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GAMIFIED ENGLISH LEARNING AND STUDENTS' SPIRITUAL LEARNING BEHAVIOR: ROLES OF WAYGROUND USE, ENJOYMENT, AND INTEREST

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Abstract: Learning success in gamification era is no longer determined solely by technology, but also by crisis or strength of students' spiritual learning behavior. This study examines students' moral-spiritual learning behavior in digital English learning by investigating the effects of Wayground use and Perceived Ease of Use (PEOU), with learning enjoyment and student interest as mediating variables. Although gamified digital platforms have been widely implemented in English language instruction, maintaining students' consistent and value-oriented learning behavior remains challenging, particularly in vocational education contexts. This study employed a quantitative cross-sectional design using Structural Equation Modeling (SEM). Data were collected through a structured questionnaire administered to one hundred and

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fifty Indonesian vocational high school students who had experience using Wayground or Quizizz. The findings indicate that Wayground use significantly influences learning enjoyment, student interest, and moral-spiritual learning behavior. In contrast, PEOU does not directly affect moral-spiritual learning behavior, although it significantly predicts learning enjoyment. The results also demonstrate that learning enjoyment and student interest mediate the relationship between Wayground use and moral-spiritual learning behavior. These findings suggest that successful digital English learning is shaped not only by technological usability but also by students' emotional engagement and internalized values. This study highlights the importance of affective factors in strengthening students' moral-spiritual learning behavior in gamified English learning environments.

Keywords: *Wayground use; perceived ease of use; enjoyment; interest; moral-spiritual learning behavior*

INTRODUCTION

Recent developments in digital learning technology have significantly transformed English language instruction, particularly through the integration of gamified platforms such as Wayground and Quizizz. These platforms are widely recognized for their ability to increase students' motivation, participation, enjoyment, and engagement during learning activities by providing interactive tasks, instant feedback, and competitive learning experiences (Huang & Hew, 2022; Cakiroglu & Kokoc, 2021; Wang & Tahir, 2020; Lin et al., 2020). In EFL contexts, previous studies have also reported that gamified digital learning can improve students' vocabulary mastery, grammar understanding, reading comprehension, and behavioral engagement while simultaneously promoting value-oriented and moral-spiritual learning behaviors through meaningful and feedback-rich activities (Hasby et al., 2021; Aco et al., 2025; Wahyuni & Rahmawati, 2024).

Despite these benefits, the effectiveness of gamified learning platforms is not always sustainable over time. Several studies indicate that students' interest, focus, and participation may gradually decline once the novelty of digital game-based activities diminishes, particularly in online

and vocational education settings where maintaining consistent learning behavior remains challenging (Fitria, 2022; Susanti et al., 2023; Sun & Chen, 2021; Adedoyin & Soykan, 2020). Although digital learning environments provide opportunities for practicing communication, vocabulary, grammar, and comprehension through interactive activities, many learners continue to experience fluctuating motivation, limited self-regulation, and inconsistent participation during online learning (Zhao & Chen, 2020; Barrot, 2021). These findings suggest that access to technology alone is insufficient to ensure positive learning behavior, highlighting the importance of examining psychological and pedagogical factors that influence students' engagement and behavioral consistency.

One important factor associated with successful digital learning implementation is Perceived Ease of Use (PEOU), which is rooted in the Technology Acceptance Model (Davis, 1989). PEOU explains that students are more likely to adopt and actively engage with digital learning systems when the platforms are easy to understand and operate. Previous studies have demonstrated that user-friendly digital platforms positively influence students' satisfaction, participation, and learning outcomes in online learning environments (Wong et al., 2013; Maharani et al., 2022; Zulherman et al., 2023; Sari & Liu, 2023). Therefore, the effectiveness of gamified English learning depends not only on technological features but also on students' perceptions of accessibility and usability during the learning process.

In addition to technological factors, emotional and motivational aspects such as learning enjoyment and student interest also play a significant role in shaping students' learning behavior in digital English learning environments. Based on Self-Determination theory (Deci & Ryan, 2000), students tend to demonstrate stronger motivation when learning activities provide enjoyment, satisfaction, and personal meaning. Previous research has further shown that enjoyment and interest strengthen students' participation, persistence, curiosity, and communication in technology-enhanced learning contexts (Dewaele & MacIntyre, 2019; Abdullah et al., 2022; An & Shin, 2023). Interactive platforms such as Wayground may support these emotional processes through feedback-rich and problem-solving-based activities that enhance students' attention and enthusiasm in English learning (Ainley & Hidi, 2021; Mazer et al.,

2022). Furthermore, learning behavior in digital environments is influenced not only by technological interaction but also by moral-spiritual values such as discipline, responsibility, honesty, and self-control, which contribute to stronger participation and self-management during learning activities (Suyono & Hariyanto, 2020; Maulida & Rahmawati, 2022; Berkowitz & Bier, 2014). In line with constructivist learning theory (Piaget, 1976; Vygotsky, 1978), interactive digital learning environments encourage students to actively construct knowledge, although their implementation may still be constrained by teachers' limited digital competence and technology integration skills (Handayani et al., 2023).

Although previous studies have examined digital learning engagement, most have focused either on technological predictors, such as perceived usefulness and ease of use within TAM-based models, or on affective-motivational variables, such as enjoyment and interest, without explicitly incorporating moral-spiritual outcomes in the same framework. Only a limited number of studies in English education have linked gamified or digital platforms to character- or value-based learning, and these typically treat moral-spiritual constructs descriptively rather than integrating them with technology acceptance and affective mediators in a single structural model. Consequently, a conceptual and empirical gap remains regarding how Wayground use and perceived ease of use, together with learning enjoyment and student interest, jointly relate to students moral-spiritual learning behavior in digital English learning contexts. This gap is addressed in the present study by testing an integrative model that connects these technological, emotional, and value-oriented factors. Thus, this study was guided by the following questions:

1. Does Wayground use significantly influence students' learning behavior in English?
2. Does the perceived ease of use of Wayground significantly affect students' behavior in English learning?
3. Do learning enjoyment and student interest mediate the relationship between Wayground use, perceived ease of Use, and students' learning behavior?

METHOD

Research Design

This study employed a quantitative survey design to examine the relationships among Wayground use, Perceived Ease of Use (PEOU), learning enjoyment, student interest, and students' moral-spiritual learning behavior in English language learning. A quantitative approach was considered appropriate because it enables researchers to systematically test hypotheses and investigate relationships among variables (Creswell & Creswell, 2018). The study was grounded in the Technology Acceptance Model (Davis, 1989), which explains that users' behavioral intentions and actions toward technology are influenced by their perceptions of ease of use and usefulness. This model has been widely applied in educational technology research to explain students' acceptance, engagement, and behavioral responses toward digital learning platforms (Teo, 2019; Al Emran et al., 2018). Therefore, TAM provided the conceptual framework for analyzing how Wayground use and PEOU influence students' moral-spiritual learning behavior through emotional and motivational factors such as learning enjoyment and student interest.

Participants and Sampling

This study involved one hundred and fifty vocational high school students from a vocational school Luwu Utara who had experience using Wayground in English classes. A purposive sampling technique was employed to ensure that all participants had used Wayground for at least one academic semester. Purposive sampling is considered appropriate when researchers select participants who possess specific characteristics and relevant experiences related to the research objectives (Etika et al., 2016). In addition, the sample size met the requirements for Structural Equation Modeling (SEM), as recommended by Hair et al. (2021) that the minimum number of respondents should be at least five to ten times the number of observed variables to ensure adequate data analysis.

Of the total participants, eighty-four were female and sixty-six were male. Most respondents were Grade 10 students, while the remaining participants were Grade 11 students. Regarding experience with digital learning platforms, sixty-seven students reported having one to two years of experience using Wayground or Quizizz, whereas eighty-three students

had used the platforms for more than three years. These demographic characteristics indicate that the majority of participants had substantial prior exposure to digital English learning platforms, providing an appropriate basis for the subsequent analysis.

Table 1.
Respondents' demographics

Demographic Item	Frequency	Percentage (%)
Gender		
Male	66	44
Female	84	56
Grade		
Grade 10	134	89.3
Grade 11	16	10.7
Duration of Wayground Use		
1–2 years	67	44.7
More than 3 years	83	55.3

Data Collection Instruments

The primary instrument used in this study was a structured questionnaire adapted from previously validated instruments related to technology acceptance, learning enjoyment, student interest, and students' learning behavior (Hair et al., 2021). All constructs were measured using a five-point Likert scale ranging from strongly disagree to strongly agree. The questionnaire items were translated and linguistically adjusted to fit the Indonesian vocational EFL context, while several items were modified to reflect moral-spiritual dimensions such as honesty, discipline, responsibility, and self-regulation. Wayground use, PEOU, learning enjoyment, student interest, and moral-spiritual learning behavior were each measured using five items adapted from relevant previous studies. To ensure content validity and contextual relevance, the questionnaire was carefully reviewed and revised before administration.

Data Collection Procedures

Data were collected through a self-administered online questionnaire distributed via Google Forms. Prior to the main survey, a

pilot test involving twenty students was conducted to examine the clarity, comprehensibility, and reliability of the questionnaire items. Based on the pilot feedback, several minor revisions were made to improve the wording and overall readability of the instrument. After the revision process, the final questionnaire was distributed to the selected participants from the two vocational high schools. Participants completed the questionnaire voluntarily based on their experiences using Wayground in English learning activities.

Data Analysis

All constructs in this research were assessed using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The measurement items were adapted and modified from previous empirical studies to maintain both content validity and contextual relevance to English language learning. Specifically, the original English items were translated and linguistically adjusted to fit the Indonesian vocational EFL context, some wording was simplified to match students' proficiency levels, and a small number of items were added or removed to better reflect moral-spiritual dimensions such as honesty, discipline, and self-regulation. In total, Wayground use was measured with five items capturing frequency of use, perceived usefulness for English tasks, and perceived interactivity; perceived ease of use comprised five items assessing clarity of instructions, ease of navigation, and effort required to operate the platform; learning enjoyment was measured with five items reflecting feelings of fun, interest, and satisfaction during digital English activities; student interest consisted of five items related to sustained curiosity, willingness to continue learning, and personal value attached to English; and moral-spiritual learning behavior was represented by five items covering honesty in completing tasks, discipline in meeting deadlines, self-regulation during online activities, and responsibility toward peers and teachers.

The measurement items for Wayground use were adapted from Lampropoulos and Sidiropoulos (2024) and Hew and Cheung (2020). Items for Perceived Ease of Use were adapted from Teo (2021) and Ho Thao, et al. (2020). The items for learning enjoyment were adapted from Huang and Liu (2024) and Meyer and Turner (2006). The indicators for student interest were adapted from Prismastami (2024) and Hidi and

Renninger (2016). Students' behavior was adapted from Maulida and Rachmawati (2022) and Suyono and Hariyanto (2020). To ensure clarity and consistency, the questionnaire was carefully reviewed and adjusted to fit the current research context. All measurement items for each construct are listed in the Appendix.

Based on these instruments, the proposed model of research illustrates the relationships among the variables, as shown in Figure 1, where Wayground Use (X_1) and PEOU (X_2) directly affect Learning Enjoyment (Z_1), which in turn influences Student Interest (Z_2) and ultimately leads to higher moral-spiritual learning behavior (Y). The model assumes both direct and indirect effects among the variables, emphasizing the mediating roles of enjoyment and interest.

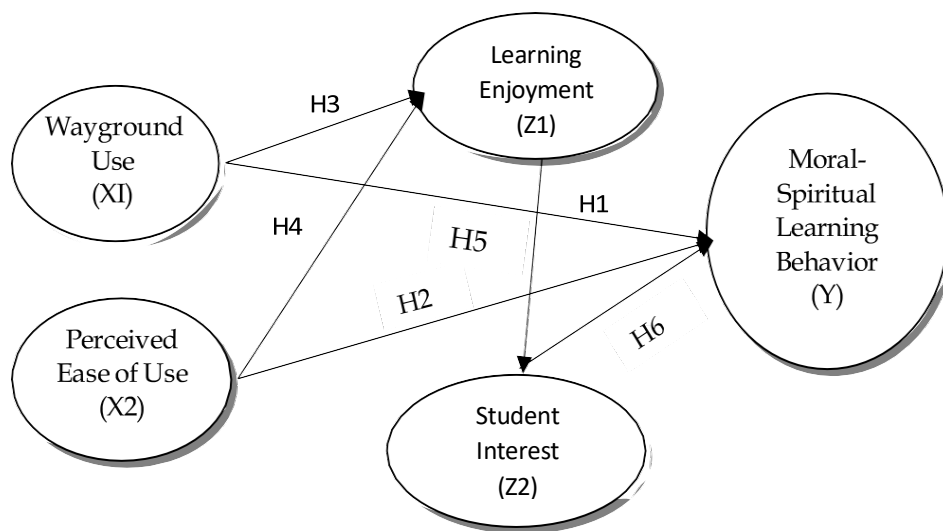


Figure 1. Research Model

The following six hypotheses (H_1 – H_6) were formulated based on the research model:

- H_1 : Wayground Use (X_1) positively and significantly affects Student Moral-Spiritual Learning Behavior (Y)
- H_2 : Perceived Ease of Use (X_2) positively and significantly affects Student Moral-Spiritual Learning Behavior
- H_3 : Wayground Use (X_1) positively and significantly affects Learning Enjoyment (Z_1).
- H_4 : Perceived Ease of Use (X_2) positively and significantly affects

Learning Enjoyment (Z_1).

H5: Learning Enjoyment (Z_1) positively and significantly affects Student Interest (Z_2).

H6: Student Interest (Z_2) positively and significantly affects student moral-spiritual learning behavior (Y).

This research reflects an integrative model combining technology acceptance and affective learning constructs, in which learners' emotional experiences serve as a bridge between system usability and academic achievement.

Ethical considerations

This study adhered to ethical research standards. Participants were informed about the purpose of the study, provided informed consent, and participated voluntarily, while their confidentiality and anonymity were strictly maintained.

FINDINGS

Preliminary Analysis

Table 2 presents the result of correlation matrix. In this research, WU refers to Wayground Use, PEOU stands for Perceived Ease of Use, ENJ represents Enjoyment, INT indicates Interest, MSLB refers to Moral-Spiritual Learning Behavior, and SD denotes Standard Deviation.

Table 2.

The results of correlation matrix for measurement scales

Construct	Mean	SD	WU	PEOU	ENJ	INT	MSLB
WU	4.2520	.63391	1.00				
PEOU	4.3147	.64729	0.799**	1.00			
ENJ	4.2840	.68982	0.722**	0.734**	1.00		
INT	4.3213	.56611	0.679**	0.681**	0.711**	1.00	
MSLB	4.3893	.61993	0.654**	0.614**	0.712**	0.650**	1.00

Pearson correlation analysis revealed moderate to strong relationships among the study variables. The mean scores for all constructs were above 4.00, while the standard deviation values were below 1.00, indicating relatively high and consistent responses among participants. Several variables demonstrated moderately high correlations, particularly

between Perceived Ease of Use (PEOU) and Wayground Use ($r = .799$), as well as between Learning Enjoyment and Student Interest ($r = .711$), suggesting close conceptual relationships among these constructs. Nevertheless, discriminant validity assessment using the Fornell–Larcker criterion indicated that the square root of the Average Variance Extracted (AVE) for each construct exceeded the correlations with other constructs, confirming acceptable discriminant validity within the measurement model.

The diagonal values in Table 2 represent the correlations of each construct with itself (1.00), while the off-diagonal elements show the Pearson correlations among different constructs. The Average Variance Extracted (AVE) values and their square roots are reported separately in Table 3, and discriminant validity is evaluated using the Fornell–Larcker criterion by comparing the square root of each construct's AVE with its correlations with other constructs. Pearson's correlations are shown below the diagonal. Significant at *: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$

Measurement Model

Structural Equation Modeling (SEM) was employed to examine the proposed model and research hypotheses using a two-stage approach recommended by Byrne (2016) and Hair et al. (2018). In the first stage, Confirmatory Factor Analysis (CFA) was conducted to evaluate the reliability and validity of the measurement model. In the second stage, the structural model was assessed to examine the hypothesized relationships among the study variables.

As presented in Table 3, the standardized factor loadings ranged from 0.391 to 0.769. Most indicators demonstrated acceptable loading values, although several items showed relatively low loadings, particularly within the Student Interest construct. Composite Reliability (CR) values ranged from 0.76 to 0.85, indicating satisfactory internal consistency across the constructs. In addition, most Average Variance Extracted (AVE) values approached or exceeded the recommended threshold of 0.50, although the AVE value for Student Interest remained below the recommended criterion.

The overall fit indices of the CFA model indicated a marginal model fit, with GFI = 0.721, NFI = 0.617, CFI = 0.697, IFI = 0.702, and

RMSEA = 0.121. These results suggest that the measurement model did not fully satisfy the conventional SEM fit criteria.

Table 3.

Measurement model result

Construct	Indicator	Std. Loading	Square Multiple Correlation (SMC)	Composite Reliability (CR)	Average of Variance Extracted (AVE)
Wayground Use (X1)	X1.1	0.520	0.271		
	X1.2	0.637	0.406		
	X1.3	0.604	0.365		
	X1.4	0.736	0.542		
	X1.5	0.594	0.353	0.76	0.48
PEOU (X2)	X1.1	0.654	0.427		
	X2.2	0.686	0.471		
	X2.3	0.686	0.470		
	X2.4	0.667	0.444		
	X2.5	0.550	0.302	0.85	0.54
Enjoyment (Z1)	Z1.1	0.693	0.480		
	Z1.2	0.769	0.591		
	Z1.3	0.681	0.464		
	Z1.4	0.565	0.444		
	Z1.5	0.559	0.313	0.83	0.50
Interest (Z2)	Z2.1	0.539	0.291		
	Z2.2	0.391	0.153		
	Z2.3	0.508	0.258		
	Z2.4	0.638	0.407		
	Z2.5	0.540	0.292	0.76	0.39
Spiritual Behavior (Y)	Y.1	0.568	0.322		
	Y2	0.702	0.493		
	Y3	0.732	0.535		
	Y4	0.709	0.502		
	Y5	0.598	0.358	0.84	0.52

Note. Fit Statistics (N= 150)

$\chi^2/\text{df} = 269$, Goodness-of-Fit Index (GFI) = 0.721, Normed Fit Index (NFI) = 0.617, Comparative Fit Index (CFI) = 0.697, Incremental Fit Index (IFI) = 0.702, and Root Mean Square Error of Approximation (RMSEA) = 0.121.

Structural Model Analysis

Given the suboptimal fit of the measurement model, the structural results should be interpreted with caution and regarded as preliminary rather than conclusive findings. The estimates suggest that Wayground use is positively associated with learning enjoyment ($\beta = 0.661$), and perceived ease of use is also positively and significantly associated with enjoyment ($\beta = 0.558$). Learning enjoyment, in turn, exhibited a strong association with students' interest ($\beta = 0.912$), indicating a central motivational role within the model. In terms of behavioral outcomes, Wayground use showed a positive and significant direct association with moral-spiritual learning behavior ($\beta = 0.304$), whereas perceived ease of use did not demonstrate a significant direct association ($\beta = -0.075$), implying that usability alone may not directly shape students' moral-spiritual learning behavior. Students' interest was positively associated with moral-spiritual learning behavior ($\beta = 0.666$), suggesting a potential mediating role between digital learning experiences and behavioral development; however, all these paths should be viewed as tentative patterns pending validation with better-fitting models (see Table 4).

Table 4.

Structural Model Results

Hypothesis	Symbol	Independent Variable	Dependent Variable	Coefficient	Result
H1	γ_{11}	Wayground Use	Enjoyment	0.661***	Supported
H2	γ_{21}	PEOU	Enjoyment	0.558***	Supported
H3	γ_{31}	Enjoyment	Interest	0.912***	Supported
H4	β_{41}	Wayground Use	Moral-Spiritual Learning Behavior	0.304**	Supported
H5	β_{42}	PEOU	Moral-Spiritual Learning Behavior	-0.075	Not Supported

H6	β_{43}	Interest	Moral-Spiritual Learning Behavior	0.666***	Supported
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To provide a clearer visualization of the tested relationship, Figure 2 illustrates the structural model used in this study.

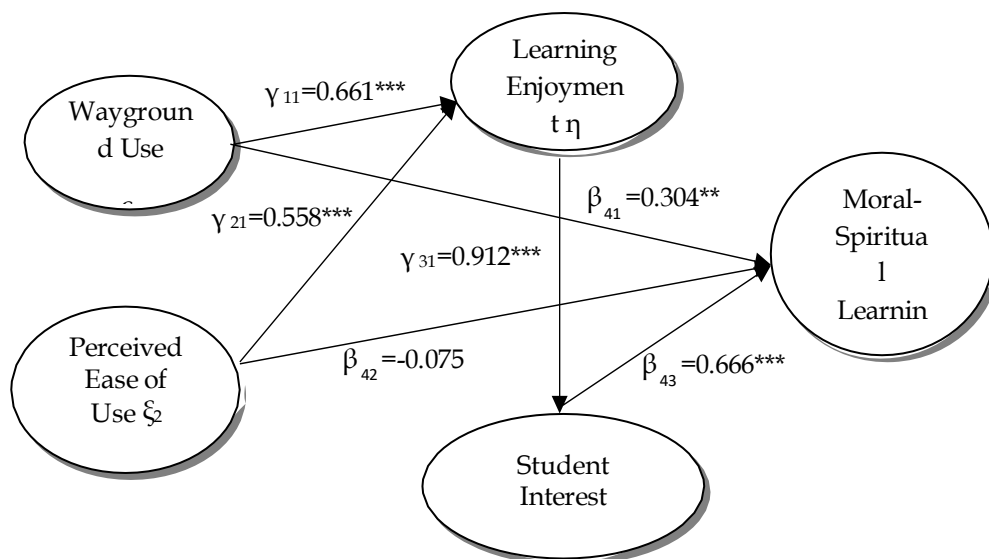


Figure 2. Structural Model Result

DISCUSSION

This study aimed to investigate the impact of Wayground usage and perceived ease of use on students' moral-spiritual learning behavior, both directly and indirectly via enjoyment and interest. The findings indicate that Wayground utilization is positively associated with students' enjoyment, implying that gamified learning elements, including real-time feedback and interactive activities, may be linked to greater positive emotional involvement. This finding corresponds with earlier research emphasizing the motivational advantages of gamified platforms in language acquisition contexts (Barrot, 2021; Bury, 2021). Similarly, perceived ease of use positively influenced satisfaction, suggesting that students are more inclined to experience favorable emotions when digital platforms are user-friendly and cognitively accessible. These findings provide partial and tentative support for the Technology Acceptance

Model, suggesting that usability may be linked to learners' emotional responses, although PEOU did not significantly predict moral-spiritual learning behavior, and the overall model fit was suboptimal (Teo, 2019).

Moreover, enjoyment is a significant predictor of students' interest, validating the theoretical assertion that positive learning emotions underpin enduring situational and individual motivations (Hidi & Renninger, 2019). This result demonstrates that enjoyment functions as a crucial emotional bridge that transforms fleeting engagement into a deep learning interest. This result suggests that enjoyment may play a bridging emotional role between fleeting engagement and deeper learning interest; however, this interpretation is tentative because the interest construct showed limited convergent validity ($AVE = 0.39$), and mediation was inferred conceptually rather than formally tested. This process is crucial for moral-spiritual learning behavior, as internalized interest is more likely to cultivate enduring value-driven behavior.

Concerning moral-spiritual learning behavior, Wayground usage showed a positive association with self-reported moral-spiritual learning behavior, suggesting that gamified digital platforms may be linked to value-oriented learning when thoughtfully designed and implemented. However, because moral-spiritual learning behavior was measured through students' self-reports rather than direct observation, these findings should be interpreted cautiously because of the possibility of response and social desirability bias. Nonetheless, the perceived ease of use does not exhibit a strong direct impact on moral-spiritual learning behavior. This insignificant finding indicates that usability alone is inadequate to influence students' moral and spiritual behavior. Moral-spiritual behavior seems to be shaped more significantly by affective and motivational factors than by strictly technical aspects. This result supports the view that value-based learning requires emotional engagement and substantial learning experiences rather than mere technological convenience (Deci & Ryan, 2020).

The mediation study indicated that enjoyment and interest significantly mediated the relationship between digital platform usage and moral-spiritual learning behavior. The indirect findings indicate that Wayground improves students' moral-spiritual behavior by fostering enjoyable learning experiences that stimulate inquiry. This discovery

highlights the importance of emotional pathways in transforming digital learning activities into meaningful behavioral outcomes. Prior studies have recognized similar trends, highlighting enjoyment and interest as essential psychological drivers of sustained learning behaviors (Dewaele & MacIntyre, 2019; Ainley & Hidi, 2021).

CONCLUSION

This study demonstrates that Wayground use contributes to students' moral-spiritual learning behavior primarily through learning enjoyment and student interest. The findings suggest that emotional and motivational factors play a more important role than technological ease alone in shaping students' responsible, disciplined, and consistent learning behavior in digital English learning environments. In addition, the study provides preliminary support for extending the Technology Acceptance Model beyond technological usability by incorporating affective and value-oriented dimensions. The significant roles of enjoyment and interest also reinforce Self-Determination Theory and interest development theory, emphasizing that meaningful learning experiences can strengthen students' intrinsic motivation and internalized learning behavior.

Practically, the findings imply that English teachers and curriculum developers should focus not only on the usability of digital platforms but also on designing interactive, enjoyable, and value-oriented learning activities that sustain students' engagement and moral awareness. Nevertheless, this study has several limitations, including its reliance on self-reported data and the use of participants from a limited educational context, which may restrict the generalizability of the findings. Therefore, future research is recommended to involve broader educational settings, longitudinal or mixed-method designs, and additional variables such as teacher support and school culture to obtain a deeper understanding of moral-spiritual learning behavior in digital learning environments.

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DECLARATION OF AI AND AI-ASSISTED TECHNOLOGIES

The author declares that artificial intelligence (AI)-assisted tools were used in the preparation of this manuscript. ChatGPT and Claude.ai were employed to support idea development and enhance the clarity of academic writing, while QuillBot and DeepL were used for language editing, paraphrasing, and translation to improve readability and linguistic accuracy.

All substantive intellectual content, data analysis, interpretation of findings, and final decisions remain solely the responsibility of the author. The use of AI tools did not replace academic judgment, originality, or scholarly integrity. The author has carefully reviewed and verified the accuracy and originality of the final manuscript.

REFERENCES

- Abdullah, M. Y., Hussin, S., & Ismail, K. (2022). The effect of emotional engagement on ESL learners' participation in online classes. *Education and Information Technologies*, 27(3), 3451–3470. <https://doi.org/10.1007/s10639-021-10734-3>
- Aco, D., Liu, M. C., & Sari, H. (2025). The shifting role of the teacher perceptions and practices with AI in the EFL classroom. *Jurnal Riset dan Inovasi Pembelajaran*, 5(3), 1073–1093. <https://doi.org/10.51574/jrip.v5i3.3994>
- Adedoyin, O. B., & Soykan, E. (2020). COVID-19 pandemic and online learning: The challenges and opportunities. *Interactive Learning Environments*. <https://doi.org/10.1080/10494820.2020.1813180>
- Ainley, M., & Hidi, S. (2021). Interest and enjoyment in learning. *Educational Psychologist*, 56(2), 78–93. <https://doi.org/10.1080/00461520.2021.1872378>
- Ahmad, N., Zainuddin, Z., & Keumala, N. (2022). Gamified vocabulary learning in EFL contexts. *Computer Assisted Language Learning Electronic Journal*, 23(2), 134–150.
- Al-Emran, M., Mezhuyev, V., & Kamaludin, A. (2018). Technology acceptance model in M-learning: A systematic review. *Computers & Education*, 125, 389–412. <https://doi.org/10.1016/j.compedu.2018.06.008>

- An, Y., & Shin, S. (2023). Gamified learning and student motivation in digital environments. *Journal of Computer Assisted Learning*, 39(1), 121–134. <https://doi.org/10.1111/jcal.12685>
- Barrot, J. S. (2021). Effects of online learning on students' academic performance during COVID-19. *Educational Technology Research and Development*, 69, 611–624. <https://doi.org/10.1007/s11423-021-09975-5>
- Berkowitz, M. W., & Bier, M. C. (2014). Research-based character education. *Journal of Character Education*, 10(1), 21–36.
- Bury, S. (2021). Students' motivation and engagement in gamified language learning. *Language Learning & Technology*, 25(2), 1–22. <https://doi.org/10.10125/73446>
- Cakiroglu, Ü., & Kokoc, M. (2021). Game-based learning for English grammar. *Interactive Learning Environments*, 29(4), 579–594. <https://doi.org/10.1080/10494820.2019.1709219>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of IT. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Deci, E. L., & Ryan, R. M. (2020). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Publications.
- Dewaele, J.-M., & MacIntyre, P. D. (2019). Foreign language enjoyment and anxiety: The right and left feet of FL learning. *Studies in Second Language Learning and Teaching*, 9(1), 19–45. <https://doi.org/10.14746/ssllt.2019.9.1.2>
- Etika, I., et al. (2016). Purposive sampling in educational research. *Journal of Educational Research and Evaluation*, 5(2), 85–92.
- Fitria, T. N. (2022). The effect of gamified learning on students' English achievement. *Journal of English Education and Technology*, 3(1), 44–52.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2021). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Handayani, S., et al. (2023). Teachers' digital competence in online learning. *Journal of Educational Technology & Society*, 26(1), 100–112.
- Hasby, M., Wahyono, E., & Supraba, A. (2021). EFL students' perception toward online classes. *Ethical Lingua: Journal of Language Teaching and Literature*, 8(1), 181–185.
- Hidi, S., & Renninger, K. A. (2019). The four-phase model of interest. *Educational Psychologist*, 54(2), 86–98. <https://doi.org/10.1080/00461520.2019.1580611>

- Ho, N. T. T., Sivapalan, S., Pham, H. H., Nguyen, L. T. M., Pham, A. T. V., & Dinh, H. V. (2021). Students' adoption of e-learning in emergency situation: The case of a Vietnamese university during COVID-19. *Interactive Technology and Smart Education*, 18(2), 246–269. <https://doi.org/10.1108/ITSE-08-2020-0164>
- Huang, R. H., & Hew, K. F. (2022). Implementing gamified learning: A meta-analysis. *Educational Research Review*, 35, 100433. <https://doi.org/10.1016/j.edurev.2021.100433>
- Lin, H., et al. (2020). Game-based learning for L2 vocabulary. *Educational Technology Research and Development*, 68, 2615–2634. <https://doi.org/10.1007/s11423-020-09781-7>
- Lampropoulos, G., & Sidiropoulos, A. (2024). Impact of gamification on students' learning outcomes and academic performance: A longitudinal study comparing online, traditional, and gamified learning. *Education Science*, 14(4), 367. <https://doi.org/10.3390/educsci14040367>
- Maulida, Y., & Rachmawati, D. (2022). The role of spiritual attitudes in online learning persistence. *Jurnal Pendidikan Karakter*, 12(1), 45–58. <https://doi.org/10.21831/jpk.v12i1.45589>
- Maharani, D., Usman, H., & Marsofiyati. (2022). Students' acceptance of mobile learning using TAM. *Journal of e-Learning and Knowledge Society*, 18(1), 13–25.
- Mesterjon, et al. (2024). Effectiveness of the use of Quizizz media on students' learning interest. *Futurity Education*, 4(2), 245–262. <https://doi.org/10.57125/FED.2024.06.25.13>
- Meyer, D. K., & Turner, J. C. (2006). Re-conceptualizing emotion and motivation. *Educational Psychology Review*, 18(4), 377–390. <https://doi.org/10.1007/s10648-006-9032-1>
- Pekrun, R., et al. (2002). Academic emotions in students' self-regulation. *Educational Psychologist*, 37(2), 91–105.
- Permana, D., & Santoso, L. (2022). Game-based learning in Indonesian ELT classrooms. *TESOL International Journal*, 17(2), 122–135.
- Piaget, J. (1976). *The grasp of consciousness*. Harvard University Press.
- Prismastami, R. J., & Insani, N. H. (2024). Investigating the impact of learning interest on student achievement in Javanese language courses. *Al-Islah: Journal of Education*, 16(4), 123–135.
- Sari, H., & Liu, M. (2023). Exploring e-learning success during the COVID-19 pandemic: Indonesian empirical study. *Journal name unclear*, 25*(4), 1225–1259. <https://doi.org/10.15516/cje.v25i4.4976>
- Sun, A., & Chen, X. (2021). Online learning engagement in pandemic settings. *Computers & Education*, 165, 104149. <https://doi.org/10.1016/j.compedu.2021.104149>

- Susanti, R., et al. (2023). Gamification and students' learning motivation. *Journal of Language Teaching and Research*, 14(1), 55–64.
- Suyono, S., & Hariyanto. (2020). *Belajar dan pembelajaran*. PT Remaja Rosdakarya.
- Teo, T. (2019). Students and teachers' acceptance of technology. *Interactive Learning Environments*, 27(4), 593–607.
<https://doi.org/10.1080/10494820.2018.1486869>
- Taufiqurohman, M., Nurihsan, J., & Rachmawati, Y. (2023). Interest as mediator in digital learning engagement. *Psychology and Education Journal*, 60(1), 223–236.
- Vygotsky, L. S. (1978). *Mind in society*. Harvard University Press.
- Wahyuni, S., & Rahmawati, T. (2024). Adaptive gamified English learning using Quizizz. *Jurnal Teknologi Pendidikan*, 26(1), 112–125.
- Wang, A. I., & Tahir, R. (2020). A systematic review of Kahoot!, Quizizz, and Quizlet. *Computers & Education*, 144, 103657.
<https://doi.org/10.1016/j.compedu.2019.103657>
- Wong, K. T., Osman, R., Goh, P. S. C., & Rahmat, M. (2013). Understanding student adoption of e-learning: TAM approach. *Australian Journal of Educational Technology*, 29(2), 303–318.
- Zainuddin, Z., & Keumala, N. (2021). Student enjoyment and engagement in blended English learning. *Journal of Language and Education*, 7(2), 30–46. <https://doi.org/10.17323/jle.2021.11612>
- Zhao, Y., & Chen, L. (2020). Learners' disengagement in digital learning. *Educational Technology Research and Development*, 68, 3561–3579.
<https://doi.org/10.1007/s11423-020-09822-6>
- Zulherman, I., Zain, A. N., & Sailin, S. N. (2023). Examining PEOU in mobile learning. *Heliyon*, 9(5), e15271.
<https://doi.org/10.1016/j.heliyon.2023.e15271>

Appendix 1. Items of questionnaire

A. Wayground Use

Developed based on Technology Acceptance Model (Davis, 1989) and adapted from Lampropoulos & Sidiropoulos (2024) and Hew & Cheung (2020).

This construct measures students' frequency, engagement, and functional use of Wayground in English learning activities.

1. I frequently use Wayground-based quizzes and activities during English learning sessions.
2. I actively participate in English tasks provided through Wayground rather than only completing them minimally.

3. I utilize Wayground feedback (scores, corrections, or explanations) to improve my English learning performance.
4. I prefer using Wayground because its interactive quiz features support my English practice.
5. I revisit Wayground activities outside classroom time to practice English independently.

B. Perceived Ease of Use

Developed based on Technology Acceptance Model (Davis, 1989) and adapted from Teo (2021) and Ho et al. (2020).

This construct measures students' perception of ease in using Wayground for English learning.

1. I find it easy to navigate Wayground features such as quizzes, assignments, and feedback sections.
2. I can understand how to complete English tasks on Wayground without confusion.
3. I do not need frequent assistance from teachers when using Wayground for English learning.
4. I feel confident answering English questions on Wayground using its interface and tools.
5. Completing English exercises on Wayground requires minimal effort compared to other learning platforms.

C. Learning Enjoyment

Developed based on Self-Determination Theory and engagement literature and adapted from Huang & Liu (2024) and Meyer & Turner (2006).

This construct measures students' emotional enjoyment during Wayground-based English learning activities.

1. I enjoy answering English quizzes on Wayground because of its interactive design.
2. I feel excited when new English activities or challenges are assigned through Wayground.
3. I experience positive emotions such as fun and enthusiasm while using Wayground for English learning.
4. The game-like features of Wayground make English learning more enjoyable for me.
5. I feel satisfied after completing English tasks on Wayground due to immediate feedback and scoring.

D. Student Interest

Developed based on Interest Development Theory (Hidi & Renninger, 2016) and adapted from Prismastami (2024).

This construct measures students' curiosity, attention, and sustained interest in Wayground-based English learning.

1. Wayground-based English tasks increase my curiosity to explore more learning materials.
2. I remain focused throughout English learning sessions when using Wayground activities.
3. I am motivated to complete all English quizzes and assignments provided in Wayground.
4. I voluntarily explore additional Wayground activities beyond those assigned by the teacher.
5. I persist in completing Wayground English tasks even when they are challenging.

E. Moral-Spiritual Learning Behavior

Adapted from Maulida & Rachmawati (2022) and Suyono & Hariyanto (2020).

This construct measures students' moral, ethical, and spiritual behavior during Wayground-based learning activities.

1. I complete Wayground English quizzes honestly without seeking unauthorized assistance.
2. I discipline myself to follow instructions and time limits during Wayground activities.
3. I avoid cheating in Wayground assessments because I believe it is ethically wrong.
4. I take responsibility for completing all assigned Wayground tasks on time.
5. I regulate my behavior during Wayground activities based on my personal moral and spiritual values.