January 2025, Vol. 11, No. 1
ISSN 2163-758X

The Application of Wordwall.net in English Language Instruction for Young Learners: The Learning Motivation of Taiwanese Elementary School Third Graders

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Abstract

Technology plays a crucial part in the educational field since it aids both educators and learners. Wordwall.net is a digital game-based education site that has a wide selection of activities. Many studies have been conducted concerning Wordwall.net as a tool to enhance learning outcomes. However, research has not identified which motivational factors are attained simultaneously by using Wordwall.net. The current study unveils young learners' motivational factors during grammar and vocabulary instruction. The ARCS model of Attention, Relevance, Confidence, and Satisfaction was applied as the basis for investigating learners' motivational aspects. After collecting two sets of questionnaires from 24 participants, the Spearman Rank correlation was used to find correlations. The outcomes revealed that Wordwall.net led to many significant correlations between the ARCS's four motivational domains for both vocabulary and grammar teaching. As a result, apart from the findings of many studies that have indicated the beneficial aspects of Wordwall.net in enhancing students' language proficiency, this study fills in the research gap regarding motivational aspects that Wordwall.net brings to third-grade students. This will enable educators who are seeking to apply web-based tools in class for vocabulary and grammar instruction to recognize the ARCS motivational aspects that Wordwall.net can enhance.

Introduction

Background and Motivation

With the advancement of educational technology, different technological programs are nowadays widely applied in classrooms (Dash, 2022). Currently, in Taiwan, there are ample opportunities to attend online classes, which proves that technology has become an essential instrument that boosts both learning and teaching (Vosiqova, 2024). Recently, technology has also been viewed as a pivotal tool used by educators to teach a wide range of content (Dash, 2022). With access to the internet, educators can provide plentiful content to learners. Furthermore, technology meets the varied needs of learners across the world and can lead to "interactive and immersive language learning" (Vosiqova, 2024, p. 413). Hence, it is apparent that the introduction of technology to the teaching setting can help learners to achieve the desired outcomes as it does not limit them or the instructors to traditional teaching and learning (Dash, 2022).

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Computer-assisted language learning (CALL) is a powerful new educational support that alters the way that language can be taught and acquired (Ima & Jihad, 2024). CALL enhances students' motivation, particularly particularly its intrinsic motivations (Ima & Jihad, 2024). When students use computers in class, they are more stimulated than when teachers use traditional approaches in their instructional sessions. Additionally, the use of interactive language learning platforms promotes an enjoyable and effective learning environment with engaging games, quizzes, and activities (Vosiqova, 2024).

CALL tools often gamify the language learning process. Gamification is not only the top choice for educators when teaching virtual classes (Sylvia et al., 2024), but also for educators who are inclined to gamify their conventional classroom teaching since gamification has become the means to encourage students to learn. This gamification has been brought forth as one of the means to encourage students to learn (Sylvia et al., 2024). By taking advantage of digital tools, teachers can also create engaging learning settings for diverse learners (Ima & Jihad, 2024).

Motivation plays a crucial role in both learning and teaching processes, whether they are taking place in online or face-to-face classes (Sylvia et al., 2024). When students are not naturally motivated, games or attractive visual materials can help, which requires a lot of teacher's effort. Specifically, non-native English speakers can get discouraged when learning the English language, which leads to educators exploring different strategies to assist those who are in need (Sylvia et al., 2024). However, a range of strategies need to be explored and a range of factors need to be considered. One of them is students' attention (Sylvia et al.., 2024).

The ARCS motivational model includes four major aspects: Attention, Relevance, Confidence, and Satisfaction (Keller, 1987). It has been proposed as framework for sustaining students' motivation throughout a lesson (Keller, 1987). This model of learning motivation can apply to both conventional and online classes. The ARCS model was first created to address the lack of macro theories or models that could be used to develop the kind of instruction that increased motivational learning (Keller, 1987). The foundation of this model was based on Tolman and Lewin's expectancy-value theory, which stated that if the activity is aligned to personal needs, a positive expectancy for success will exist (Keller, 1987).

Attention is the first condition in the model, and it is defined as catching and maintaining the interest and curiosity of learners, which can be accomplished by including "visual aids, animation, and interactive simulations (Alenezi, 2023). Relevance is the second condition in the model. It refers to the learners' view of the content regarding their needs and the value or importance of the lesson (Alenezi, 2023). To achieve practical learning, a range of fun and challenging games must be employed (Paksi et al., 2023). Confidence is the third component of the model. It relates to learners' belief in their abilities to succeed in the task at hand (Alenezi, 2023). Satisfaction is the last component of the model. It refers

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to learners' experiencing "a sense of achievement and fulfillment" after completing the activity (Alenezi, 2023, p. 169). These four conditions must be met for students to be motivated in the learning process.

When classrooms around the world moved online during the Covid-19 pandemic in 2020, many teachers in Taiwan applied Wordwall.net as the primary teaching tool for online learning. In 2020 and 2021, Wordwall.net had 1 million visitors and 100,000 paid subscribers (About Wordwall, n.d.). At the time, Wordwall.net had 18 unique games with different features that could be used for teaching vocabulary and grammar. However, since students have returned to in-person classrooms post-pandemic, few teachers are still using Wordwall.net. Even those with access to a projector or e-board in the classroom prefer to use the traditional teaching approach, such as using textbooks and whiteboard or blackboard to rather than Wordwall.net. Therefore, the usage of Wordwall.net is not as common as it was during the Covid-19 pandemic. The aim of the current study is to prove that Wordwall.net activities could still be applied during face-to-face instruction increasing young learners' motivation in English learning.

Research Questions

This study has two research questions. The first research question aims to find out whether the implementation of Wordwall.net during vocabulary instruction increases students' attention, confidence, relevance, and satisfaction to unveil which motivational domain has a significant correlation with another while Wordwall.net is being applied. The second research question aims to examine students' motivational domains during grammar teaching when educators employ Wordwall.net. By doing so, we can find out whether Wordwall.net is beneficial for teaching vocabulary or grammar.

The research questions are as follows:

RQ1: What is the correlation between each of the domains of the Taiwanese elementary school students' attention, relevance, confidence, and satisfaction during classroom instruction while utilizing Wordwall.net for learning vocabulary?

RQ2: What is the correlation between each of the domains of the Taiwanese elementary school students' attention, relevance, confidence, and satisfaction during classroom instruction while utilizing Wordwall.net for learning grammar?

Statistical Hypothesis for RQ1

H01: There are no statistically significant correlations between students' ARCS motivational factors while Wordwall.net was being employed for vocabulary learning.

H0: $r = 0$

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H11: There are statistically significant correlations between students' ARCS motivational factors while Wordwall.net was being employed for vocabulary learning.

H1: $r \neq 0$

Statistical Hypothesis for RQ2

H02: There are no statistically significant correlations between students' ARCS motivational factors while Wordwall.net was being employed for grammar learning.

H02: $r = 0$

H12: There are statistically significant correlations between students' ARCS motivational factors while Wordwall.net was being employed for grammar learning.

H12: $r \neq 0$

Literature Review

Vocabulary and grammar are crucial for learning a new language, such as English (Andriani et al., 2021; Paksi al., 2023). Grammar plays an important role in communicating; It is indispensable for developing the four skills, i.e. listening, speaking, reading and writing (Lim et al., 2021). Knowledge of English grammar underlies comprehension and communication for comprehension and communication (Andriani et al., 2021; Ilahi et al., 2022). Furthermore, to acquire a foreign language, students are required to gain vocabulary knowledge to succeed in developing the aforementioned four English skills (Masruddin, 2019). Without proper vocabulary, an individual does not know what words to use in a sentence, despite knowing the proper grammatical structure (Paksi al., 2023). One of the issues that educators grapple with is that students lack adequate vocabulary with which to understand the text and construct a sentence (Andriani et al., 2021). Conventionally, educators tend to ask students to memorize the words and give them a test afterward; however, such rote memorization inevitably results in losing motivation by the students (Paksi et al., 2023). Therefore, technology integration in the classroom can tremendously boost foreign language learning (Avila & Mayorga, 2020).

Digital media plays an important part in the education process because it can positively affect students' motivation and desire to learn (Wuryanti & Kartowagiran, 2016). More specifically, game-based learning allows educators to implement an active learning environment in class, leading to students being engaged (Mazelin et al., 2022). The utilization of games during the learning process leads to higher attention and better learning outcomes (Mazelin et al., 2022). Learners claim that the integration of technology in the classroom leads to an increase of interaction, motivation, and engagement (Baytak et al., 2011).

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Apart from short language games Wordwall.net contains resources appropriate for both online and face-to-face teaching (Mazelin et al., 2022). They can revolutionize both online and conventional purposes, with features that revolutionize vocabulary instruction, providing students with engaging and interactive approaches to learning (Wandari et al., 2024). The use of Wordwall.net enhances students' attention, and level of engagement during playing the games (Hasram et al., 2021). Wordwall.net captures students' attention and increases participation in the learning process (Wandari et al., 2024). Technology can help foster students' participation in class, increasing students' learning success (Ahmadi, 2018). Students' active participation helps in development of vocabulary (Wandari et al., 2024). Moreover, as students take more of an active role in the process, their retention of the content also increases (Costley, 2014). The acquisition of vocabulary through games has been found to increase learners' vocabulary knowledge without students realizing it (Paksi, et al., 2023).

Methodology

Research Context and Participants

The participants of the current study were third-grade cram school students in New Taipei City, Taiwan. The instructor utilized Wordwall.net when teaching students English vocabulary and grammar in class. Students repeated a unit that consisted of a set of grammar and vocabulary approximately five times before learning the next unit.

Data Collection and Analysis

This study applied a quantitative analysis. Before distributing the questionnaires, permission from the parents was collected. Twenty-four students were formally by their parents to participate in this study. The researchers distributed two questionnaires that were designed on the basis of Keller's model (2010). Some items were altered to fit the research purposes. The items on the questionnaires were close-ended Likert scale questions with rankings from 1 to 5. Statistical Package for the Social Sciences (SPSS) was used to analyze the data from the questionnaires. The Spearman Rank Correlation was used to examine the results. The level of correlation between the variables determined by Dancey and Reidy's (2007) study is displayed in Table 1.

Table 1
Level of Correlation of Spearman Rank Correlation

Spearman ρ	Correlation
≥ 0.70	Very strong relationship
0.40–0.69	Strong relationship
0.30–0.39	Moderate relationship
0.20–0.29	Weak relationship
0.01–0.19	No or negligible relationship

Note. From Dancey and Reidy's study (2007).

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Reliability of the Questionnaires

Cronbach's alpha was used to measure the internal reliability of the two questionnaires. The reliability interpretation is displayed in Table 3. The outcomes showed that the questionnaires regarding the application of Wordwall.net for learning vocabulary and grammar fell in the "good" range (α = .75 and α = .80) (see Table 2 and Table 3). It can be concluded that after modification of this study's items to fit the research purposes, the reliability of the questionnaires demonstrated an acceptable consistency throughout.

Table 2
Reliability Statistics

Items	Cronbach's Alpha	N. of Items
The Use of Wordwall.net for Vocabulary	.75	33
The Use of Wordwall.net for Grammar	.80	33

Note. N = 99.

Table 3
Internal Consistency of the Questionnaire

Cronbach's α	Internal Consistency
$\alpha \geq 0.9$	Excellent (high-stakes testing)
$0.7 \leq \alpha < 0.9$	Good (low-stakes testing)
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Results and Discussions

As shown in Table 4, there were significant correlations between the four domains of the ARCS model when Wordwall.net was implemented during vocabulary instruction. There was a statistically significant outcome between confidence and attention ($p < .01$), and a strong positive correlation was found between them (= 65) (Dancey & Reidy, 2007). This result indicated that as students' confidence increased, so did their attention. Furthermore, a significant association between relevance and confidence was found, and a medium positive relationship was discovered ($p < .01$, = .58) (Dancey & Reidy, 2007). This result showed that as students obtained confidence, their relevance aspect also increased. Lastly, relevance and satisfaction had a significant correlation and a medium positive relationship with one another ($p < .05$, = .48) (Dancey & Reidy, 2007). This result indicated that when the use of Wordwall.net captured students' satisfaction, they regarded Wordwall.net as a practical platform that aligned with their needs.

There were a few non-significant correlations between the ARCS domains during the application of Wordwall.net for vocabulary teaching. First, the association between

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satisfaction and confidence was found to be not significant. This indicated that if Wordwall.net boosted learners' confidence, it did not necessarily lead to the learners experiencing gratification. Moreover, two negligible relationships were also discovered between attention and satisfaction ($p > .05$) and between attention and relevance ($p > .05$). This indicated that with the increase in students' attention, the students' satisfaction and perceived relevance of the subject did not necessarily follow.

Table 4

Spearman's rho - Correlations between the ARCS Motivational Domains using Wordwall.net for Vocabulary Teaching

Variable	1	2	3	4
1. AttentionVoc	.	.	.	.
2. ConfidenceVoc	.65**	.	.	.
3. SatisfactionVoc	.12	.29	.	.
4. RelevanceVoc	.27	.58**	.48*	.

Note. N = 33 * p <.05, ** p <.01.

In terms of the learning and teaching of grammar (Table 5), significant correlations between the ARCS motivational components were found. First, confidence and attention were found to be significantly associated with one another ($p < .05$); there was a strong relationship between these two variables (= .42) (Dancey & Reidy, 2007). These outcomes indicated that using Wordwall.net for grammar assisted with increasing not only students' confidence, but also their attention. Second, another strong correlation was discovered between satisfaction and confidence (= .67), and a significant association was found between these two variables ($p < .05$) (Dancey & Reidy, 2007). Therefore, as the students' confidence increased, satisfaction increased proportionately. Third, there was a very strong relationship between relevance and confidence (=.76,), and a significant correlation was found between relevance and confidence as the p-value was lower than .05 (Dancey & Reidy, 2007). Once again, as students' confidence was boosted, so was students perceived subject relevance. Last, a significant association was found between relevance and satisfaction ($p < .01$); the relationship between these two variables was very strong (= .72) (Dancey & Reidy, 2007). According to these results, Wordwall.net had beneficial effects on students' motivational aspects since the outcomes showed numerous significant associations.

Conversely, a few variables were found not to be significantly correlated, namely, attention and relevance, as well as attention and satisfaction. This indicated that while attention was captured, students' perceived relevance of subject might have decreased or shown no changes. This also suggested that even though students were satisfied while learning grammar via Wordwall.net, it did not necessarily lead to them being more attentive.

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Table 5

Spearman's rho - Correlations between ARCS Motivational Domains using Wordwall.net for Grammar Teaching

Variable	1	2	3	4
1. AttentionGram	.	.	.	.
2. ConfidenceGram	.42*	.	.	.
3. SatisfactionGram	.37	.67*	.	.
4. RelevanceGram	.29	.76**	.72**	.

Note. N = 33 * p <.05, ** p <.01.

Conclusion

With web-based tools being prevalent in today's education, Wordwall.net is one of the web-based platforms that can be used for teaching vocabulary and grammar. Wordwall.net has many games that can be used for diverse educational purposes. A number of studies have indicated that Wordwall.net boosts students' motivation to learn; however, no studies have examined the correlation between the different motivational components that are attained. This study showed that teaching vocabulary and grammar to students using Wordwall.net's educational games is advantageous since there are several substantial correlations between students' ARCS motivational factors. Significant correlations were found between confidence and attention, confidence and relevance, and relevance and satisfaction pertaining to the use of Wordwall.net for vocabulary instruction. Therefore, to obtain all motivational factors, educators should focus on utilizing the content on Wordwall.net to meet students' needs, which can then lead to the elevation in other motivational domains. Furthermore, confidence and attention, confidence and satisfaction, confidence and relevance, and relevance and satisfaction were found to be significantly correlated in the use of Wordwall.net for teaching and learning grammar. Based on these outcomes, it is highly recommended that educators guide students in utilizing Wordwall.net educational games to induce a chain reaction that increases all four motivational domains.

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