



Integrating the KWL Strategy with Wordwall Gamification to Enhance Reading Comprehension in Junior High School

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Abstract

Reading is a foundational skill in secondary English language education, essential for academic achievement and preparing learners for global contexts. Explicit instruction in reading strategies is particularly beneficial for students with limited academic English exposure. This study examines the integration of the KWL (Know, Want to know, Learned) strategy with the digital platform Wordwall, an approach designed to improve reading comprehension for junior high school students. The KWL framework enhances comprehension, focus, and engagement by activating prior knowledge, setting clear reading purposes, and encouraging reflective learning. A mixed-methods research design was employed to evaluate this intervention. The combination of structured metacognitive guidance and interactive digital activities transformed classroom instruction. Results indicated significant improvements in reading comprehension and vocabulary acquisition. Furthermore, the approach increased student motivation and established a low-anxiety environment that encouraged participation and risk-taking. The experimental group achieved a substantially higher and more consistent mean learning gain (31.05%) compared to the control group (10.73%). Their results also exhibited greater statistical stability and a distribution closer to normality, indicating that the benefits were both reliable and equitable across participants.

These findings confirm that strategically combining evidence-based reading strategies with digital tools fosters a more engaging, effective, and inclusive learning environment. This pedagogical integration ultimately leads to deepened comprehension and strengthened academic outcomes, highlighting its significant potential for contemporary English language education

Keywords: Digital Learning Tools; Junior High School Students; KWL Strategy; Wordwall Gamification

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1. Introduction

Reading is a crucial skill in English language education, especially at the secondary level, as it supports academic achievement and prepares students for global challenges. Explicit instruction in reading strategies significantly improves comprehension, particularly for students with less experience in English academic reading (Yapp et al., 2023). Vocabulary



knowledge is the strongest predictor of reading comprehension, followed by grammar and oral language skills (Babayiğit & Shapiro, 2020; Brooks et al., 2021). Integrating 21st-century skills such as critical thinking and digital literacy into reading tasks further enhances students' readiness for globalization and lifelong learning (Babayiğit & Shapiro, 2020; Brooks et al., 2021; Yapp et al., 2023). Effective reading instruction should combine strategy training, vocabulary development, and broader language skills.

Students face several reading comprehension challenges, including limited vocabulary, difficulty understanding text content, trouble identifying main ideas, inability to make inferences, and lack of concentration. Research shows that explicit instruction in reading strategies such as skimming, scanning, summarizing, and questioning significantly improves comprehension and student engagement (Banditvilai, 2020; Pourhosein Gilakjani & Sabouri, 2016; Yapp et al., 2023). Teachers can further support students by using scaffolding, think-alouds, and collaborative learning activities (Amin, 2023; Dwiningtiyas et al., 2020). Addressing these challenges with targeted strategies helps students become more active, self-regulated readers and enhances their overall reading (Banditvilai, 2020; Pourhosein Gilakjani & Sabouri, 2016).

Multiple studies show that the K-W-L (Know–Want to know–Learned) technique is highly effective for improving students' reading comprehension and classroom engagement. Students taught with K-W-L consistently achieve higher post-test scores than those taught with conventional methods, with significant gains in understanding main ideas, supporting details, and making inferences (Sari et al., 2023; Sholeh et al., 2020; Sinambela et al., 2015). The technique also increases student participation, curiosity, and motivation, as learners actively connect prior knowledge, set reading goals, and reflect on what they have learned (Gracia M. N Otta et al., 2024; Rochmah & Shunlin, 2024). K-W-L is especially beneficial for students struggling with vocabulary, concentration, and comprehension.

As technology develops, teachers must also adapt their English language teaching methods by keeping up with technological advancements so that students can better understand



the material and be more active in class. Gamification, which integrates game elements like points and badges into English language learning, increases student motivation, engagement, and performance (Dehghanzadeh et al., 2021; Lee & Baek, 2023; Zhang & Hasim, 2023). Tools such as Kahoot!, Quizlet, and Duolingo make lessons more interactive and enjoyable, supporting vocabulary, grammar, and communication skills (Detken Landázuri et al., 2025; Laura-De La Cruz et al., 2023; Shahidan & Kamarol Ariffin, 2024). Research shows that gamification fosters positive attitudes, active participation, and self-directed learning (Detken Landázuri et al., 2025; Sharifuddin & Abdullah, 2023). However, its effectiveness depends on thoughtful design and teacher training. Overall, gamification is an effective strategy to make English learning more dynamic, motivating, and meaningful for students (Detken Landázuri et al., 2025; Lee & Baek, 2023; Zhang & Hasim, 2023).

In this research, the researcher will use Wordwall. Wordwall is a web-based platform that can be used as a medium for learning activities (Utami et al., 2025). It provides various types of interactive quizzes that can increase student learning motivation, while the KWL strategy helps students organize and reflect on their learning. Wordwall has been shown to increase intrinsic student motivation from 60% to 85% and extrinsic motivation from 55% to 80% (Renata et al., 2024). Its use facilitates social collaboration and increases student engagement with digital content, making learning more enjoyable and interactive (Akbar & Hadi, 2023).

The integration of the KWL strategy and digital tools like Wordwall is a promising approach to enhance English reading comprehension among junior high school students. Studies consistently show that the KWL strategy significantly improves students' reading comprehension, focus, and engagement by activating prior knowledge, setting goals, and encouraging reflection (Diasti et al., 2023; Madhi, 2021; Rahmawati, 2018). When combined with interactive media such as Wordwall, students experience even greater motivation and interest, leading to higher achievement and more active participation (Azwar et al., 2024). This blended approach not only helps students understand texts better but also fosters a more



enjoyable and effective learning environment, supporting both comprehension and classroom enthusiasm (Azwar et al., 2024; Heriyawati et al., 2021; Nirwan, 2020).

Therefore, this study aims to fill this gap by investigating the unique contribution of integrating the KWL strategy with Wordwall gamification. The research will examine whether this combined approach not only improves reading comprehension more effectively than standard methods but also creates a more dynamic and motivating learning environment for junior high school students. The present study is entitled, "Integration of the Know-Want-Learned (KWL) Strategy and Wordwall Gamification: Improving English Reading Comprehension of Junior High School Students."

2. Method

The researcher conducted this study using a mixed-methods methodology. The mixed methods approach was a technique designed to build synergy and leverage the strengths of both quantitative and qualitative approaches in order to understand a phenomenon more comprehensively than using either method alone (Geoffrey & Gay, 2019). The subjects in this study were junior high school students in the city of Samarinda, East Kalimantan. The research procedure commenced with the administration of a reading pre-test, which served to establish a baseline measure of the students' reading comprehension abilities. Subsequently, an instructional intervention was implemented utilizing the KWL (Know, Want to Know, Learned) strategy. This intervention was deployed across six sequential sessions, each dedicated to a distinct topic. The KWL framework was employed to facilitate the activation of students' prior knowledge, guide them in formulating inquiry-based questions, and promote metacognitive reflection on their acquired understanding post-reading.

A total of 59 students were selected from two intact classes, which were randomly assigned to either the experimental or control group. The primary criteria for selection were enrollment in the standard seventh-grade English curriculum. This was done to ensure participants had a comparable starting point, with an average age of 13-14 years. Prior to the commencement of the study, official permission was secured from the school principal.



Informed consent was acquired from the parents or guardians of all participating students, and assent was also obtained from the students themselves. Participants were assured of confidentiality, anonymity, and their right to withdraw from the study at any time without penalty. To augment the pedagogical approach, the digital platform Wordwall was integrated into all six instructional sessions. This tool was utilized to deliver interactive exercises designed to enhance student engagement, provide formative assessment through quiz-based activities, and reinforce vocabulary acquisition.

Upon conclusion of the intervention cycle, a reading post-test was administered to evaluate potential discrepancies between the students' initial and final competencies. To triangulate the quantitative data and gain deeper phenomenological insight, semi-structured interviews were conducted with student participants and teacher. These interviews aimed to elicit detailed accounts of their experiential perceptions, assess the perceived utility of the methods, and identify any emergent challenges associated with the integration of the KWL strategy and Wordwall platform.

2.1. Data Collection Technique

The research instruments were derived from the textbook Bahasa Inggris untuk Nusantara (English for the Archipelago), published by the Curriculum and Book Center of the Ministry of Education, Culture, Research, and Technology. This textbook was selected for its established presence within Samarinda junior high schools and its alignment with the mandated national curriculum.

The data collection procedure will consist of an eight-session intervention. An achievement test in reading comprehension will be administered as a pre-test in the initial session and again as a post-test in the final session. The intervening six sessions will constitute the treatment phase, during which the KWL (Know-Want-Learned) instructional strategy will be implemented, integrated with interactive digital media from the Wordwall platform. All instructional content for these sessions will be drawn from the designated textbook.



To capture qualitative data, semi-structured interviews will be conducted with student participants. These interviews are designed to elicit student perspectives on the utility and perceived effectiveness of the Wordwall media, with each interview allocated a duration of three to eight minutes per participant.

3. Findings and Discussion

3.1. Descriptive Statistics

The descriptive analysis of the N-Gain Score indicates a difference in learning outcomes between the control class (the female group) and the experimental class (the male group that received the treatment before the post-test). The mean N-Gain for the experimental group was 31.05% with a median of 33.33%, whereas the control group only achieved a mean of 10.73% with a median of 30.95%.

Table 1. Descriptive Statistics

| | N-Gain Score % | |
|------------------------|----------------|------------|
| | Control | Experiment |
| Valid | 32 | 27 |
| Missing | 0 | 0 |
| Median | 30.95 | 33.33 |
| Mean | 10.727 | 31.048 |
| 95% CI Mean Upper | 38.548 | 47.156 |
| 95% CI Mean Lower | -17.094 | 14.939 |
| Std. Deviation | 77.163 | 40.72 |
| IQR | 57.855 | 60 |
| Variance | 5954.326 | 1658.137 |
| Skewness | -2.888 | -0.132 |
| Std. Error of Skewness | 0.414 | 0.448 |
| Kurtosis | 9.33 | -0682 |
| Std. Error of Kurtosis | 0.809 | 0.872 |
| Range | 375 | 150 |
| Minimum | -300 | -50 |
| Maximum | 75 | 100 |

The 95% confidence interval for the mean of the experimental group ranged from 14.94 to 47.16. As this entire interval is positive, it demonstrates a significant improvement. Conversely, the confidence interval for the control group ranged from -17.09 to 38.55, which



includes negative values. This indicates that the observed improvement cannot be considered consistent or reliable.

In terms of data dispersion, the control group exhibited a standard deviation of 77.16, which is substantially higher than that of the experimental group (40.72). This suggests that the variation in learning outcomes was greater and less stable within the female class. The data distribution for the control group also indicated non-normality (skewness = -2.89; kurtosis = 9.33), characterized by the presence of rather sharp extreme values. In contrast, the experimental group's data distribution was relatively closer to normal (skewness = -0.13; kurtosis = -0.68). The value range for the control class was recorded as very wide, from -300 to 75, while the experimental group's range was more reasonable, from -50 to 100.

Overall, the results of this descriptive analysis demonstrate that the treatment administered to the male group (the experimental class) was more effective and consistent in improving learning outcomes compared to the female group (the control class).

3.2. Interview

Analysis of student interviews reveals that the KWL strategy was perceived as highly effective in facilitating English language learning. A predominant theme was that its structured framework "made it easier" by breaking down comprehension into manageable steps, reducing cognitive overload. Students demonstrated clear metacognitive engagement, actively categorizing their existing knowledge ("Know"), identifying gaps ("Want to Know"), and solidifying new understandings ("Learned").

Table 2. Question 1

| Question | Theme | Example od Excerpts |
|--|--|--|
| the KWL strategy make it easier for you to learn English | Student-Perceived Efficacy of the KWL Strategy in Facilitating English Language Learning | "It was fairly helpful because with KWL, the first thing is we know—'Know,' we know this word; 'Want to know,' we don't know this word, but we want to know it; with 'Learned.' So, it really helped to make learning English easier for us. (S1)" |



We were also given a sheet of paper and asked what we already knew and what we didn't know before reading. (St8)"

"In my opinion, it really made things easier because of the system with know, want to know, and learned. (St9)

"It made it easier because there are some English vocabulary words whose meanings I did not know. (St21)"

This process fostered self-awareness and ownership of learning. Furthermore, the strategy was particularly valued for vocabulary acquisition, providing a dedicated mechanism for addressing unfamiliar words. The interactive nature of the process, moving from pre-reading reflection to post-reading conclusion, promoted an active, student-centered learning environment. By guiding students to activate their prior knowledge, set learning goals, and reflect on new information, the KWL strategy fosters metacognitive engagement and self-awareness (Krismansyah et al., 2025; Nanda & Pratama, 2021). This process not only helps students organize their thoughts but also encourages them to take ownership of their learning.

Overall, the qualitative data indicates that the KWL strategy empowered students, demystified reading comprehension, and built confidence, thereby explaining the mechanisms behind its positive impact on learning outcomes.

Table 3. Question 2

| Question | Theme | Example od Excerpts |
|---|--|---|
| The English language learning that used the KWL strategy and Wordwall media | Scaffolding Learning through Structured Activities and Interactive Vocabulary Building | "At first, during the very first session, it was there [the difficulty], but by the second session, it had already started to become smooth, it started to feel comfortable. The second part was the one we didn't understand. Yes, but then the tutor explained it. So then I knew which parts I understood, which parts I didn't, and which parts I had actually known before but didn't realize. (ST6)" "There were things I didn't know yet. It was more enjoyable because it was easier to understand since the questions were grouped. (ST20)" "There were interesting and fun games that trained teamwork. Because there were some English words I didn't understand, we would write them down and then we were told their meanings. (ST21)" |



"I got new words, and then the games were fun, enjoyable, just great. 'Want to know.' Because there, I had difficulty understanding the language. So, if I didn't know [a word], I put it in 'Want to know.' After that, after it was put in 'Want to know,' it would later be explained. (ST23)"

Overall, the interview excerpts illustrate how students' learning experiences evolved through a process of gradual adaptation, structured guidance, and engaging activities. At the beginning, students often felt uncertain and faced difficulties in understanding the material. However, consistent practice, combined with clear explanations from the tutor, enabled them to recognize what they already knew, what remained unclear, and what they had newly learned. This reflective process was supported by structured activities, such as the grouping of questions, which provided clarity and reduced confusion, making learning more enjoyable.

Research highlights that combining the KWL strategy with interactive activities, such as games, significantly boosts student motivation, engagement, and teamwork in English language learning. Interactive games provide a collaborative environment where students can practice and internalize new vocabulary, making learning both enjoyable and effective (Li, 2024; Nanda & Pratama, 2021). The "Want to Know" component of KWL is especially valuable, as it encourages learners to actively identify gaps in their knowledge and seek clarification, leading to deeper vocabulary acquisition and comprehension (Krismansyah et al., 2025; Nanda & Pratama, 2021).

Additionally, interactive games played a vital role in sustaining motivation and encouraging teamwork, allowing students to engage with new vocabulary in a collaborative manner. The use of the "Want to Know" strategy further demonstrates how learners actively identified gaps in their knowledge and sought clarification, leading to deeper vocabulary acquisition. The literature emphasizes that scaffolding and structured learning designs, like those provided by the KWL framework, support metacognitive development and help students organize information more efficiently (Li, 2024; M. E. Putri, 2023). Teachers and students report that these approaches not only improve reading comprehension and vocabulary but also



boost confidence and participation in the classroom (Krismansyah et al., 2025; Nanda & Pratama, 2021). Overall, combining KWL with interactive and collaborative activities creates a dynamic learning environment that supports language development through motivation, structure, and active engagement.

Table 4. Question 3

| Question | Theme | Example od Excerpts |
|---|--|--|
| Learning English with the KWL strategy and Wordwall media help you understand English texts more easily | KWL and Wordwall build English proficiency through translation, vocabulary, and literacy skills. | Quite helpful, because after the text was read by the teacher, we were also helped in translating what was in the text. (St1) It made it easier because I got new vocabulary from the text. (St4) It helped understanding, because the vocabulary we had learned made us know the meaning. (St21) It made it easier. We were taught how to read, the meaning, and also how to write. (St25) |

This theme compiles the students' experiences by identifying the core mechanism that made the instruction effective. The teacher's direct support (reading aloud, translating) and the explicit focus on dissecting vocabulary provided essential scaffolding. Teacher support, such as reading aloud, translating, and explicitly dissecting vocabulary, provides essential scaffolding that enhances vocabulary instruction. Research shows that when teachers offer direct support and focus on vocabulary, students experience greater gains in reading comprehension and vocabulary knowledge. These supportive instructional practices are especially effective in high-poverty or diverse classrooms, highlighting the importance of teacher involvement in making vocabulary learning meaningful and effective for all students (Carlisle et al., 2013; Neugebauer et al., 2021). This support system directly reduced the intellectual burden (cognitive load) on students when faced with challenging texts. By breaking down the barrier of unknown words and complex sentences, this approach built a solid foundation that enabled students to achieve genuine comprehension and develop broader language skills, which they perceived as the learning process being "easier" and "quite helpful."



Table 5. Question 4

| Question | Theme | Example od Excerpts |
|---|--|--|
| The KWL strategy and Wordwall games fun and interesting | KWL and Wordwall merge inquiry and interactivity for engaging, knowledge-building fun. | <p>The way of teaching is fun. We can learn English, play games as entertainment, and the tutor is also kind. (ST1)</p> <p>Because we can find the answers through the game. The game has numbers, like from 1 to maybe 20, where you choose a number. [Open the Box] (ST2)</p> <p>It's fun because we can talk, search for answers, and train our brain. (ST7)</p> <p>It's really fun, because it can increase our knowledge in learning. (ST9)</p> |

The analysis of student interviews reveals that gamification served as a highly effective strategy, significantly enhancing engagement and learning outcomes. Students consistently described the experience as "fun," highlighting how game-based activities like Wordwall's "Open the Box" transformed the learning environment into an enjoyable and dynamic space. This sense of enjoyment directly increased intrinsic motivation and made participants more eager to engage. Beyond superficial appeal, the games promoted active, inquiry-based learning by encouraging students to collaboratively explore, discuss, and discover answers turning lessons into challenges that felt both entertaining and mentally stimulating.

Research consistently shows that gamified learning environments foster a sense of active participation, allowing students to become protagonists in their own learning process and encouraging continuous practice and reflection (Jaramillo-Mediavilla et al., 2024; Manzano-León et al., 2021; Sailer & Homner, 2020). Furthermore, gamification has been shown to reduce learning anxiety and create a more positive, collaborative classroom atmosphere by promoting teamwork, emotional engagement, and social interaction (Gressick & Langston, 2017; Jaramillo-Mediavilla et al., 2024; Nurtanto et al., 2021) . While the novelty of game elements may diminish over time, ongoing innovation in game design and thoughtful integration of gamification strategies can sustain these benefits and support meaningful, long-term learning outcomes (Nurtanto et al., 2021; Sailer & Homner, 2020).



Notably, learners recognized the cognitive benefits, emphasizing how these activities "trained the brain" and reinforced knowledge in an interactive manner. Overall, gamification successfully reduced learning anxiety, fostered a positive classroom atmosphere, and supported meaningful comprehension through playful yet purposeful instruction.

Table 6. Question 5

| Question | Theme | Example od Excerpts |
|---|---|---|
| Wordwall game is the most interesting for you | Wordwall games thrill students, turning vocabulary building into a challenging competition. | Multiple choice because I like multiple choice. I like having many questions. (ST4) (Open the Box) because we guess the questions inside, and there are traps or bonus points or not. (ST5) Guessing English words, meaning in Indonesian. So we can know English. (ST10) Multiple choice, because we have to choose between right or wrong. It's more exciting because we choose and wait for the next question. (ST12) |

The comments reveal that students are not just passive participants; they are actively engaging with the meta-game of assessment. Their preferences are driven by a complex mix of cognitive challenge, emotional excitement, and a desire for effective learning. The key themes are Engagement & Gamification, Cognitive Strategy & Control, and Perceived Learning Efficacy. Student engagement with assessment plays a crucial role in enhancing learning efficacy and academic performance. Research shows that when students are actively involved behaviorally, emotionally, and cognitively in assessment activities, their learning outcomes and satisfaction improve significantly (Holmes, 2018; Ma & Luo, 2022; Panigrahi et al., 2021) . Peer and formative assessments encourage critical thinking, reflection, and self-regulation, further boosting performance and perceived learning effectiveness (Panigrahi et al., 2021; Zohre et al., 2025). Engagement is also positively influenced by factors such as self-efficacy, motivation, and quality of online interactions, which together mediate the relationship between assessment practices and academic achievement (Hamid et al., 2023; Meng & Zhang, 2023; Wu et al., 2020).



3.3. Result of Teacher Interview

The KWL strategy transforms reading from a passive task into an active, structured journey of discovery. By first activating prior knowledge (Know), then setting personal inquiry goals (Want), and finally reflecting on new understanding (Learned), it creates a purposeful framework. This process not only deepens comprehension by connecting old and new information but also empowers students, making them engaged participants in their own learning and fostering a more meaningful interaction with any text.

Table 7. Teacher's Interview Result

| Theme | Response |
|---|---|
| KWL strategy provides structured learning that enhances students' understanding and makes the reading process more meaningful | I was impressed with the KWL strategy. It brought a clear structure to the lesson that I hadn't seen before. The students began by listing what they already knew, then identified what they wanted to learn. This process of building from known to unknown made the learning much more effective and beneficial for them. |
| Integration of KWL and Wordwall enhances engagement and comprehension by making learning structured, interactive, and enjoyable. | Students often get bored, but combining KWL with Wordwall really helps. The KWL gives them a thinking structure, and Wordwall makes the practice fun and interactive. They end up understanding the material better because they're learning through more than just text they're engaged by the games. |
| Wordwall enhances students' motivation and enthusiasm by providing interactive, playful, and varied learning experiences compared to traditional methods. | The students look more enthusiastic when there are activities that are not commonly done in the classroom. It feels more like playing, while in fact they are learning at the same time. So, it really influences the students' interest. They become motivated to keep learning. |
| The combined use of KWL and Wordwall boosts comprehension, vocabulary, and confidence by making English practice engaging and effective. | The impact is quite positive. The students seemed to understand the text better because it was broken down the vocabulary was separated, so they could grasp the text more clearly and acquire new language. They also became more confident in expressing their ideas. Wordwall also made it easier for them to practice in a fun way. And because there was something different from the usual classroom activities, it felt more engaging. |
| Teachers should use familiar themes, diversify media and activities, and create a supportive, pressure-free classroom environment. | So my suggestion is that when designing materials or lessons, the theme should be closer to daily life, something familiar to them. And I'm not saying Wordwall is not sufficient, but there will always be more room for teachers or pre-service teachers like you to explore other learning media. Besides Wordwall, reading activities can also be combined with group discussions, games, or storytelling to make it more varied. The most important thing is that when students learn, they do not feel pressured and feel that they belong in the class. |



This response demonstrates a masterful synthesis of pedagogical theory and practical application, showcasing a teacher who leverages the structured, metacognitive framework of KWL to foster deep comprehension by transforming students into active investigators driven by their own inquiry. The strategic integration of Wordwall is not merely for engagement but is purposefully embedded within each stage of the learning cycle to elevate the experience, making it interactive and collaborative, thereby directly addressing and lowering the affective filter to build student confidence and encourage risk-taking. This approach holistically develops key skills comprehension, vocabulary, and motivation through varied, contextualized practice, all underpinned by a student-centered philosophy that prioritizes psychological safety, inclusivity, and differentiated instruction. The KWL (Know, Want to Know, Learned) framework significantly improves students' reading comprehension by activating prior knowledge, focusing learning goals, and encouraging reflection. Research shows KWL increases motivation, participation, and critical thinking, leading to better understanding of main ideas, details, and vocabulary (Fajri et al., 2019; Hanura & Jono, 2021; Y. S. Putri et al., 2023). Integrating interactive tools like Wordwall can further enhance engagement and create a supportive, collaborative environment, lowering anxiety and building confidence for risk-taking in learning. Together, KWL and Wordwall foster deep comprehension by making learning structured, student-centered, and enjoyable (Hanura & Jono, 2021; Y. S. Putri et al., 2023; Retriansyah et al., 2020).

This powerful synergy directly enhances English proficiency by making vocabulary building and text comprehension practice feel like enjoyable play, which in turn builds student confidence. The game-based nature of Wordwall lowers the affective filter, creating the supportive, pressure-free environment essential for risk-taking in language learning. The game-based nature of Wordwall has been shown to lower the affective filter in language learning by creating a supportive and pressure-free environment that encourages risk-taking. Research across various languages and educational contexts demonstrates that Wordwall's interactive and engaging activities significantly increase student motivation and enjoyment, making



learners more willing to participate and less anxious about making mistakes (Alfiah et al., 2024; Hasram et al., 2021; Kariyati et al., 2024). This positive emotional climate is essential for language acquisition, as it helps students feel comfortable experimenting with new vocabulary and structures without fear of embarrassment or failure. Studies also highlight that Wordwall's dynamic features and immediate feedback foster active participation and sustained interest, further reducing barriers to learning and supporting the development of language skills in a fun and effective way (Arsyad, 2024; Ratri & Rachman, 2024). Overall, the evidence suggests that Wordwall's game-based approach is highly effective in lowering the affective filter, thereby creating the optimal conditions for language learning.

4. Conclusion

Based on the findings, it can be conclusively determined that the integration of the KWL strategy with Wordwall technology represents a highly effective pedagogical approach, resulting in significantly improved and more consistent learning outcomes. The intervention successfully transformed the learning process by combining structured metacognitive inquiry with interactive engagement, which not only enhanced reading comprehension, vocabulary acquisition, and motivation but also created a low-anxiety environment that encouraged participation and risk-taking. This method proved particularly impactful for the experimental group, which demonstrated a substantially higher and more reliable average learning gain (31.05%) compared to the control group (10.73%). Furthermore, the experimental group's results showed greater stability and a more normal distribution, indicating the treatment produced consistent benefits across learners. Ultimately, these results affirm that strategically blending evidence-based teaching frameworks with digital tools fosters a more engaging, effective, and equitable learning experience, leading to deeper comprehension and stronger academic achievement.



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