

Needs Analysis of Mandarin Language Learning Assisted by the Wordwall Game Application on Students at a University in Padang

Ani Kariyati¹, Syahrul Ramadhan², Mukhaiyar³, Ridha Hasnul Ulya⁴

¹ Universitas Negeri Padang, Padang, Indonesia; anikariyati12@gmail.com

² Universitas Negeri Padang, Padang, Indonesia; syahrul_r@fbs.unp.ac.id

³ Universitas Negeri Padang, Padang, Indonesia; mukhaiyar@fbs.unp.ac.id

⁴ Universitas Negeri Padang, Padang, Indonesia; ridhasnulya@fbs.unp.ac.id

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ABSTRACT

In the digital era, the integration of technology in education is becoming increasingly crucial to enhance student engagement and learning outcomes. One prominent tool in the context of Mandarin language instruction is Wordwall, a game-based learning platform that offers various interactive activities. This article aims to elucidate and evaluate the benefits of using Wordwall in the context of Mandarin language teaching and learning. The research conducted is of a descriptive nature. The respondents for this study were 52 students at Padang State University enrolled in Mandarin language courses. The subjects of this research consisted of 52 UNP study program students (45 women and 7 men) aged between 19 and 20 years who were selected using the random sampling technique. Data collection utilized a questionnaire through Google Forms and assessments of quizzes on the Wordwall game. The research data were analyzed qualitatively by conducting validity tests, reliability tests, and classical assumption tests. The research findings conclude that learning with Wordwall makes the learning process easy, enjoyable, and assists students in understanding Mandarin. Furthermore, the implications of this research suggest that learning through the application of play techniques using the Wordwall game is highly suitable for beginner Mandarin language learners.

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Corresponding Author:

Ani Kariyati

Universitas Negeri Padang, Padang, Indonesia; anikariyati12@gmail.com

1. INTRODUCTION

Mandarin is one of the most widely spoken languages globally, attracting the attention of learners worldwide. Teaching Mandarin requires innovative and engaging approaches to motivate students (Binyan, 2019). In this context, Wordwall emerges as a promising tool to create an engaging and effective learning experience. Innovative educational technology has proven to provide opportunities for learners to engage and acquire essential skills, knowledge, and values.

The competencies that students are expected to master in Mandarin language learning include writing, reading, listening, and speaking (Hang, 2018). Traditional teaching methods, supported by

textbooks, instructor-led content delivery, and written or oral exercises, are considered outdated and monotonous, leading to a decline in student motivation (Ulya, 2022; Ulya, Gani, & Noveria, 2022; Ulya, 2022; Gani & Ulya, 2022; Asmawati, Ulya, & Jasril, 2023). With the advancement of technology and the internet, educators are rightfully leveraging online learning applications, such as the Wordwall game (Dahlström, 2019; Dubiner, 2017).

Wordwall game is a free online game-based E-learning platform used in teaching activities to enhance enthusiasm, motivation, and learning outcomes. According to Yan (2018), Wordwall game can improve learning outcomes and student motivation (Rachman, Oktoviandry, Putri, Ningsih, Ulya, Indriyani, & Juita, 2023). The Wordwall game is an online educational platform accessible through the web browser at www.wordwall.net and can be downloaded from the Play Store for smartphones, allowing students to access it directly or through a provided link (Dotutinggi, Zees, & Rahmat, 2023). With internet connectivity, both educators and students can access the Wordwall game from computers and smartphones anywhere and anytime for free, including all the advanced features available (Ulya, Noveria, Henanggil, Nurizzati, & Rachman, 2023; Afnita, Husein, & Ulya, 2023). Technology-based learning, such as computer-assisted learning, stimulates students to engage in learning and exercises due to animations, graphic illustrations, and colors that enhance realism (Erarslan, 2019; Bateman, 2021; Henanggil, Ulya, Sari, Rachman, Putri, Zuve, & Erlianti, 2023).

Wordwall game serves as a relevant supporting tool for teaching and learning activities at both secondary and tertiary education levels. The Wordwall game platform has two websites: www.wordwall.net, dedicated to instructors for designing online quizzes, discussions, or surveys, and www.wordwall.net, used by students to participate in game-based learning. The Wordwall.net application can be easily downloaded on smartphones (Yulianti & Ekohariadi, 2020).

This research focuses on utilizing online quizzes on the Wordwall game platform. The process of using Wordwall game as a learning or evaluation tool is straightforward. Before utilizing the application, instructors need to create an account. Once registered on the Wordwall game platform, instructors can design online games using the available features. During the learning session, students are directed to connect to the internet and access the Wordwall game platform. The main instructor device displays the pre-designed game questions, and students can choose the appropriate answers from their smartphones within a specified time frame.

The Wordwall game platform is a technological innovation that makes learning interactive and engaging, aiding instructors in evaluating students. Wordwall game is a choice among various online learning multimedia that makes the teaching and learning process enjoyable and non-monotonous. The platform prioritizes learning styles that involve active participation and competition among students (Suo Yan Mei, 2018; Trisnawati, 2013). Additionally, the online quiz model on the Wordwall game platform, with its competitive and collaborative capabilities, can influence the socio-emotional development of students (Boeriswati, Lustyantie, & Ulya, 2021; (Zuve, Atmazaki, Ardoni, Amir, Afnita, Ulya, & Henanggil, 2023).

The use of the Wordwall game not only helps students recall the given material but also fosters competition among students, challenging them to excel in the class (Yulianti and Ekohariadi, 2020). Online learning using digital media is a form of utilizing technology that facilitates both educators and learners in managing, delivering information, and providing a different and non-monotonous learning experience (Hermita, et al 2021; Alim, & Putra, 2023; Huong & Hung, 2021). Interactive technology-based learning media can spark new interests, increase motivation, and stimulate learning activities, even influencing students psychologically (Ghimire, 2022; Greene et al, 2021).

Educational games focus on a game that contains educational elements or values (Rohmatin, 2023). Game-based learning, involving learners in gameplay, generates a greater desire to continue the learning process compared to conventional learning (Christiansen & Koelzer, 2016; Coşkun, 2021; Hermita, et al, 2021). Through the Wordwall game application, researchers can provide tests that cover three basic Chinese language competencies: writing, reading, and listening. So that students can feel that studying through the wordwall game application does not make them bored in learning

Mandarin. Apart from that, students can get other benefits. Learning is more focused and must follow the rules set in playing one by one according to the material being studied.

2. METHODS

The researcher collected data and information using a questionnaire. The questionnaire was created using Google Forms and distributed online through WhatsApp social media groups. Participants involved in this study were students enrolled in Mandarin language courses at Padang State University, with a total of 52 respondents. The subjects of this research consisted of 52 UNP study program students (45 women and 7 men) aged between 19 and 20 years who were selected using the random sampling technique. The research data collection instrument consisted of 15 questionnaire statements related to students' perspectives on the utilization of the Wordwall game in Mandarin language learning.

In the questionnaire, respondents could choose answers ranging from strongly disagree, disagree, agree, and strongly agree. The score range for answers from strongly disagree to strongly agree was 1 to 4. The research procedure included: (1) conducting a preliminary study to identify field problems; (2) identifying the most influential factors in the implementation of the model; (3) determining research indicators; (4) creating a questionnaire containing positive and negative statements; (5) validating the questionnaire with experts; (6) revising the questionnaire; (7) distributing the questionnaire; (8) analyzing the questionnaire through preconditions validity and reliability tests, descriptive tests based on indicators, and (9) drawing conclusions. Data were analyzed by describing the findings obtained through the questionnaire and described using descriptive statistics (Kabalmay, 2002; Sudaryanto, 1993).

3. FINDINGS AND DISCUSSION

The first stage of the research focused on establishing the validity of the 15 statement items designed to assess the advantages of the Wordwall game application in learning Mandarin. Each statement item was carefully crafted to cover a comprehensive range of topics essential for Mandarin learners. These included fundamental aspects such as numerical material, names of years, months, and days, and family terminology, as well as more complex skills like reading pinyin vocabulary and Hanzi characters. The statements also aimed to evaluate the practical benefits of using the Wordwall application, such as its effectiveness in helping students arrange words into sentences and facilitating an overall easier learning experience. Additionally, the items explored how the application could enhance students' motivation and preference for learning Mandarin, train them in listening to tones, and provide a flexible learning environment.

The reliability test, which formed the second stage of the preliminary tests, was crucial in ensuring that the statement items consistently measured what they were intended to across different instances and participants. By administering these tests, the researchers could confirm that the data collected would be dependable and reflective of the actual advantages provided by the Wordwall application. This phase involved rigorous statistical analysis to verify the consistency and stability of the responses to each statement item. Ensuring reliability was essential to validate the overall findings of the study, thereby reinforcing the credibility of the conclusions drawn regarding the effectiveness of the Wordwall game application in enhancing Mandarin language proficiency. Further details of these findings, including specific statistical outcomes, are presented in Table 1, highlighting the robust nature of the preliminary tests conducted.

Table 1. Validity and Reliability Test Results

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR0001	43.2885	34.013	.628	.922
VAR0002	42.6346	35.687	.494	.926
VAR0003	42.4615	34.214	.648	.921
VAR0004	42.4423	35.075	.632	.922
VAR0005	42.6538	34.937	.522	.925
VAR0006	42.6154	34.045	.690	.920
VAR0007	42.6346	35.687	.538	.924
VAR0008	42.7885	34.405	.607	.923
VAR0009	42.6731	34.146	.657	.921
VAR00010	42.3077	32.570	.802	.916
VAR00011	42.3462	34.858	.601	.923
VAR00012	42.3846	33.614	.729	.919
VAR00013	42.4423	34.212	.677	.921
VAR00014	42.4808	33.117	.744	.918
VAR00015	42.4615	34.097	.763	.918

Based on Table 1, the results of the validity test indicate that all instruments or statement items produce a calculated r-value greater than the tabled r-value. The per-item validity test shows Pearson correlation results > 0.2732 , thus declared valid. Furthermore, the results of the reliability test show that all items on the instrument yield a Cronbach's Alpha value of 0.926, indicating reliability. Next, to fulfill the classical assumption test, normal data is required. The normality test was conducted using the One-Sample Kolmogorov-Smirnov test, as seen in Table 2 below.

Table 2. One-Sample Kolmogorov-Smirnov Test

		TOTAL
N		52
Normal Parameters ^a	Mean	45.6154
	Std. Deviation	6.25959
Most Extreme Differences	Absolute	.083
	Positive	.083
	Negative	-.074
Kolmogorov-Smirnov Z		.596
Asymp. Sig. (2-tailed)		.870

The results of the classical assumption test in the form of the normality test indicate a significance level of 0.870. The normality test using the One Sample Kolmogorov-Smirnov method yields a result > 0.05 , thus declared normally distributed. The next step is to conduct a factor analysis. This action is performed to test the correlation of predetermined variables and assess the suitability of a variable to be analyzed using factor analysis, specifically using the Kaiser-Meyer-Olkin (KMO) test, Bartlett's Test

of Sphericity, and Bartlett's Sphericity Test. The KMO and Bartlett tests in factor analysis are conducted to test the correlation between variables because the desired result in factor analysis is a high correlation between variables. If the KMO value is greater than 0.60 and the p-value (Sig) of the Bartlett test is less than 0.05, it indicates a high correlation between variables, and the process can proceed. Further details can be seen in Table 3.

Table 3. Results of Kaiser-Meyer-Olkin dan Bartlett Test Analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.812
Bartlett's Test of Sphericity	Approx. Chi-Square	492.160
	Df	105
	Sig.	.000

Table 3 presents the results of the KMO and Bartlett's test analysis, which yielded a KMO value of 0.812, exceeding the threshold of 0.60, and a Bartlett test p-value of 0.000, which is below the significance level of 0.05. These results indicate that the indicators are sufficiently correlated and suitable for further factor analysis. The high KMO value suggests that the sample size is adequate for the analysis, while the significant Bartlett's test confirms that the correlations between items are statistically significant. Following this, a descriptive overview of students' perceptions of Mandarin language learning facilitated by the Wordwall game is provided. This overview, detailed in Table 4, breaks down the responses for each indicator or component, offering insights into specific areas such as the perceived difficulty of Mandarin, the effectiveness of numerical and vocabulary exercises, and the overall impact of Wordwall on language proficiency and learner motivation.

Table 4. Descriptive Test Analysis Results

Num.	Statements	Respondent's Answer			
		SS	S	KS	TS
1	The fact that Mandarin is quite challenging;	1,2	59,6	30,8	8,4
2	Numerical material;	11,5	76,9	9,6	2
3	Year names material;	26,9	61,5	11,5	0
4	Month names material;	23,1	71,2	5,7	0
5	Day names material;	17,3	61,5	21,2	0
6	Family term material	17,3	65,4	17,3	0
7	How to read pinyin vocabulary;	11,5	75	13,5	1
8	How to read Hanzi characters;	7,7	71,2	17,3	3,8
9	Arranging words into sentences;	15,4	63,5	21,2	0
10	Wordwall helps facilitate learning Mandarin;	40,4	51,9	6	2,7
11	Prefer learning Mandarin;	32,7	61,5	5,8	0
12	Trained in listening to tones;	32,7	57,7	9,6	0
13	More flexible;	25	69,2	10	5,8
14	Tone/material aspect; and	26,9	61,5	9,6	1
15	Language proficiency	23,1	69,2	7,7	0
	Average (%)	20,85	65,12	11,86	1,17

The results of the descriptive statistical processing in Table 4 above indicate that respondents or students strongly agree that the Wordwall game application facilitates and enhances Mandarin language learning, with an achievement of 40.4%. Based on the data analysis above, it can be explained that students have improved abilities and interest after playing the Wordwall game in

studying Mandarin language course materials. Therefore, these findings indicate and reinforce that Wordwall game can facilitate students in learning Mandarin.

Discussion

Wordwall is a game-based learning platform that offers various types of games and activities that can be customized to teach vocabulary, grammar, and speaking skills. With a user-friendly interface, Wordwall enables teachers to easily create quiz games, word puzzles, and other activities. Wordwall, which translates to "word wall," is a systematically arranged collection of words displayed using large letters attached to the classroom wall or other large-sized media within the classroom (Mayang, 2012).

In this study, the researcher utilized Mandarin consonants as keywords and organized them into specific themes aligned with the curriculum, writing them in large Mandarin characters. The use of Wordwall in Mandarin language teaching can enhance student motivation. Interactive games and activities provide elements of healthy competition and instant rewards, creating a fun and challenging learning environment. This can stimulate active student participation, subsequently improving information retention.

Wordwall facilitates independent learning by providing resources accessible to students outside the classroom (Purba, 2019). Teachers can create online quizzes, flashcards, and other interactive activities that students can access anytime and anywhere. This grants flexibility to students to learn at their own pace. Through various word games and visual quizzes, Wordwall helps students reinforce and expand their Mandarin vocabulary. Structured repetition through games allows students to better remember vocabulary, making learning more effective and engaging.

Wordwall doesn't solely focus on the passive aspects of learning but also provides opportunities to enhance speaking skills (Darmaningrat, 2018). Activities such as word games and role-playing games allow students to practice speaking in a fun and supportive context. The Wordwall platform enables teachers to track student progress through formative assessment features. This provides insights to teachers about areas that may need further attention and allows for better instructional adjustments, as seen in Figure 1 below.

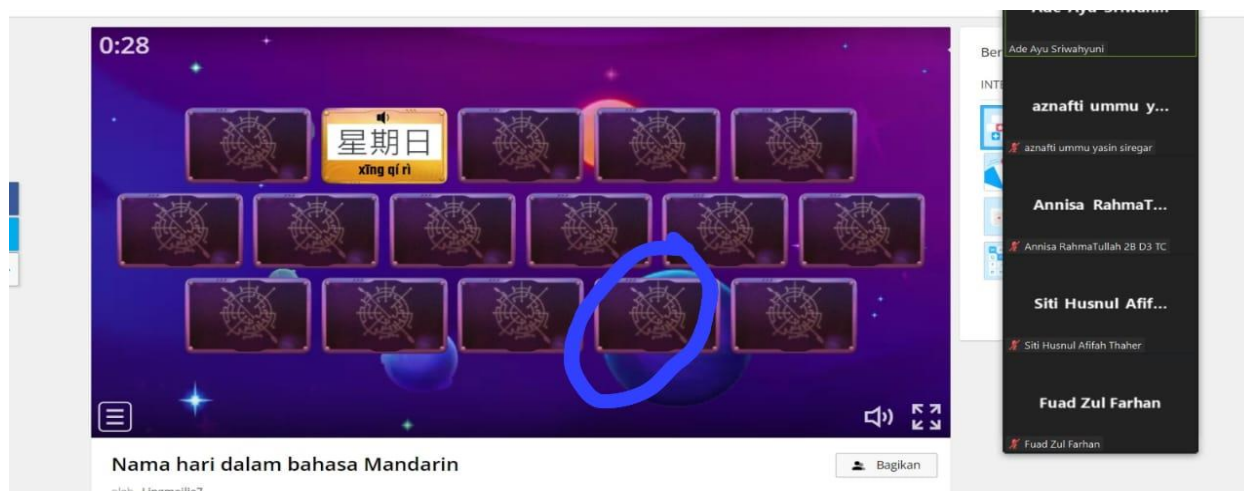


Figure 1. View during Zoom class of students actively participating in the wordwall game

The quiz models designed are diverse and undoubtedly engaging, as they contain clear explanations that facilitate students in recalling the taught material. With game-based learning methods like Wordwall, it is highly suitable for the applied online learning, making the learning atmosphere more accessible and enjoyable. Wordwall can adapt the quiz models created with online Mandarin language teaching materials by providing facilities to design quiz models freely. The Wordwall page can be accessed at <https://wordwall.net/enus/community/classroom>, where teachers need to register on the page to obtain an account and then can design the desired game models. The

patterns available on the Wordwall game allow researchers to choose multiple-choice patterns, match Hanzi characters with Pinyin and their sounds, and arrange vocabulary into sentences. Additionally, images or audio can be added to each question or answer (Guo & Qiu, 2018; Gutiérrez-Martín, et al, 2022; Guo, 2021).

In a single game, a teacher can convey or assess various language aspects such as listening, reading, and writing. Once the Wordwall game is completed, the player's scores are automatically saved on the Wordwall page, and the rankings can be easily viewed by typing the player's name on the scoreboard. This feature not only motivates students through friendly competition but also allows teachers to track progress and identify areas needing improvement. Additionally, Wordwall can be used for delivering course materials, making it a versatile tool for educators. It supports online learning activities in Mandarin language courses, providing interactive and engaging ways to reinforce vocabulary, grammar, and pronunciation (Shu Hang, 2018). This flexibility helps create a dynamic learning environment, enabling students to practice and improve their language skills outside of traditional classroom settings.

4. CONCLUSION

The use of the Wordwall game in teaching Mandarin brings several significant benefits, ranging from increased student motivation and participation to the strengthening of speaking skills and vocabulary mastery. With continually advancing technology, the integration of game-based learning tools like Wordwall can be key to creating a more engaging, effective, and useful Mandarin language learning experience. The implementation of the Wordwall game during online learning is highly suitable as an E-learning tool for Mandarin language learning, making learning activities interactive, easy, and enjoyable, and helping students understand Mandarin. Additionally, the use of the Wordwall game facilitates instructors in monitoring student learning outcomes, providing immediate feedback, and tailoring instruction to meet students' needs. Game-based learning media with the Wordwall application is highly appropriate for beginner Mandarin language learners.

However, this research has some limitations. The study's sample size may not be representative of all Mandarin learners, potentially limiting the generalizability of the findings. Additionally, the focus was primarily on beginner learners, so the effectiveness of Wordwall for more advanced students remains unclear. Future research could address these limitations by including a larger and more diverse sample and exploring the use of Wordwall for intermediate and advanced Mandarin learners. Moreover, investigating long-term impacts on language retention and proficiency would provide deeper insights into the sustained benefits of game-based learning in Mandarin education.

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