engagement and active learning: A game-based technology solution for eLearning novices. *Management Teaching Review*, 2(2), 151–158. https://doi.org/10.1177/2379298116689783
[120]. Puig, B., et al. (2021). Gamification in science teaching: Benefits and challenges. *Journal of Science Education*, 42(1), 77–89.
[121]. Putman, S. M., & Walker, C. M. (2021). Retrieval practice and repeated exposure: Effects on vocabulary learning and retention. *Journal of Educational Psychology, 113*(6), 1124–1138. https://doi.org/10.1037/edu0000648
[122]. Quintas, J., et al. (2020a). Gamification in science education: Case study in primary schools. *Education Sciences*, 10(2), 1–15.
[123]. Quintas, J., et al. (2020b). Gamification for active learning in STEM. *International Journal of STEM Education*, 7(1), 1–12.
[124]. Rachels, J. R., & Rockinson-Szapkiw, A. J. (2018). The effects of a mobile gamification app on language learning: Duolingo as a case study. *Computer Assisted Language Learning*, 31(1–2), 133–151. https://doi.org/10.1080/09588221.2017.1382536
[125]. Raj, R., & Renumol, V. G. (2021). Gamification and individual differences: A systematic review. *Education and Information Technologies*, 26(5), 1–20. https://doi.org/10.1007/s10639-020-10352-6
[126]. Rapp, A., Hopfgartner, F., Hamari, J., Linehan, C., & Cena, F. (2019). Strengthening gamification studies: Current trends and future opportunities of

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

gamification research. *International Journal of Human-Computer Studies*, 127, 1–6. https://doi.org/10.1016/j.ijhcs.2018.11.007

[127]. R Core Team (2025). R: A Language and environment for statistical computing. (Version 4.5) [Computer software]. Retrieved from https://cran.r-project.org (R packages retrieved from CRAN snapshot 2025-05-25).

[128]. Rodríguez, A., et al. (2019). Gamification in virtual learning environments: A systematic review. *Education Sciences*, 9(2), 1–15. https://doi.org/10.3390/educsci9020072

[129]. Rouder, J. N., Speckman, P. L., Sun, D., Morey, R. D., & Iverson, G. (2009). Bayesian t tests for accepting and rejecting the null hypothesis. Psychonomic Bulletin &Review, 16, 225-237.

[130]. Sanchez, D., et al. (2019). Gamification in assessment: Kahoot and Socrative in Higher education. *Education and Information Technologies*, 24(2), 1–15. https://doi.org/10.1007/s10639-018-9783-5

[131]. Santos, O. C., et al. (2021). Context-aware gamification in education: A systematic review. *IEEE Transactions on Learning Technologies*, 14(3), 1–15. https://doi.org/10.1109/TLT.2021.3074598

[132]. Scriven, R., & Langan, D. (2020). Gamification in non-game contexts: Applications and challenges. *Journal of Applied Learning & Teaching*, 3(2), 45–56.

[133]. Seaborn, K., & Fels, D. I. (2015). Gamification in theory and action: A survey. *International Journal of Human-Computer Studies*, 74, 14–31.https://doi.org/10.1016/j.ijhcs.2014.09.006

[134]. Selwyn, N. (2016). *Education and technology: Key issues and debates* (2nd ed.).

➢ *Bloomsbury Academic*

[135]. Septida, R. (2020). *Teaching English to young learners: Strategies and challenges*. Indonesian

[136]. Serdar Balci (2022). ClinicoPath jamovi Module doi:10.5281/zenodo.3997188. [Rpackage]. Retrieved from https://github.com/sbalci/ClinicoPathJamoviModule. link .

[137]. Shaffer, D. W., Halverson, R., Squire, K., & Gee, J. P. (2005). Video games and the future of learning. *Phi Delta Kappan*, 87(2), 104–111. https://doi.org/10.1177/003172170508700205

[138]. Sipone, A., et al. (2019). Gamification in science education: A systematic review. *International Journal of Science Education*, 41(3), 345–365.

[139]. Snowling, M. J., & Hulme, C. (2012). Interventions for children's language and Literacy difficulties. *International Journal of Language & Communication Disorders*, 47(1), 2734. https://doi.org/10.1111/j.1460-6984.2011.00081.

[140]. Sousa, D. A. (2011). *How the brain learns* (4th ed.). Corwin Press.

[141]. Stahl, S. A., & Nagy, W. E. (2006). *Teaching word meanings*. Lawrence Erlbaum Associates.

[142]. Stephen, A., & Edwards, R. (2018). Problem-solving through gamification in education. *Journal of Educational Computing Research*, 56(5), 745–765.

[143]. Straker, L., Pollock, C., & Maslen, B. (2013). Principles for the wise use of computers by children. *Ergonomics*, 52(11), 1386–1401. https://doi.org/10.1080/00140130903066710

[144]. Sunday, O., et al. (2022). Gamification in online learning environments: Effects on engagement and performance. *Interactive Learning Environments*, 30(4), 1–15. https://doi.org/10.1080/10494820.2020.1855216

[145]. Tan Ai Lin, T., et al. (2018). Gamification in primary education: Teachers' perspectives. *Asia-Pacific Journal of Teacher Education*, 46(4), 377–390.

[146]. Taşpınar, Z., Schmidt, W. C., & Schuhbauer, H. (2022). Gamification in education: A systematic review of motivational outcomes and learning performance. *Education and Information Technologies, 27*(6), 7613–7642. https://doi.org/10.1007/s10639-022-10960-8

[147]. The jamovi project (2025). jamovi. (Version 2.7) [Computer Software]. Retrievedfrom https:// www.jamovi.org

[148]. Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms* (2nd ed.). Association for Supervision and Curriculum Development (ASCD).

[149]. Tóth, Á., et al. (2019). Gamification in education: A case study in Hungary. *Education and Information Technologies*, 24(3), 243–256.

[150]. Trask, R. L. (2006). *Mind the gaffe: The Penguin guide to common errors in English*. Penguin Books.

[151]. Treiman, R. (2017). Learning to spell words: Findings, theories, and issues. *Scientific Studies of Reading*, 21(4), 265–276. https://doi.org/10.1080/10888438.2017.1296449

[152]. Uluyol, C., & Sahin, S. (2016). The effect of gamification on primary school students' learning. *International Journal of Instruction*, 9(1), 55–68.

[153]. UNESCO. (2018). *Digital games and gamification in learning*. UNESCO Publishing. UNESCO International Institute for Educational Planning (IIEP). (n.d.). *Learning materials*. UNESCO IIEP Learning Portal. Retrieved January 5, 2026, from https://learningportal.iiep.unesco.org

[154]. Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*. MIT Press.

[155]. Warschauer, M., & Matuchniak, T. (2010). New technology and digital worlds: Analyzing evidence of equity in access, use, and outcomes. *Review of Research in Education*, 34(1), 179–225. https://doi.org/10.3102/0091732X09349791

[156]. Webb, S., & Nation, P. (2021). *How vocabulary is learned* (2nd ed.). Oxford University Press

[157]. Wright, T. S., & Neuman, S. B. (2020). Building vocabulary through meaningful contexts and multisensory experiences. *Reading Psychology, 41*(8), 753–776. https://doi.org/10.1080/02702711.2020.1803456

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26sep022

[158]. Yieng, C. D. M., & Abdul Aziz, A. (2022). A systematic literature review on using game-based learning to enhance English vocabulary and spelling for primary school pupils. *International Journal of Academic Research in Progressive Education and Development*, 11(2), 1725–1737.
[159]. Yıldırım, İ., & Demir, S. (2016). The effect of gamification on interaction and Communication in education. *International Journal of Instruction*, 9(2), 123–138.
[160]. Zainuddin, Z., et al. (2020). The impact of gamification on learning outcomes: A systematic review. *Education and Information Technologies*, 25(5), 1–25.https://doi.org/10.1007/s10639-019-10027-0
[161]. Ziernwald, L., Hillmayr, D., & Holzberger, D. (2022). Promoting student engagement through differentiated instruction in mixed-ability classrooms: A systematic review. *Gifted Child Quarterly, 66*(4), 249–268. https://doi.org/10.1177/1932202X221112931
[162]. Ziernwald, L., Schleicher, M., & Kopp, B. (2022). Differentiated instruction in digital learning environments: Supporting diverse learners through adaptive educational materials. Education Sciences, 12(10), 698. https://doi.org/10.3390/educsci12100698.