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STUDENTS' ENGAGEMENT AND PERCEIVED EFFECTIVENESS OF WORDWALL ACTIVITIES FOR ESL SENTENCE CONSTRUCTION

Nur Aina Amanina Rusli[1], Wirawati Ngui[2]*, Peng Xiaohua[3]
[1,2]Faculty of Education and Sports Studies, Universiti Malaysia Sabah, Malaysia
[3]Guangzhou College of Technology and Business, Guangzhou, China

**Corresponding author:*
wirawati.ngui@ums.edu.my

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Abstract

This study investigated students' behavioural, emotional and cognitive engagement, and their perceived effectiveness of Wordwall, following the use of Wordwall activities in English sentence construction lessons in one secondary school in Malaysia. While digital and game-based learning are gaining traction in the language classroom, constructing sentences can be a challenge for language learners and may need to be practised multiple times with feedback and active engagement. A quantitative descriptive survey design was employed with 55 Form 1 and Form 2 students from four classes in one secondary school in Malaysia. The participants engaged in three Wordwall-based sentence construction sessions followed by a post-intervention questionnaire that measured behavioural, emotional and cognitive engagement and the perceived effectiveness of Wordwall. The data were analysed using frequencies, means, standard deviations and Cronbach's alpha to assess the internal consistency of the questionnaire scales. The results showed that self-reported engagement scores were moderately positive across all three dimensions, with emotional engagement recording the highest mean score (M = 3.45, SD = 0.85), followed by cognitive engagement (M = 3.42, SD = 0.82) and behavioural engagement (M = 3.34, SD = 0.84); however, differences among the three dimensions were small. Students also reported moderately positive perceptions of the effectiveness of Wordwall for learning sentence construction (M = 3.28, SD = 1.09). These findings suggest that Wordwall may serve as a supplementary tool in interactive and participatory sentence construction lessons. However, the study did not measure learning gains, no control group was used, and the small convenience sample limits generalisation; the results therefore reflect students' self-reported perceptions only. Future research should incorporate objective measures of learning and stronger comparative designs in ESL classrooms.

Kata kunci:
Bahasa Inggeris sebagai Bahasa Kedua, gamifikasi, pembelajaran berasaskan permainan, penglibatan murid, Wordwall

Kajian ini meneliti penglibatan tingkah laku, emosi dan kognitif pelajar serta persepsi mereka terhadap keberkesanan Wordwall susulan penggunaan aktiviti Wordwall dalam pengajaran pembinaan ayat bahasa Inggeris di sebuah sekolah menengah di Malaysia. Walaupun pembelajaran digital dan pembelajaran berasaskan permainan semakin mendapat tempat dalam bilik darjah bahasa, pembinaan ayat boleh menjadi cabaran kepada pelajar dan mungkin memerlukan latihan berulang dengan maklum balas serta penglibatan aktif. Reka bentuk tinjauan deskriptif kuantitatif digunakan melibatkan 55 orang pelajar Tingkatan 1 dan Tingkatan 2 daripada empat kelas di sebuah sekolah menengah di Malaysia. Peserta kajian mengambil bahagian dalam tiga sesi pembinaan ayat berasaskan Wordwall yang diikuti dengan soal selidik pascaintervensi untuk mengukur penglibatan tingkah laku, emosi dan kognitif serta persepsi terhadap keberkesanan Wordwall. Data dianalisis menggunakan kekerapan, min, sisihan piawai dan alfa Cronbach bagi menilai ketekalan dalaman skala soal selidik tersebut. Dapatan kajian menunjukkan bahawa skor penglibatan yang dilaporkan sendiri oleh pelajar berada pada tahap sederhana positif merentasi ketiga-tiga dimensi, dengan penglibatan emosi mencatatkan skor min tertinggi (M = 3.45, SD = 0.85), diikuti oleh penglibatan kognitif (M = 3.42, SD = 0.82) dan penglibatan tingkah laku (M = 3.34, SD = 0.84). Walau bagaimanapun, perbezaan antara ketiga-tiga dimensi tersebut adalah kecil. Pelajar juga melaporkan persepsi yang sederhana positif terhadap keberkesanan Wordwall dalam pembelajaran pembinaan ayat (M = 3.28, SD = 1.09). Dapatan ini menunjukkan bahawa Wordwall berpotensi digunakan sebagai alat sokongan dalam pengajaran pembinaan ayat secara interaktif dan melibatkan penyertaan aktif pelajar. Namun demikian, kajian ini tidak mengukur peningkatan hasil pembelajaran, tiada kumpulan kawalan digunakan, dan saiz sampel mudah yang kecil membataskan kebolehumuman dapatan. Oleh itu, dapatan kajian ini hanya mencerminkan persepsi yang dilaporkan sendiri oleh pelajar. Kajian pada masa hadapan wajar menggunakan pengukuran hasil pembelajaran secara objektif serta reka bentuk kajian perbandingan yang lebih kukuh dalam bilik darjah bahasa Inggeris sebagai bahasa kedua (ESL).

1.0 Introduction

The use of educational technology has expanded opportunities for teachers to design more interactive and learner-centred learning environments (Selwyn, 2016). In ESL classrooms, digital tools can provide additional opportunities for learners to practise language through interactive activities. An example of a digital learning platform is Wordwall, which allows teachers to create game-based activities according to desired learning outcomes. However, despite technological progress, sentence construction has been identified as one of the most difficult aspects of English language learning for secondary school students in Malaysia (e.g., Hijjo, 2013; Mehat et al., 2024). Grammar lessons are often perceived by learners as challenging and dull, leading to low participation levels in the classroom. The integration of game-based learning platforms into specific skill areas, such as grammar instruction, remains an area that requires further exploration in the Malaysian secondary ESL context. This calls for the exploration of interactive strategies that would increase students' engagement during sentence construction lessons.

Gamification has received increasing attention in language education because of its potential to promote active learning and enhance students' engagement. Previous studies have shown that game-based learning environments encourage participation, provide immediate feedback and allow learners to practise repeatedly,

thereby supporting language learning and grammar development (Hasanah & Mahmudah, 2022). Wordwall activities provide students with opportunities to complete interactive learning tasks while receiving immediate feedback, making sentence construction lessons more engaging and meaningful. Furthermore, its visual and interactive features align well with learner-centred approaches to language teaching (Mayer, 2005). Although numerous studies have explored the use of gamification in education, research specifically examining the use of Wordwall to enhance ESL students' engagement during sentence construction lessons in Malaysian secondary schools remains limited. Existing studies have primarily focused on vocabulary learning, motivation or general language learning outcomes (Hafifah & Hanifa, 2024; Darmawati & Nayla, 2025). Studies on grammar, engagement and Malaysian ESL contexts remain particularly scarce, as existing Malaysian studies have largely focused on using Kahoot! for grammar lessons (e.g., Badri et al., 2025), with secondary-level grammar and sentence-construction engagement still underexplored.

To address this gap, the present study examines the implementation of Wordwall activities to support the behavioural, emotional and cognitive engagement of ESL learners in Malaysian secondary school sentence construction lessons. It also explores students' perceived effectiveness of Wordwall for learning sentence construction.

Research Objectives:

1. Examine the levels of students' behavioural, emotional and cognitive engagement after using Wordwall activities in sentence construction lessons.

2. Explore students' perceived effectiveness of Wordwall activities in learning sentence construction.

Research Questions:

1. What are the levels of students' behavioural, emotional and cognitive engagement after using Wordwall activities in sentence construction lessons?

2. How do students perceive the effectiveness of Wordwall activities in learning sentence construction?

2.0 Literature Review and Conceptual Framing

This section outlines the theoretical and empirical foundations guiding the study. It first presents the theoretical framework, which is grounded in a multidimensional model of student engagement and supplemented by Self-Determination Theory as an interpretive lens. Next, the review explores the broader integration of gamification within English as a Second Language (ESL) education, highlighting its potential to promote active participation and motivation. Finally, it examines specific applications of the Wordwall platform in ESL contexts to establish the current research gaps regarding sentence construction and student engagement in the Malaysian secondary school environment.

2.1 Theoretical Framework

This study is guided primarily by the multidimensional engagement framework of Fredricks et al. (2004), which conceptualises student engagement as comprising behavioural, emotional and cognitive dimensions. Behavioural engagement refers to participation, effort and conduct in learning activities; emotional engagement encompasses affective reactions such as interest, enjoyment and anxiety; and cognitive engagement involves investment in learning, including strategy use and self-regulation. This framework directly informs the questionnaire dimensions and the interpretation of results in this study.

Self-Determination Theory (SDT; Deci & Ryan, 2000) is used as a supplementary interpretive lens rather than as a tested model. explains that students are more likely to become motivated and engaged when three basic psychological needs are fulfilled based on autonomy, competence and relatedness. According to SDT, autonomy refers to students' sense of control over their own learning, competence refers to their confidence in successfully completing learning tasks, while relatedness refers to meaningful interactions with teachers and peers during the learning process. In this study, the Wordwall activities were designed with these needs in mind: choice of activities (autonomy), immediate feedback and manageable tasks (competence), and opportunities for peer and teacher interaction (relatedness). However, autonomy, competence and relatedness were not directly measured. Therefore, SDT is not tested as a model but is used only to interpret possible mechanisms underlying students' reported engagement. Figure 1 illustrates the theoretical framework underpinning this study.

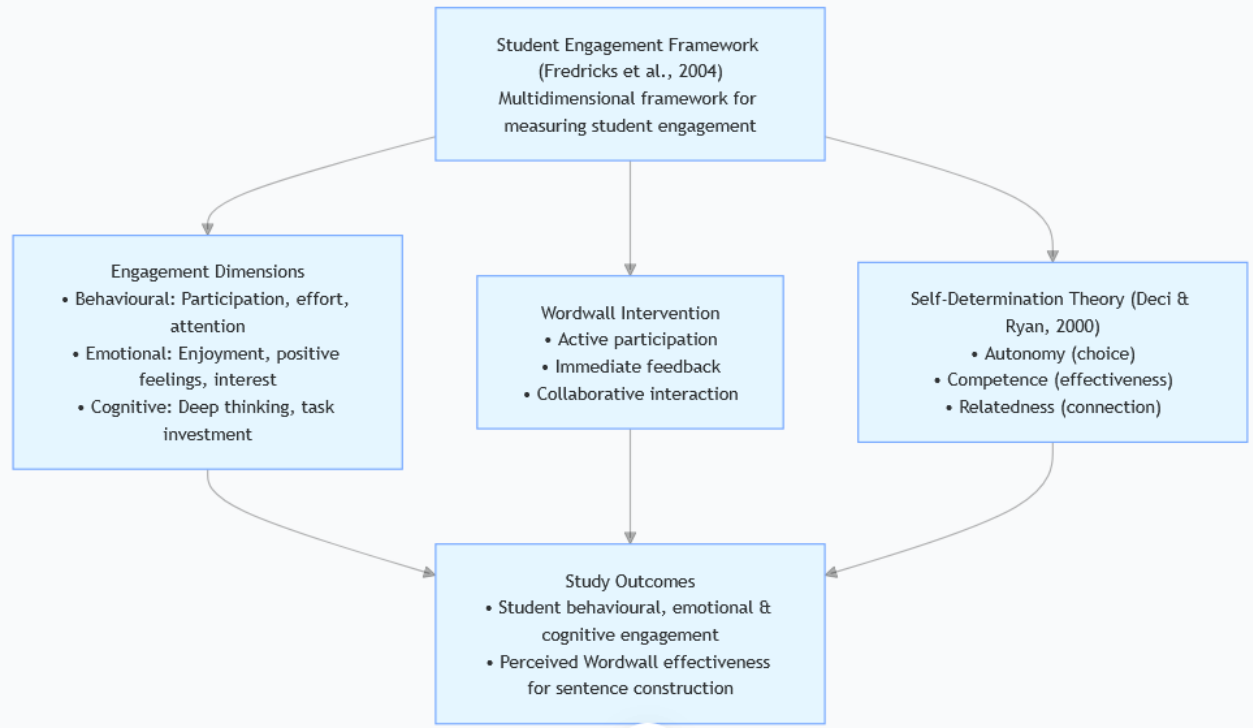


Figure 1. Theoretical framework: Engagement dimensions (Fredricks et al., 2004) with self-determination theory (SDT) as an interpretive lens (Deci & Ryan, 2000)

2.2 Gamification in ESL Education

Gamification has become a more and more popular approach in English as a Second Language (ESL) education due to its ability to motivate, involve and engage students in learning. Gamification can enhance the learning process by making it more interactive, and actively motivating students to take part in class activities through the use of points, challenges, feedback and rewards. Previous research suggests that gamified learning can support motivation and engagement by providing opportunities for active participation and feedback (Hasanah & Mahmudah, 2022; Pradana et al., 2024).

Gamification can be especially beneficial in the ESL classroom for language learning tasks that can appear repetitive or difficult. Interactive games-based activities may offer learners opportunities to practise language items repeatedly and receive immediate feedback on their performance. For instance, Hasanah and Mahmudah (2022) found that use of Wordwall as a gamification technique enhanced students' motivation in learning grammar in the English learning process. Likewise, Pradana et al. (2024) found that gamification had an impact on students' web-based learning engagement. The results indicate that gamification may create a supportive learning environment to foster students' active learning in the target language.

While these advantages are possible, gamification may be more or less effective in different learning environments. It is important to consider gamification in specific contexts, particularly on platforms such as Wordwall, which is designed to make learning and teaching more interactive and engaging. This section therefore focuses specifically on Wordwall's use in ESL settings. Studies on grammar, engagement and Malaysian ESL contexts remain particularly scarce.

2.3 The Application of Wordwall in ESL Contexts

Ilahiyati et al. (2023) examined the implementation of Wordwall games in vocabulary learning and reported that interactive game-based activities may support students' involvement in language learning. The interactive elements in Wordwall appeared effective in making the learning process more engaging and exciting. Overall, existing literature suggests that Wordwall activities may motivate students to participate actively in learning, but the effectiveness of the activities depends on the particular teaching situation and goals.

Hafifah and Hanifa (2024) investigated students' perceptions of Wordwall in vocabulary learning through the ARCS Model, which focuses on attention, relevance, confidence and satisfaction (Keller, 1987). Their quantitative study involving 64 senior high school students found high levels of motivation across all four ARCS dimensions, namely attention, relevance, confidence and satisfaction. Students responded positively to the interactive games, visual elements, sound effects and scoring system incorporated into the learning activities. Similarly, Maharani et al. (2025) developed Wordwall-based interactive learning media to support writing instruction among eighth-grade students using the ADDIE instructional model. Their mixed-methods research and development study reported that integrating Wordwall activities into classroom instruction increased students' motivation and supported writing activities. Collectively, these studies indicate that well-designed Wordwall activities can

encourage students to participate more actively and create positive learning experiences during English language lessons.

Similar findings were also obtained in a study conducted by Do and Huynh (2024), which investigate students' perception of using Wordwall application in vocabulary memorization at a private university in Vietnam. The stud revealed that students viewed had a positive perception towards using Wordlwall to memorise vocabulary. In a similar vein, Darmawati and Nayla (2025) also conducted a quasi-experimental study to assess the effectiveness of Wordwall in the teaching of vocabulary. Findings from their study indicate that students who were involved in Wordwall-related activities performed better than those who underwent conventional instructions. In the same vein, Sari (2024) found that students who were taught using Wordwall performed significantly better than those who were instructed through conventional techniques.

Although previous studies have consistently reported positive outcomes following the implementation of Wordwall activities, several research gaps remain. Most existing studies have focused primarily on vocabulary learning, writing performance, motivation or general language achievement, while comparatively fewer studies have specifically examined students' behavioural, emotional and cognitive engagement during sentence construction lessons. In addition, many previous studies were conducted outside Malaysia, making it difficult to generalise their findings to Malaysian secondary school ESL classrooms. Moreover, there is a lack of study on students' behavioural, emotional and cognitive involvement in detail when engaged in sentence building activities in Wordwall during sentence construction lessons, especially among the secondary ESL learners in Malaysia. Thus, this study aims to fill the gap by investigating the extent of students' engagement and effectiveness of Wordwall activities after having been taught sentence construction through Wordwall. Therefore, this study aims to address these gaps by examining students' engagement and perceived effectiveness of Wordwall activities following sentence construction lessons.

3.0 Methodology

This section outlines the methodological framework and procedures employed to investigate students' engagement and perceived effectiveness of Wordwall in sentence construction lessons. It details the quantitative descriptive survey design, the sampling and profile of the participants, and the adaptation of the research instrument. Additionally, this section describes the intervention and data collection procedures, the statistical approaches utilized for data analysis, and the ethical safeguards maintained throughout the study.

3.1 Research Design

According to Creswell and Creswell (2018), quantitative research is appropriate for examining measurable variables through systematic data collection and statistical analysis. In line with this approach, a quantitative descriptive survey research design was employed to examine students' behavioural, emotional and cognitive engagement and their perceived effectiveness of Wordwall activities following participation in

Wordwall-based sentence construction lessons. This design was appropriate because the study aimed to describe students' engagement and perceptions after the implementation of the Wordwall activities rather than compare changes between two measurement points. Therefore, the study does not make causal claims, nor does it utilise a control group.

3.2 Population and Sampling

The participants consisted of 55 Form 1 and Form 2 students from one secondary school in Malaysia. Convenience sampling was used as participants were available and directly involved in the implementation of the Wordwall activities during sentence construction lessons. The participants were taken from 4 classes namely 1 *Progresif* (18), 1 *Dinamik* (16), 2 *Ibnu Sina* (10) and 2 *Ibnu Taimiyah* (11). In terms of the initial level of English proficiency, students were categorised based on their previous school-based assessment results and teacher records. Students in 1 *Dinamik* and 2 *Ibnu Sina* were at intermediate to low level, whereas 1 *Progresif* and 2 *Ibnu Taimiyah* students were at low level. It should be noted that the use of convenience sampling from a single school with a sample size of N = 55 limits the generalisability of the findings to the broader population of Malaysian secondary school students.

3.3 Research Instruments

The instrument used was an adapted questionnaire that was designed from the three dimensions of student engagement that include behavioural, emotional and cognitive engagement (Fredricks et al., 2004). The questionnaire was adapted to the Malaysian ESL classroom and the teaching of sentence construction. The questionnaire items were modified to fit the context of sentence construction classes with ESL students and the implementation of Wordwall activities; the wording of the items was simplified so that they would be suitable for Form 1 and Form 2 students. The post intervention questionnaire was made up of 16 items split into four categories: behavioural engagement (5 items), emotional engagement (5 items), cognitive engagement (3 items), and perceived effectiveness of Wordwall (3 items). The items were rated on a 5-point Likert scale from 1 (Strongly Disagree) through 5 (Strongly Agree).

To ensure content validity, the questionnaire was reviewed by two experts in ESL education. Following expert review, a pilot test was conducted with 10 students who were not part of the main study to check the clarity and appropriateness of the items. Minor wording changes were made based on the feedback.

3.4 Data Collection Procedures

The data collection took place during a 10-week teaching practicum. The pre-intervention questionnaire was administered during the second week to determine each participant's baseline of behavioural, emotional and cognitive engagement in English sentence construction lessons. This was followed by three intervention sessions where Wordwall activities were used in the normal sentence construction lessons. The entire intervention spanned three consecutive weeks, with one 60-minute

session conducted per week. The post-intervention questionnaire was administered immediately in the week following the third session.

During the intervention, students worked in small groups of three (trios) under the teacher's facilitation. Activities utilised the classroom digital infrastructure, which included a teacher's laptop and projector for demonstrations. Students used their own mobile devices (smartphones) or shared devices provided by the teacher to access the Wordwall platform.

The teacher introduced the sentence construction content, explained and demonstrated the Wordwall activities, monitored students' participation during the group activities and provided guidance and feedback when necessary.

Data from the pre-intervention questionnaire and the Session 1 pre-test were gathered as part of the overall research protocol but are not analysed or reported in this article. These data were excluded because the primary aim of this paper is to provide a descriptive account of students' post-intervention engagement and perceptions. Furthermore, the small sample size and the absence of a control group would make pre-post inferential statistical comparisons statistically weak and potentially misleading.

Researcher Positionality and Bias: It should be acknowledged that the researcher also acted as the teacher during the intervention. This dual role may have introduced social desirability bias, as students may have been inclined to rate a familiar teacher favourably. The anonymous nature of the questionnaire was emphasised to students to mitigate this risk, but this remains a limitation.

Table 1. Summary of Intervention Sessions

Session	Topic	Learning Outcome	Teaching & Learning Activities	Duration
1.	Building Simple Sentences	Students arrange words into correct simple sentences using the SVO structure.	Students completed a pre-test before participating in Wordwall activities, including Match Up, Unscramble and Quiz to identify sentence structures and construct simple sentences. A short class discussion was conducted to reinforce the lesson.	60 min
2.	Improving Sentence Accuracy	Students identify and correct grammatical errors in simple sentences.	Students participated in Wordwall activities such as Missing Word, Find the Match and True or False to identify grammatical errors and improve sentence accuracy. Feedback was provided through whole-class discussion.	60 min
3.	Constructing Complete Sentences	Students construct complete and meaningful sentences based on pictures and keywords.	Students completed Wordwall activities, including Random Cards, Open the Box and Quiz to construct complete and meaningful sentences. The session concluded with a review and reflection of the lesson.	60 min

3.5 Data Analysis

IBM SPSS Statistics Version 26.0 was used to analyse the data collected from the post-intervention questionnaire. Descriptive statistics, including frequencies, percentages, means and standard deviations, were used to summarise the participants' demographic characteristics and their levels of behavioural, emotional and cognitive engagement and perceived effectiveness of Wordwall activities. The mean scores were interpreted using the following bands: low (1.00–2.33), moderate (2.34–3.66), and high (3.67–5.00), adapted from standard Likert scale interpretation guidelines. Cronbach's alpha was used to assess the internal consistency of the four scales. The conventional cut-off value of .70 was used as a threshold for acceptable internal consistency (Nunnally, 1978).

3.6 Ethical Considerations

This study followed all applicable institutional ethical standards. Approval was obtained from the relevant university committee and the school administration. Participation was entirely voluntary, and informed consent was obtained from all participants and their parents/guardians. Students were assured of their anonymity and that their responses would remain strictly confidential. Data were stored securely and used solely for research purposes.

4.0 Findings

This section presents the empirical results obtained from the post-intervention questionnaire administered to the participants. It begins by outlining the demographic profile of the sample and the reliability analysis of the survey scales. The section then details the descriptive findings addressing the two research questions, specifically examining students' engagement across the behavioural, emotional, and cognitive dimensions, followed by their perceived effectiveness of Wordwall activities in learning sentence construction. Finally, brief notes regarding subgroup comparisons and construct validity considerations are addressed.

4.1 Demographic Profile of Participants

A total of 55 students participated in this study. Table 2 presents the demographic characteristics of the sample.

Table 2. Demographic Characteristics of Participants

Characteristics	Category	Frequency *(n)*	Percentage (%)
Gender	Male	26	47.3
	Female	29	52.7

Characteristics	Category	Frequency *(n)*	Percentage (%)
Age	Form 1 (13 years old)	27	49.1
	Form 2 (14 years old)	28	50.9
Class	*Progresif*	18	32.7
	Dinamik	16	29.1
	Ibnu Sina	10	18.2
	Ibnu Taimiyah	11	20.0

The demographics of the participants are illustrated in Table 2 above. Out of 55 participants, 29 (52.7%) were females and 26 (47.3%) were males. The sample had 27 students in form 1 (49.1%) and 28 students in form 2 (50.9%) from four classes; *Progresif* (n = 18), *Dinamik* (n = 16), *Ibnu Sina* (n = 10) and *Ibnu Taimiyah* (n = 11).

4.2 Reliability Analysis

The internal consistency of the final post-intervention scales was assessed using Cronbach's alpha. The results are presented in Table 3.

Table 3. Reliability Analysis of the Post-Intervention Scales

Scale	Number of Items	Cronbach's Alpha (α)
Behavioural Engagement	5	0.64
Emotional Engagement	5	0.69
Cognitive Engagement	3	0.59
Perceived Effectiveness	3	0.67

The behavioural engagement scale had moderate internal consistency (α = .64) while the emotional engagement scale had acceptable internal consistency (α = .69) and the perceived effectiveness scale (α = .67). However, these values fall slightly below the widely accepted .70 threshold (Nunnally, 1978). The Cronbach's alpha for the cognitive engagement scale was .59, which is below the acceptable threshold. Therefore, the lower internal consistency of the cognitive engagement scale is recognized as a limitation and results of cognitive engagement should be interpreted with the proper degree of caution.

4.3 Students' Engagement After Using Wordwall Activities

To answer the first research question, descriptive statistics were used to examine students' behavioural, emotional and cognitive engagement after participating in Wordwall-based sentence construction activities.

Table 4. Descriptive Statistics of Students' Engagement After Using Wordwall Activities

Scale	Number of Items	N	Mean (M)	Standard Deviation (SD)
Behavioural Engagement	5	55	3.34	0.84
Emotional Engagement	5	55	3.45	0.85
Cognitive Engagement	3	55	3.42	0.82
Overall Engagement	-	55	3.41	0.74

Based on Table 4, the mean scores across the three engagement dimensions were very similar, with emotional engagement (M = 3.45, SD = 0.85), cognitive engagement (M = 3.42, SD = 0.82), and behavioural engagement (M = 3.34, SD = 0.84) all falling within the moderate range (2.34–3.66). The overall engagement mean was 3.41 (SD = 0.74). Because the differences between the dimension means are marginal, no single dimension is claimed to be significantly higher than the others. The findings presented below are students' reports on their engagement after completing the Wordwall activities and do not reflect any changes or improvements from a pre-intervention measure.

4.4 Behavioural Engagement

Table 5. Descriptive Statistics for Behavioural Engagement

Item	Statement	Mean (M)	SD
B2	Wordwall made me participate more during English lessons.	3.51	1.22
B4	I completed all the Wordwall activities.	3.42	1.29
B3	I paid attention while using Wordwall.	3.4	1.29
B1	I took part actively in the Wordwall activities.	3.24	1.25
B5	I was able to use the words and phrases I had prepared.	3.12	1.22

Based on the results presented in Table 5, the descriptive statistics of behavioural engagement are analysed. The highest mean score was for B2, "Wordwall made me participate more during English lessons" (M = 3.51, SD = 1.22) followed by B4, "I completed all the Wordwall activities." (M = 3.42, SD = 1.29). This was followed by B4, "I completed all the Wordwall activities" (M = 3.42, SD = 1.29), and B3, "I paid

attention while using Wordwall" (M = 3.40, SD = 1.29). The lowest mean score was for the item B5, "I was able to use the words and phrases I had prepared" (M = 3.12, SD = 1.22). The mean of the behavioural engagement was M = 3.34 (SD = 0.84).

4.5 Emotional Engagement

Table 6. Descriptive Statistics for Emotional Engagement

Item	Statement	Mean (M)	SD
E3	I felt excited when using Wordwall.	3.55	1.23
E5	I felt more confident writing English sentences after using Wordwall.	3.53	1.32
E2	Wordwall made English lessons more interesting.	3.35	1.29

Table 6 indicates the students' emotional involvement after engaging in the Wordwall activities. The highest mean score was obtained for E3 – "I felt excited when using Wordwall" (M = 3.55, SD = 1.23). E5, "I felt more confident writing English sentences after using Wordwall" (M = 3.53, SD = 1.32) followed closely behind. The lowest mean score was found for E2, Wordwall made English lessons more interesting (M = 3.35, SD = 1.29). Overall, emotional engagement had the highest mean score of the three engagement dimensions, M = 3.45 (SD = 0.85).

4.6 Cognitive Engagement

Table 7. Descriptive Statistics for Cognitive Engagement

Item	Statement	Mean (M)	SD
C3	I can write English sentences better after using Wordwall.	3.62	1.23
C2	Feedback from Wordwall helped me correct my errors.	3.33	1.17
C1	I understand sentence construction better after using Wordwall.	3.31	1.23

As shown in Table 7, the highest mean score for cognitive engagement was for item C3, "I can write English sentences better after using Wordwall" (M = 3.62, SD = 1.23). This was followed by items C2, regarding feedback helping students correct errors (M = 3.33, SD = 1.17), and C1, regarding understanding sentence construction better (M = 3.31, SD = 1.23). The overall mean for cognitive engagement was M = 3.42 (SD = 0.82). As noted in the reliability analysis, these results must be interpreted with caution due to the lower internal consistency of this scale (α = .59).

4.7 Students' Perceived Effectiveness of Wordwall Activities

To answer the second research question, descriptive statistics were used to examine students' perceived effectiveness of Wordwall activities in learning sentence construction. The final perceived effectiveness scale consisted of three positively worded items (P1–P3), with an overall mean of M = 3.28 and a standard deviation of

SD = 1.09.

Table 8. Descriptive Statistics for Perceived Effectiveness of Wordwall

Item	Statement	Mean (M)	SD
P1	Wordwall helped me learn sentence construction more easily.	3.4	1.34
P2	Wordwall improved my English sentence construction skills.	3.29	1.44
P3	Wordwall is a good learning tool for English lessons.	3.15	1.42

P1 (M = 3.40, SD = 1.34) had the highest mean score as shown in Table 8: Wordwall helped me learn sentence construction more easily. This was followed by P2, wordwall improved my English sentence construction skills (M = 3.29, SD = 1.44). P3 recorded the lowest mean score (M = 3.15, SD = 1.42), with the overall rating for Wordwall being a good learning tool for English lessons. The students' perceived effectiveness of Wordwall had a mean score of M = 3.28 (SD = 1.09) overall. The results showed that on average, participants' answers were above the neutral point on the scale about their perceived effectiveness of Wordwall for learning sentence construction. The relatively larger standard deviations for these items also indicate variation in students' responses.

4.8 Additional Analysis and Construct Validity Note

While independent samples t-tests were considered to compare engagement levels by gender or class, the small, unequal sample sizes within specific subgroups and the descriptive nature of the study limit the statistical power and interpretability of such tests. Therefore, only descriptive statistics are reported. Finally, it should be noted that some items across the constructs (e.g., E5, C3, and P2) share overlapping semantic content regarding perceived improvement in writing. This overlap suggests that the constructs may not be entirely distinct, which is an inherent limitation of the adapted questionnaire.

5. Discussion

This section contextualises and interprets the empirical findings in relation to the conceptual framework and existing literature on gamification in language learning. It discusses the multidimensional nature of student engagement observed across the intervention sessions, examining the contributing roles of task design, pedagogical scaffolding, and teacher feedback. Furthermore, it considers individual nuances in students' emotional responses, addresses key methodological limitations of the study, and provides practical implications for ESL educators seeking to integrate digital game-based tools into grammar instruction.

5.1 Overall Engagement Through Interactive Sentence Construction

The results indicate that students' engagement with the activities carried out on the Wordwall platform was generally positive, with all dimensions falling within the moderate range. Emotional engagement (M = 3.45, SD = 0.85) was followed closely by cognitive engagement (M = 3.42, SD = 0.82), and behavioural engagement (M = 3.34, SD = 0.84). Mean scores are close, indicating that there was not a significant difference between the three dimensions, but that student engagement was spread across participation, affective response and cognitive involvement (Fredricks et al., 2004). Because the mean scores are marginal and no inferential statistical tests were conducted, no single dimension can be claimed to be significantly higher than the others. Instead, the data suggest that student engagement was spread relatively evenly across participation, affective response, and cognitive involvement (Fredricks et al., 2004).

This distribution of engagement may be related to how Wordwall was embedded in the three intervention sessions. These activities were not set up as individual games but rather, supported by increasingly more complex sentence construction tasks. The students learnt to construct simple SVO sentences first, then to pick out and correct grammatical mistakes, and then to write complete and meaningful sentences using pictures and keywords. This sequence might have let students discover how to construct sentences, rather than treating it as a rule-based exercise.

This is especially true of the ESL context where students need to monitor word order, grammar and meaning simultaneously when constructing sentences. The interactive nature of the different formats could have offered several opportunities for students to interact with sentence construction in different ways and in multiple modes, which led to multiple opportunities for students to learn about sentence construction (Meyer et al., 2014). For instance, Match Up/Unscramble, for instance, forced students to move parts of the sentence around, and Missing Word and Find the Match asked them to find the right words and parts of the sentence. The last session involved Random Cards/ Open the Box in which students were asked to create whole sentences from prompts. The present study, therefore, does not view the engagement as being only a reaction to the existence of technology, but rather in the context of the meaningful language tasks into which the technology was integrated (Dichev & Dicheva, 2017).

From a Self-Determination Theory (SDT) perspective, task structures can afford opportunities for students to experience competence by completing manageable language tasks and by receiving guidance while learning new tasks (Deci & Ryan, 2000). However, because SDT constructs were not directly measured in this study, these theoretical explanations should be viewed as possible interpretations, not as evidence of a causal relationship between Wordwall and students' engagement.

5.2 From Participation to Learning: The Role of Task Design and Feedback

The behavioural and cognitive results also indicate that interactive nature of the activities might have had other functions beyond making the lessons more interesting. Students' agreement with the item that Wordwall made them participate more during English lessons (M = 3.51) indicated behavioural engagement, and the agreement for students to write English sentences better after using Wordwall (M =

3.62) showed the cognitive engagement. The results suggest that the activities involved frequent choices of sentence structure rather than just providing sentences for students to copy.

This may have been influenced by the specific format of the activities. The first session was spent using Match Up and Unscramble, which asked students to manipulate words and select word order. During the second session Missing Word, Find the Match and True or False, students had to locate grammar issues and make the right choice. The third session worked towards sentence production by engaging in the activities of Random Cards and Open the Box where students built their sentences using pictures and words. This series may have served as a steppingstone from recognition and arrangement to more productive use of language.

Teacher guidance and feedback were also an important aspect of the intervention. The digital activities were not used independently by the students: the teacher facilitated the first session, provided feedback during the second session and guided students to reflect and review during the third session. Therefore, the learning experience can be described as a digital practice and complementary reflection with the teacher's guidance, instead of using technology as a replacement for teaching (Hasanah & Mahmudah, 2022).

This aligns with the cognitive item that had the highest mean (M = 3.62) regarding the ability to write English sentences better. This repetition of writing and revising sentences, giving feedback and rethinking errors, might have helped the students to consider the connection between grammatical correctness and meaningful sentence construction (Hasanah & Mahmudah, 2022). However, given that the cognitive engagement scale had a lower reliability (α = .59), and because this is based entirely on students' self-reports, this should not be used as evidence of actual improved writing, but rather as an indication of students' perceived cognitive investment.

5.3 Positive Emotional Engagement Does Not Mean Every Student Had the Same Experience

The moderate level of emotional involvement implies that the students positively reacted to the Wordwall activities in general. The students' reported excitement about using Wordwall was the highest emotional item reported, with students feeling confident in how to write English sentences after using the activities coming in next with M = 3.53. The pattern indicates that the activities might have offered a more interesting experience than traditional sentence construction exercises, as students felt they were more engaged during the activities (Hafifah & Hanifa, 2024).

It is, however, important to note that not all learners will have the same emotional experience when engaging in an interactive or game-based activity. The intervention consisted of activities in groups of students with teacher guidance and feedback. This could also involve opportunities for peer interaction and collaborative problem-solving, which could help build students' sense of social involvement. Students can also vary in their confidence and participation style and may feel comfortable or uncomfortable in responding to language tasks in front of others.

This is especially significant when considering emotional engagement. The post-intervention questionnaire did not attempt to directly measure anxiety or

relatedness as separate psychological constructs, but it did measure enjoyment, excitement, and confidence. Thus, the present results do not confirm if Wordwall was able to decrease students' anxiety or increase students' sense of relatedness. The findings, however, suggest that the students overall had positive emotional engagement, but the emotional process in which these feelings occurred was not clearly identified.

This study could therefore be replicated in different Wordwall configurations to see if they result in different emotional experiences. For instance, collaborative activities and individual practice/competitive game formats may be compared to see if there is a difference in the responses of the students depending on the level of peer interaction, public performance, and competition (Dichev & Dicheva, 2017).

5.4 Limitations of the Study

Several limitations must be acknowledged when interpreting the findings of this study. First, the use of convenience sampling from a single school with a relatively small sample size (N = 55) limits the generalisability of the results to the broader population of Malaysian secondary school students. Second, the absence of a control group and the purely descriptive nature of the data mean that no causal inferences can be drawn. Third, the researcher also acted as the teacher during the intervention, which may have introduced social desirability bias despite assurances of anonymity. Fourth, the cognitive engagement scale demonstrated low internal consistency (α = .59), meaning those specific results must be interpreted cautiously. Finally, because the intervention lasted only three sessions, it is highly likely that a novelty effect influenced the students' positive responses to the Wordwall platform.

5.5 Implications for Teachers

Despite these limitations, the study offers several practical implications for ESL educators. The findings suggest that platforms like Wordwall can be valuable supplementary tools for grammar and sentence construction lessons. Teachers should note, however, that positive self-reported engagement does not automatically equate to successful learning. Therefore, the integration of digital tools should be accompanied by structured task design, clear learning objectives, and continuous teacher facilitation, feedback, and reflection. Furthermore, teachers should carefully consider how to support students who may feel anxious or uncomfortable with public, game-based participation.

6.0 Conclusion

This study explored students' engagement and perceived effectiveness of the Wordwall activities in Malaysian secondary ESL sentence construction lessons. Overall, the results showed moderate and generally positive levels of behavioural, emotional, and cognitive engagement after the intervention. Because the mean scores for the three dimensions were highly similar, no single dimension is claimed to be significantly higher. The results indicate that there was a positive response to the interactive construction of sentences tasks and students could participate in the learning tasks in

all three aspects of engagement.

The results further indicate that aligning Wordwall's interactive tools to language-learning tasks is crucial. Students had different opportunities to practise sentence construction in the progression from arranging sentence components to identifying grammatical errors to producing complete sentences. This was also reflected throughout the intervention, as teachers provided guidance, feedback and reflections, indicating that Wordwall was used as a supplemental learning rather than a replacement for teacher instruction. Students' positive perceptions of Wordwall's effectiveness suggest that it may be a potentially useful supplementary tool for assisting students in practising sentence construction in ESL classrooms. However, this study provides only local descriptive data and does not present evidence of actual learning gains.

It is important to interpret these findings within the context of the study's limitations. the data presented in this study are descriptive data and gathered after a short three-session intervention. Therefore, the results reflect what students reported about their experiences, which may have been influenced by a novelty effect, rather than objective improvements in their sentence construction abilities. Future studies could utilize pre- and post-tests with objective sentence-construction or writing tasks and compare similar measures of the students over time. Future research may also explore the effect of the various Wordwall activity formats, as well as the extent of collaboration or competition, on behavioural, emotional and cognitive engagement of students.

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8.0 Conflict of Interest Statement:

The authors declare that there is no conflict of interest regarding the publication of this article.

9.0 Research and Publication Ethics Statement:

The authors confirm that this study was conducted in accordance with relevant research ethics principles. Participation was voluntary, and informed consent was obtained from all participants. Confidentiality and participant privacy were maintained throughout the research process. The authors further confirm that the manuscript is original and complies with established standards of publication ethics.

10.0 Author Contributions:

All authors contributed to the conception, design, and development of this study. They participated in data collection, analysis, manuscript preparation, and revision. All authors have read and approved the final version of the manuscript

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14.0 References

Badri, Z., Amat, R., & Abd Rahim, M. A. (2025). Assessing the effectiveness of using Kahoot! to improve students' engagement during grammar lessons. *Creative Practices in Language Learning and Teaching (CPLT)*, *13*(1), 105-117. https://doi.org/10.24191/cplt.v13i1.4547

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative and mixed methods approaches* (5th ed.). SAGE Publications.

Darmawati, D., & Nayla, N. (2025). The effect of using Wordwall website as a strategy on students' vocabulary mastery. *International Journal of Educational Research*, *2*(2), 64–70. https://doi.org/10.62951/ijer.v2i2.311

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Dichev, C., & Dicheva, D. (2017). Gamifying education: What is known, what is believed and what remains uncertain: A critical review. *International Journal of Educational Technology in Higher Education, 14*(1). https://doi.org/10.1186/s41239-5

Do, T. C., & Huynh, N. T. (2024). Students' perception of using Wordwall application to enhance vocabulary memorization. In M. Shelley & O. T. Ozturk (Eds.), *Proceedings of International Conference on Research in Education and Science (ICRES)* (Vol. 1, pp. 810–820). International Society for Technology, Education, and Science. https://files.eric.ed.gov/fulltext/ED673135.pdf

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59–109. https://www.jstor.org/stable/3516061

Hafifah, F. N., & Hanifa, R. (2024). Students' perception of Wordwall game in learning vocabulary through ARCS model. *Journal of English Language Teaching, 13*(1), 56–66. https://doi.org/10.24036/jelt.v13i3.129630

Hasanah, L., & Mahmudah, N. (2022). Gamification strategy using Wordwall to improve students' learning motivation in grammar class. *Indonesian EFL Journal*, 8(1), 15–22.

Hijjo, N. F. M. (2013). A morphosyntactic analysis on Malaysian secondary school

students' essay writing in English class. *International Journal of Humanities and Social Science, 3*(11), 286-291.

Keller, J. M. (1987). Development and use of the ARCS model of instructional design. *Journal of Instructional Development, 10*(3), 2–10. https://doi.org/10.1007/BF02905780

Maharani, R. P., Arianto, F., & Diningrat, S. W. M. (2025). Developing Wordwall-based interactive game media to enhance writing skills and motivation in recount text. *Jurnal Visi Ilmu Pendidikan, 17*(1), 9–27. https://doi.org/10.26418/jvip.v17i1.85438

Mehat, S. Z., Ismail, L., Noordin, N., & Mohamad Ali, A. (2024). Error analysis of narrative writing among secondary school students in Selangor, Malaysia. *International Journal of Academic Research in Progressive Education and Development, 13*(4), 2737–2751. https://hrmars.com/IJARPED/article/view/23652

Mayer, R. E. (2005). Introduction to multimedia learning. *The Cambridge handbook of multimedia learning*, 2(1), 24.

Meyer, A., Rose, D. H., & Gordon, D. (2014). Universal design for learning: Theory and practice. CAST Professional Publishing.

Nunnally, J. C. (1978). Psychometric theory (2nd ed.). McGraw-Hill.

Ilahiyati, N., Rohmah, Z., & Hamamah, H. (2023). The Implementation of Wordwall Games in Vocabulary Learning. *IJEE, 10*(1), 144–159. https://doi.org/10.15408/ijee.v10i1.29905

Pradana, R. P., Pinem, A. A., & Handayani, P. W. (2024). Influence of gamification on student engagement in online discussions using self-determination theory. *Journal of Educators Online, 21*(2). https://doi.org/10.9743/JEO.2024.21.2.6

Sari, P. S. A. (2024). Using Word Wall to improve EFL students' vocabulary achievement at junior high school. *Journal of English Teaching and Learning, 4*(1), 46–53. https://doi.org/10.62734/jetling.v4i1.266

Selwyn, N. (2016). *Education and technology: Key issues and debates* (2nd ed.). Bloomsbury Publishing.