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Assessing Arabic Learning through a Game-Based Evaluation Tool for Year One Primary School Students

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ABSTRACT: *An effective Arabic assessment model for first-grade students combines both formative and summative methods to evaluate foundational language abilities—like recognizing letters, understanding vocabulary, and forming basic sentences—as well as early analytical skills, such as identifying word roots and grasping simple grammar. These evaluations integrate engaging interactive tools, including digital quizzes, multimedia prompts, and educational games that adapt to each child's learning pace while offering immediate feedback. This study aims to evaluate the effectiveness and accuracy of a game-based evaluation tool (Wordwall) in Arabic language learning for Year One primary students at MIN 2 Sumenep. This study used mixed method with a quasi-experimental design through pre-test and post-test of a study group. There were 28 students who completed ten interactive tasks, matching picture test, audiovisual quizzes, spin wheel activities, and letter sequencing exercises for fruit vocabulary. The result of this study showed that 78.6%-92.9% of students found Wordwall's visuals, functionality, and motivational features engaging and easy to use. Overall, Wordwall delivered an 83% improvement in learning efficiency and achieved a 94,6% accuracy rate in vocabulary mastery. These findings concludes that game-based assessments can simultaneously boost engagement and assessment precision. The study's novelty lies in focusing on early grade Arabic evaluation within the Merdeka Curriculum framework. Implications include recommending wider adoption of game based evaluation tools, structured teacher training in interactive design, and future incorporation of Wordwall log data analysis to deepen insights into student learning behaviors.*

Keyword: *Game-Based; Evaluation tool; Arabic Learning; Primary School; Students' engagement.*

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INTRODUCTION

In an ideal Arabic assessment framework for first-grade primary students, teachers employ a balanced mix of formative and summative evaluations that accurately measure linguistic skills (letter recognition, vocabulary, simple sentence formation) and higher-order understanding (identifying root patterns, basic grammar). These assessments integrate interactive, multimodal media, such as adaptive digital quizzes, audiovisual prompts, and game-based exercises, that adjust to each learner's pace and provide instant feedback. Such tools support differentiated instruction, maintain engagement through meaningful interactivity, and offer teachers real-time analytics to inform targeted remediation (Aeni et al., 2022; Oktavia et al., 2021).

In practice, many primary Islamic schools (MI) still rely on conventional assessment tools such as verbal questioning and written worksheets. These methods often fail to capture the depth of students' understanding, particularly in early Arabic learning, which demands gradual mastery of script, vocabulary, and basic grammar. Teachers also face difficulties designing engaging evaluations due to limited training in interactive media, lack of infrastructure, and inconsistent internet access (Zalillah and Alfurqan, 2022). Furthermore, assessments are frequently focused on rote memorization, causing students to lose interest, especially those in the preoperational cognitive stage who require play based stimulation (Oktavia et al., 2021). As a result, there is a mismatch between what Arabic assessments should achieve and what is happening in most classrooms.

Addressing the limitations of conventional Arabic assessments in MI requires the integration of tools that are accessible, adaptable, and engaging for both teachers and young learners. Teachers need platforms that are user friendly and do not require advanced technical skills, while students require stimulating formats that sustain attention and reinforce learning through immediate feedback. Assessment tools must also be flexible enough to function both online and offline to accommodate limited connectivity in many schools (Zalillah and Alfurqan, 2022). Moreover, to align with the Merdeka Curriculum's emphasis on learner centered and differentiated instruction, the chosen evaluation media should support personalization, creativity, and meaningful interaction (Hermita et al., 2022). These needs underscore the importance of a game based assessment platform that combines motivation, simplicity, and effectiveness in evaluating Arabic learning outcomes (Aeni et al., 2022).

Wordwall, literally meaning "word wall" is an engaging browser based application that functions as a learning resource, instructional medium, and enjoyable assessment tool for students (Idrus et al., 2021). Wordwall emerges as a viable solution to address the identified challenges in evaluating Arabic learning among first grade MI students. As an online platform offering more than twelve customizable templates, including quizzes, matching pairs, grouping tasks, word arrangement, and fill in the blank exercises, Wordwall enables teachers to create engaging assessments without requiring advanced technological skills (Umar et al., 2023). These features are particularly beneficial for young learners, as they incorporate game, like interaction, visual stimulation, and instant feedback, elements that support the cognitive characteristics of students in the preoperational stage (Gandasari and Pramudiani, 2021). The application can be used both online and offline, allowing for flexibility in settings with limited internet access. Its automated grading and competitive modes (e.g., leaderboard scores) enhance motivation while making learning more dynamic. Furthermore, Wordwall allows alignment of tasks with specific learning objectives and curriculum competencies, making it an ideal tool for formative Arabic language assessment that meets the demands of the Merdeka Curriculum Latifah and Damayanti (2022); Rahmayanti and Abidin (2023).

Numerous studies have demonstrated Wordwall's positive impact across various educational settings. Nurhandayani and Sutiah reported that Wordwall reduced boredom and improved student interest by offering diverse and interactive formats (Hasanah and Sutiah, 2023). Zahroh found that Wordwall's automated competition features significantly increased student participation and motivation in Madrasah Aliyah (Zahroh et al., 2024). Similarly, Zalillah and Alfurqan emphasized Wordwall's practicality in designing assessments despite infrastructure limitations (Zalillah and Alfurqan, 2022). Wordwall has also been validated for its reliability and usability in both primary and secondary education Kirotul Umah et al. (2023); Latifah and Damayanti (2022). At the university level, Mardhiyah showed that

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Wordwall enhanced comprehension and enjoyment in Arabic learning (Mardhiyah, 2023). Rahmayanti and Abidin specifically investigated its effectiveness in Arabic instruction at the high school level, concluding that it significantly improved students' Arabic comprehension (Rahmayanti and Abidin, 2023). Despite these promising findings, research on Wordwall's implementation in early grade Arabic learning, especially among first grade MI students, remains scarce. This study addresses that gap by exploring Wordwall's effectiveness as an evaluation tool in Arabic instruction within the Merdeka Curriculum framework for beginner learners.

This study aims to evaluate the effectiveness of Wordwall as an Arabic language assessment tool for first grade MI students within the framework of the Merdeka Curriculum. The novelty of this research lies in its specific focus on early grade Arabic instruction, a stage often overlooked in prior studies that primarily target secondary or tertiary levels. This study also documents the practical implementation of Wordwall, including how its features align with the cognitive, linguistic, and motivational needs of young learners. The findings are expected to provide empirical support for teachers seeking technology, integrated assessments, and to contribute to the broader discourse on interactive learning tools in Islamic primary education.

METHODS

This study employed a mixed method approach by integrating qualitative and quantitative data within a quasi experimental framework (Creswell and Plano Clark, 2018). The mixed method design was chosen to comprehensively address the research question, which seeks not only to measure the effectiveness of Wordwall in improving Arabic learning outcomes but also to capture students' perceptions and engagement during its use. The quantitative aspect, through pre-test and posttest scores, enables measurable comparisons of learning outcomes (Ary et al., 2019), while qualitative feedback gathered through questionnaires explores user experience and acceptance of the platform.

The research was conducted at MIN 2 Sumenep, involving 28 students from Class 1D. This class was selected purposively based on the teacher's observation that students in 1D showed high participation during learning activities. The independent variable in this study was the use of Wordwall as an instructional evaluation tool, while the dependent variable was the students' achievement in basic Arabic vocabulary and script recognition.

The study utilized a group pre-test and post-test quasi-experimental design (Ary et al., 2019). The treatment instruments included the lesson plan (RPP) and Wordwall-based evaluation media. The measurement instruments consisted of a test sheet designed according to Grade 1 Arabic basic competencies, including vocabulary, reading, and writing components. The evaluation content was delivered through Wordwall games and interactive activities align with the linguistic and cognitive development stage of 6-7-year-old learners.

The practical implementation was carried out in Chapter 5 (Fruits) of the Arabic subject. Because students were not allowed to use personal devices and were unfamiliar with Wordwall, the teacher projected the game onto a screen. Each student completed the assessment individually on the teacher's laptop, guided at the beginning of their attempt. Student selection was randomized using a "spin wheel" displayed on the screen. The ten question evaluation included: three "Match Up" tasks (matching fruit pictures with Arabic labels), three "Quiz" questions (image audio pairing for listening and oral vocabulary), three "Spin the Wheel" tasks (Q&A in Arabic with pictures), and one "Open the Box" task (connecting letters to form words).

To assess students' perceptions of Wordwall's usability and appeal, a simplified questionnaire was administered after the post-test. The questionnaire was read aloud by the teacher to ensure that all students understood the questions. Each item was explained one by one, and students responded by selecting from the available answer choices, thereby reducing the reading burden (DeVellis, 2017).

Pre-test and post-test results were analyzed using SPSS (Statistical Package for the Social Sciences). If normality assumptions were met, a parametric Paired Sample T-test was employed to identify statistically significant differences in learning outcomes (Field, 2018). The hypotheses tested were: H_1, Wordwall is effective in Arabic instruction. H_0, Wordwall is not effective. This research ultimately aims

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to determine Wordwall's role in enhancing the accuracy and engagement of Arabic learning evaluations for Grade 1 students.

RESULT AND DISCUSSION

Result

Summary of Evaluation of Arabic Subject using Wordwall At MIN 2 Sumenep

At MIN 2 Sumenep, Wordwall is employed as an evaluation tool in Arabic language instruction. The evaluation took place in Classroom ID at MIN 2 Sumenep on Chapter 5 (Fruits) of the Arabit subject. Before using Wordwall for the assessment, the teacher demonstrated how to work through the questions in Wordwall by projecting the simulation onto the screen. Because students were not allowed to bring mobile phones and were not yet familiar with Wordwall, all questions were answered in turn on the teacher's laptop, with the teacher guiding each student at the start of their attempt. Students were selected at random using a "spin wheel" that displayed their names on the projected screen; the student whose name was chosen then came forward to the teacher's desk (see Figure 1).

Figure 1. Student names on the spin wheel

Each student completed ten evaluation items, three "Match Up" questions required them to match pictures of fruits with their Arabic labels to measure vocabulary mastery and reading skills (Figure 2). Next, three "Quiz" questions combined fruit images with audio to practice listening comprehension and verbal vocabulary (Figure 3). Then, Figure 4 showed three "Spin the Wheel" items presenting fruit images along with audio of questions and answers in Arabic to sharpen question-and-answer skills. The last one "Open the Box" task in Figure 5, in which they connect separated letters, designed to train their ability to write both isolated and connected Arabic script. This concludes the summary of the use of Wordwall as an evaluation medium in Arabic instruction at MIN 2 Sumenep.

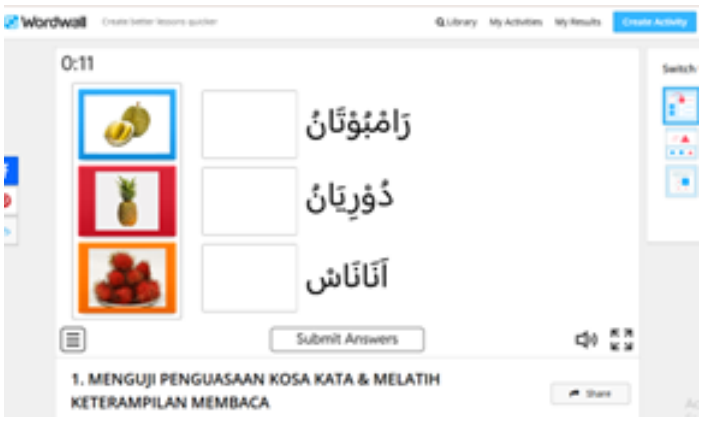

Figure 2. Three questions using the match up template

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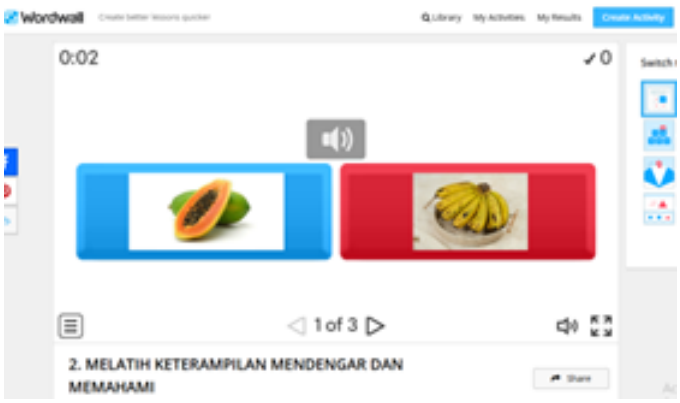

Figure 3. Three questions using the quiz template

Figure 4. Three questions using the spin the wheel template

Figure 5. One question using the open the box template

Students' Perceptions of Wordwall's Usability

In addition, the following explanation will elaborate data collected from the questionnaires. Table 1 shows that 22 students "strongly agree" and 6 students "agree" that Wordwall is engaging. This indicates that the Wordwall interface in Arabic instruction is perceived as appealing by the students. Therefore, it can be concluded that first-grade MI students at MIN 2 Sumenep are indeed attracted to the design of each question presented on Wordwall. Then, based on Table 2, the use of Wordwall in the evaluation of Arabic learning facilitates students' completion of tasks and is considered an effective assessment medium.

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Table 1. Students Liked the Appearance of The Questions on Wordwall

No	Description	Frequency	Percentage %
1	Strongly Agree	22	78.6%
2	Agree	6	21.4%
3	Disagree	0	0.0%
4	Strongly Disagree	0	0.0%
	Total	**28**	**100.0%**

Table 2. Students Find it Easier to Complete Arabic Exercises Using Wordwall

No	Description	Frequency	Percentage %
1	Strongly Agree	26	92.9%
2	Agree	2	7.1%
3	Disagree	0	0.0%
4	Strongly Disagree	0	0.0%
	Total	**28**	**100.0%**

Next, based on Table 3, 26 students (92.9%) strongly agreed that they encountered no difficulties when using Wordwall, while 2 students (7.1%) agreed that they experienced no obstacles. This indicates that almost all students find it easy to utilize Wordwall as an evaluation tool. Following this, Table 4 indicates that 26 students (92.9%) strongly agree and 2 students (7.1%) agree with using Wordwall as an evaluation medium for Arabic language learning. Thus, 100.0% of the students responded positively, confirming that Wordwall is an effective evaluation tool in Arabic instruction for Grade 1 at MIN 2 Sumenep. Therefore, the overwhelming majority of students respond positively to the visual, functional, and motivational aspects of the Wordwall medium.

Table 3. Students Did Not Encounter Any Difficulties When Using Wordwall

No	Description	Frequency	Percentage %
1	Strongly Agree	26	92.9%
2	Agree	2	7.1%
3	Disagree	0	0.0%
4	Strongly Disagree	0	0.0%
	Total	**28**	**100.0%**

Table 4. Wordwall Motivated the Students To Be Enthusiastic About Learning Arabic

No	Description	Frequency	Percentage %
1	Strongly Agree	26	92.9%
2	Agree	2	7.1%
3	Disagree	0	0.0%
4	Strongly Disagree	0	0.0%
	Total	**28**	**100.0%**

To calculate the average effectiveness of using Wordwall as an evaluation medium in Arabic language learning in the following the formula 1. The MX is Mean, $\Sigma X / SigmaX$ as the sum of the variables, and N refer to number of case.From the SPSS output, the sum of the variables (ΣX) is 436 and the number of cases (N) is 28, hence the mean (MX) is calculated as follows: $MX = 436/28 = 15.57$. From the calculations of the four perception questionnaire items completed by 28 Grade 1D students, into the "Highly Effective" category (Table 5) with a score scale of 4-16, the mean of 15.57 falls (Table 6). Thus, the use of Wordwall as an evaluation medium in Arabic language instruction for class 1D can be classified as highly effective.

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$$MX = \frac{\Sigma X}{N} XN \quad (1)$$

Table 5. Student Response Category

Description	Student Score (△Score)
Very Effective	13-16
Effective	09-Dec
Less Effective	05-Aug
Not Effective	4

Table 6. Total Variable Score

Statistics		
	Total_Score	
N	Valid	28
	Missing	0
Mean		15.57
Sum		436.00

The teacher administered a written test on paper and pencil as the pre-test. The number of pre-test items was the same as that of the post-test. The pre-test and post-test items were equivalent but not identical. This was done to prevent students from simply memorizing pre-test answers, if the tests were identical, the post-test would measure recall rather than actual learning gains. Moreover, if students knew exactly what would be tested again, they might focus on rote memorization of the questions rather than truly studying the material. Table 7 are the results of the paired-samples test comparing pre-test and post-test scores, used to measure the effectiveness of Wordwall as an evaluation medium in Arabic language instruction.

Table 7. Paired Sample Statistics

No	Description	Mean	N	Std. Deviation	Std. Error Mean
1	Pre-Test	77.50	28	10.41	1.97
2	Post-Test	94.64	28	6.93	1.31

Based on the table above, the mean Pre-Test score was 77.50 and the mean Post-Test score rose to 94.64 across all 28 students. The Pre-Test standard deviation was 10.41, while the Post-Test standard deviation was 6.93. The standard error of the mean was 1.97 for the Pre-Test and 1.31 for the Post-Test. These data indicate an increase in students' average scores following the use of Wordwall as an evaluation medium in Arabic language instruction.

To determine whether there is a significant relationship between the Pre-Test and Post-Test results, the Paired-Sample Correlation results are presented in Table 8. It can be seen that the Sig. (2-tailed) value is reported as < 0.001. Because the p-value is less than 0.05 and the Pearson correlation coefficient is 0.83, it can be concluded that there is a very strong and significant relationship between the Pre-Test and Post-Test scores.

Table 8. Paired Sample Correlations

No	Description	N	Correlation (r)	Sig. (2-tailed)
1	Pre-Test & Post-Test	28	0.83	< 0.001

Next, to determine whether there is a significant difference between these two scores, the results of the Paired-Sample T-Test on the effectiveness of using Wordwall as an evaluation medium in Arabic

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language instruction are presented in Table 9. The mean difference between the Pre-Test and Post-Test scores is -17.14, indicating a substantial increase in student scores after using Wordwall. The two-tailed significance value is reported as < 0.001. Using a paired-samples t-test at $\alpha = 0.05$, since $p < 0.05$, we reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1). Thus, there is a statistically significant difference between the Pre-Test and Post-Test means, demonstrating that using Wordwall as an evaluation medium in Arabic language instruction is statistically effective. These statistical findings reinforce that the use of Wordwall significantly enhances evaluation outcomes in Arabic language learning.

Table 9. Paired Sample Test

No	Description	Mean Difference	Std. Deviation	Std. Error Mean	95% CI Lower	95% CI Upper	t	df	Sig. (2-tailed)
1	Pre-Test - Post-Test	-17.14	6.00	1.13	19.47	14.82	15.12	27	< 0.001

Discussion

The research findings indicate that using Wordwall as an evaluation medium for the "fruits" unit in Class 1D at MIN 2 Sumenep elicited a very positive response from the students. The majority (78.6-92.9%) reported that the item displays were attractive, easy to operate, and motivating for learning. Wordwall is not only enjoyable but also statistically enhances students' mastery of vocabulary and Arabic language skills. This finding supports claimed that indicated Wordwall help student improving Arabic comprehension (Rahmayanti and Abidin, 2023).

In addition, most students found Wordwall highly engaging and motivating, which aligns with evidence that integrating gamification elements, such as challenges, instant feedback, and interactive visuals, can boost student motivation and engagement in a learning context which aligns with (Zahroh et al., 2024). In language learning, gamification has been proven to enhance intrinsic motivation and learning outcomes, particularly in vocabulary acquisition and listening comprehension (Al-Dosakee and Ozdamli, 2021). Wordwall, through formats such as Match Up, Quiz, Spin Wheel, and Open the Box, integrates these gamification principles, ensuring that students feel challenged and remain actively engaged during evaluations (Widhiatama and Brameswari, 2024). A positive response (*geq*78.6%) for each question type confirms that digital game elements can transform traditional assessments into an enjoyable learning experience (Zahroh et al., 2024).

These results are consistent with a meta analysis of digital game based vocabulary learning (DGBVL), which reported medium to large effect sizes (g = 0.57-0.85) for vocabulary retention compared to traditional methods (Chen et al., 2018). The gains in pre- and post-test scores observed in this study support the conclusion that Wordwall's gamified structure effectively reinforces vocabulary learning in early Arabic education.

According to Mayer's cognitive multimedia theory, presenting material through a combination of verbal and visual channels optimizes information processing in working memory, thereby reducing cognitive load and enhancing students' long-term memory retention (Mayer, 2024). In the context of Wordwall, the Match Up feature, which combines images of fruits with Arabic text, and the audiovisual quiz items that blend sound and imagery, practically apply Paivio's dual-coding principle. By creating dual representations (verbal and nonverbal) for each vocabulary item, they strengthen students' retention of fruit vocabulary (Li et al., 2022).

Teacher support in operating the laptop and guiding students individually through the spin wheel also functions as scaffolding, targeted assistance that lowers initial cognitive load and helps students enter their zone of proximal development (ZPD) before transitioning to independent work (van Nooijen et al., 2024). This approach aligns with Vygotsky's principle, in which temporary assistance enables students to internalize problem solving strategies before transitioning to full independence (Subiantoro et al., 2025). Moreover, the use of a spin wheel for randomly calling students' names enhances a sense of fairness and

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engagement, as every student has an equal chance of being selected without teacher bias. Mardhiyah's study supports this, showing that randomizing student selection via a spin wheel effectively increases active participation and motivation while fostering an inclusive and enjoyable learning atmosphere (Mardhiyah, 2023).

Therefore, integrating Wordwall into Arabic language assessments not only boosts motivation and engagement but also facilitates the transfer of vocabulary into long term memory by reducing cognitive load and enhancing students' multisensory involvement (Yanuarto and Setyaningsih, 2024). Thus, the combination of teacher scaffolding and randomization mechanisms not only strengthens cognitive support but also fosters a fair and interactive classroom climate.

Although the results demonstrate the effectiveness of Wordwall in teaching fruit vocabulary, this study is limited to a single class (1D) and one content area, therefore, generalization to other classes or topics should be re-examined with a more diverse sample. Additionally, using a single teacher laptop as the evaluation tool restricts both the speed of the assessment process and the number of questions that can be administered. Future research could explore giving students individual or small group access to devices to assess the impact on their technical autonomy. This study also did not measure long-term retention, whether the increase in post test scores endures after several weeks, which is crucial for understanding vocabulary retention over time. One drawback of the Wordwall platform is its dependence on a stable internet connection and the limitations of its free version, which only allows up to three games using 12 template options. Moreover, integrating Wordwall's log data (e.g., response times, error rates per item) could provide deeper insights into student learning patterns and the effectiveness of each question type (Moorhouse and Kohnke, 2024).

By addressing these limitations, future research can strengthen the empirical evidence regarding Wordwall's role across various Arabic learning contexts. To maximize effectiveness, regular training sessions for teachers on operating Wordwall and designing interactive questions should be held, as recommended by gamification studies in English language teaching that emphasize the importance of instructor readiness (Sharifuddin and Abdullah, 2023).

These findings also have several implications. Practically, they encourage Arabic teachers in primary education to adopt interactive tools like Wordwall for formative assessments. Pedagogically, the study supports the integration of gamification and multimedia principles to enhance early grade language acquisition. Institutionally, the results highlight the need for school infrastructure that supports digital learning environments. Finally, the evidence contributes to the growing body of literature advocating for game-based evaluation as an effective strategy in Islamic primary education.

CONCLUSION

The conclusion of this study confirms that Wordwall, as an evaluation medium for fruit, related material in Class 1D at MIN 2 Sumenep, successfully increased students' motivation, engagement, and mastery of Arabic vocabulary. The high percentage of positive responses (78.6 - 92.9%), and an overall efficiency improvement of approximately 83% indicate that using Wordwall is not only enjoyable but also highly effective in improving learning outcomes. From a theoretical standpoint, these findings reinforce both the cognitive-multimedia and dual-coding frameworks, while also highlighting the crucial roles of Vygotskyan scaffolding and randomization mechanisms in creating a fair and interactive learning experience. Practically, this study offers an interactive evaluation model for MI teachers, comprising interactive item design, random name selection with a spin wheel, and teacher guidance to minimize technical obstacles, that can be adopted and adapted across a variety of learning contexts.

The study's strength lies in its comprehensive quantitative approach, which combined response-frequency data, effectiveness analysis, and pre-post statistical testing to verify Wordwall's impact. However, its scope was limited by its focus on a single class, a single topic, and the use of one teacher-operated laptop, which restricts the generalizability of the results. Long-term retention and the use of Wordwall log data for learning-pattern analysis were also not measured. Therefore, future research is recommended to involve more diverse samples and materials, to examine the durability of evaluation gains over longer periods, and to analyze Wordwall's log data for deeper insights. Through these steps,

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the potential of Wordwall as a gamified evaluation tool in Arabic language learning can be fully realized and further developed to support more engaging and effective instructional processes.

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DECLARATION

Contributor Role Taxonomy

Author 1 (Nur Aini): Conceptualization, Methodology, Formal Analysis, Investigation, Writing Original Draft, Visualization. Author 2 (Heni Listiana): Supervision.

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The authors declare that they have no financial or personal relationships that could be perceived to influence the work reported in this article.

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