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Students' Attitudes and Behavioral Intentions in Using Moodle for German Language Learning: A TAM-Based Study

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Abstract

This study aims to examine how how students in the German Language Education Program at Universitas Pendidikan Indonesia perceive and intend to use Moodle as a learning platform. A quantitative approach was employed, utilizing a survey based on the Technology Acceptance Model (TAM) to assess students' attitudes and behavioral intentions toward Moodle. The questionnaire assessed students' attitudes and behavioral intentions using a 4-point Likert scale, and the data were analyzed using Spearman's rho correlation. The findings revealed that students showed a generally positive attitude towards Moodle, with an average score of 3.62, indicating their recognition of the platform's utility and its potential to engage them in the learning process. Moodle features such as discussion forums, quizzes, and multimedia materials were identified as key contributors to enhancing the learning experience. Moreover, students demonstrated strong behavioral intentions to continue using Moodle, with an average score of 3.57. Spearman's rho analysis revealed a significant positive correlation between students' attitudes and their behavioral intentions ($r = 0.679$). These findings support the TAM assumption that individuals' attitudes significantly influence their willingness to adopt technology. While this study is limited to the German Language Education Program, the results offer valuable insights for optimizing technology-based learning platforms. Further qualitative research is suggested to gain deeper insights into students' learning experiences with Moodle.

Keywords: *Behavioral Intention, German Language Learning, Moodle, Student Attitude, Technology Acceptance Model,*

Introduction

Numerous facets of modern life rely heavily on technological advancements. Efficiency has been greatly enhanced as a result of the substantial simplification and acceleration of activities (Raja & Nagasubramani, 2018). The importance of technology in modern life is undeniable, as it has brought significant changes across various sectors, including education. The use of technology in education has resulted in more participatory and efficient learning methods, facilitating the teaching and learning process for both students and teachers. It enhances education by creating personalized learning experiences, improving engagement and motivation, and facilitating collaboration between students and teachers (Kathleen et al., 2016; Sultanova, 2024; Sumakul et al., 2024).

One of the most prominent forms of implementing technology in education is the Learning Management System (LMS). LMS allows for the production, distribution, administration, monitoring, reporting, and evaluation of educational materials that are accessible online (Mershad & Wakim, 2018; Permana, 2009). One of the most popular open-source e-learning systems is Moodle, which stands for Modular Object-Oriented Dynamic Learning Environment. It allows users to create a course website accessible only to registered students (Cole et al., 2008) and offers various features such as forums, quizzes, and resource sharing,

making online courses more engaging and interactive. The tool allows individual teachers to be more creative in designing customized teaching modules for students. The software, designed by Martin Dougiamas (http://dougiamas.com) at Curtin University, Australia, saves time with features such as randomly generated tests, questions with multiple possible answers, automated scoring systems and rubrics, and automated summative and formative feedback that is positive and motivating (Aljawarneh, 2020; Gamage et al., 2022; Nedeva, 2005; Rosato et al., 2007). Moodle also facilitates collaboration between students through online group assignments and interactive discussions, which is highly relevant in improving speaking, writing, and vocabulary acquisition in foreign languages (Brandl, 2005; Qaddumi & Smith, 2024).

This platform has been adopted by the German Language Education Study Program at Universitas Pendidikan Indonesia (UPI) since 2010, through a customized Moodle-based platform called Virtuelles Klassenzimmer (VKZ), accessible at https://vkz-jerman.upi.edu (Permatawati et al., 2020). VKZ stands out due to its specialization in supporting foreign language learning and its long-standing institutional implementation, currently serving hundreds of active users each semester. Its unique application in a foreign language context, with sustained integration into curriculum delivery, makes VKZ a significant case for study.

Previous studies have highlighted Moodle's role in enhancing foreign language learning by increasing student autonomy and engagement (Gulbinskienė et al., 2017; Oproiu, 2015), significantly improving students' writing skills over conventional in terms of learning language (Mujiono & Fatimah, 2022), and intensifying students' independent work with the flexibility of learning a foreign language outside of class hours (Anatolievna, 2018). In parallel, research has also examined how attitude and behavioral intention influence the adoption of technology in education (Hameed et al., 2022; Jung et al., 2020; Liao et al., 2018; Mailizar et al., 2021; Nasution, 2024). However, there is still a lack of targeted investigation on how these psychological factors influence Moodle use specifically in the context of German language education at the university level. Given the lack of in-depth studies on how students in the German Language Education Program engage with Moodle, there is a pressing need for research that explores students' perspectives and behavioral intentions. Understanding these factors is crucial for optimizing the use of Moodle and enhancing its effectiveness in language learning. Moreover, understanding the factors that motivate students to adopt and continue using Moodle can directly influence the success of curriculum delivery and educational outcomes in foreign language education.

This study aims to fill this gap by analyzing students' perceptions and interactions with the Moodle platform in the German Language Education Study Program at UPI. E-learning systems such as Moodle depend highly on how students use them (Sánchez & Hueros, 2010). Using the Technology Acceptance Model (TAM) as a theoretical framework, this research seeks to provide practical insights for optimizing e-learning platforms to enhance student engagement and competence in German language learning. Perceived utility (PU) and perceived ease of use (PEOU) are the two factors that impact users' attitude and behavior toward technology, according to TAM. These factors define the users' desire to interact with Moodle (Agarwal & Prasad, 1998; Chauhan, 2015; Davis, 1989b). PU refers to the belief that using Moodle enhances learning performance (Ibrahim et al., 2018; Salim et al., 2021), while PEOU reflects the perception that Moodle is easy to use and requires minimal effort (Dhingra & Mudgal, 2019; Mustafa & Garcia, 2021; Rafique et al., 2020). By applying TAM, this research focuses on students' attitudes and behavioral intentions toward using Moodle in German language education, with special emphasis on the VKZ platform. This study seeks to provide educators and educational institutions with information on optimizing Moodle to improve students' learning experiences in German language lectures by analyzing their attitudes and behavioral intentions.

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Furthermore, this study seeks to provide valuable insights to educators, administrators, and researchers by exploring the connection between technology adoption and language learning through the TAM framework.

The research was conducted in the German Language Education Study Program of Universitas Pendidikan Indonesia. This program was selected due to its established use of Moodle via VKZ, its focus on a non-English foreign language, and its relevance in exploring how LMS platforms can support the learning of structurally distinct languages such as German, which may present different pedagogical challenges compared to English. Quantitative data was gathered through a Google Form survey based on the TAM. The research subjects were first, second, and third-year students in the German Language Education Study Program. Data analysis was performed using correlation analysis to determine the relationship between the factors under consideration, such as students' attitude and behavioral intention to use Moodle in German language learning. This study will address and emphasize the following research questions: 1) How is the students' attitude toward the use of Moodle in German language education? 2) How is the students' behavioral intention toward the use of Moodle in German education? 3) How do students' attitudes correlate with their behavioral intentions to use Moodle in the context of German language education?

Method

Research Design

This study employed a quantitative approach with a survey design to explore the relationship between students' attitudes and behavioral intentions towards using Moodle in German language learning at Universitas Pendidikan Indonesia (UPI). A survey design was chosen to effectively collect data from a large number of respondents regarding their perceptions and intentions.

A correlational analysis approach was used to explore the relationship between students' attitudes towards Moodle and their behavioral intentions to use it. This approach was chosen as it measures the degree of relationship between changes in one variable and changes in other variables without requiring experimental manipulations. Correlational analysis allows us to understand how positive attitudes towards learning technology relate to students' behavioral intention, consistent to the theoretical framework of the Technology Acceptance Model (TAM).

Moreover, this approach offers flexibility for analyzing data from a large sample, as was done in this study with 246 respondents. It is also suitable for designing educational intervention such as improving Moodle features based on student attitudes. To maximize the accuracy of the results, Spearman's correlation method was used because the data did not follow a normal distribution, as confirmed by the normality test.

Participants

The population of this study consisted of all students of the German Language Education Study Program at UPI. A purposive sampling method was used to select 246 students from the first, second, and third years, as these students had varying levels of exposure to Moodle through the VKZ platform. These students were specifically chosen based on their active experience in using *Virtuelles Klassenzimmer* (VKZ), aiming to capture a diverse range of perceptions and behavioral intentions across different stages of academic progression. This approach allowed for a more comprehensive understanding of how students with different levels of experience use Moodle, which is crucial for examining the platform's effectiveness across different stages of the academic program.

Instruments

A Google Forms-based survey developed according to the TAM was the tool used in this research. Students' attitudes and behavioral intentions regarding Moodle's usage in German language learning were assessed by this questionnaire. Ten items were used to evaluate each component, with each item having a Likert scale rating from 1 (strongly disagree) to 4 (strongly agree). After data collection, validity was tested using Pearson correlation to ensure each item accurately measured the intended construct. The r-count values for the attitude items ranged from 0.705 to 0.871, and for behavioral intention items from 0.570 to 0.827. All r-count values exceeded the r-table value of 0.195 ($N = 246$, $\alpha = 0.05$), indicating moderate to high validity ($p < 0.05$). This approach is commonly employed in empirical research where the focus is on assessing the actual performance of the instrument in the context of the gathered data, rather than relying solely on pilot testing prior to data collection (Resmi Hayati et al., 2024).

To facilitate the interpretation of scores, the following Table 1 and Table 2, as adapted from Hayati et al. (2024), was used.

Table 1. Interpretation of Cronbach's Alpha for Reliability

Cronbach's Alpha Value	Interpretation
< 0.50	Low reliability
0.50 – 0.70	Moderate reliability
> 0.70 – 0.80	Sufficient reliability
> 0.80 – 0.90	Strong reliability
> 0.90	Perfect reliability

Table 2. Interpretation of Pearson Correlation for Validity Testing

Score Range	Interpretation
0.50 – 0.60	Low validity
> 0.60 – 0.70	Moderate validity
> 0.70	High validity

The validity of the instrument was assessed using Pearson correlation analysis to ensure that each item in the questionnaire accurately measured the intended construct. The validity test results indicated that all items in the attitude variable had an r-value between 0.705 to 0.871 ($p < 0.05$), demonstrating statistical relevance. Similarly, the behavioral intention variable showed an r-value between 0.570 to 0.827 ($p < 0.05$), demonstrating the validity of the instrument. The instrument's reliability was assessed using Cronbach's Alpha, with a value exceeding 0.60 regarded as an indicator of strong reliability (Ahmad et al., 2024).

Reliability was assessed using Cronbach's Alpha. The attitude variable achieved a value of 0.937, and the behavioral intention variable reached 0.894, both of which indicate very high internal consistency. These results confirm that the instrument was reliable and consistent in measuring students' attitudes and behavioral intentions toward Moodle. These questionnaires were distributed via Google Forms over four weeks in August 2023. Students were informed about the study and participated voluntarily. Before filling out the questionnaire, participants were informed about the study's objectives and assured that their responses would remain confidential.

The validity and reliability of the instrument are distinct from the inferential analysis conducted later in the study. While Pearson correlation was used for testing the validity of the instrument items, Spearman's rho was employed to test the correlation between attitude and

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behavioral intention due to the non-normality of the data, as explained in the data analysis section.

Data Analysis

The survey data was analyzed using various statistical methods to explore the connection between students' attitudes and their behavioral intentions regarding the use of Moodle for learning German. The analysis was conducted in the following steps: 1) descriptive statistics, 2) normality test, and 3) correlation analysis.

The initial stage of data analysis employed descriptive statistics to outline the key characteristics of the dataset. This step aimed to provide an overview of the distribution of responses for key variables, including students' attitudes and behavioral intentions toward Moodle. The average scores (mean) for the attitude and behavioral intention variables were calculated to assess the overall trends in students' responses. The standard deviation was computed to identify the extent of variability or consistency of the students' responses.

Before proceeding with correlation analysis, the data's distribution was assessed using a normality test to assess whether the data conformed to a normal distribution. Given that the sample size was large (246 students), the Kolmogorov-Smirnov test was chosen for this purpose. The normality test results showed that both the attitude and behavioral intention variables had significance values ($p < 0.05$), indicating that the data was not normally distributed. This result suggested that a non-parametric analysis approach would be more appropriate for analyzing the relationship between the variables.

Since the data did not follow a normal distribution, a Spearman's rho correlation analysis was performed to evaluate the strength and direction of the association between students' attitudes and their behavioral intentions to use Moodle. Spearman's rho is a non-parametric test suitable for ordinal or non-normally distributed data. The correlation coefficient (r) was computed to assess the strength of the association between students' attitudes and their behavioral intentions. A positive correlation coefficient indicates that as students' attitudes become more favorable toward Moodle, their intention to continue using the platform increases as well. The strength of the relationship was categorized based on the correlation coefficient value (r), as summarized in the Tabel 3 below:

Table 3. Categories of Spearman Rank Correlation Coefficient (Wandira & Mintje, 2024)

r-value (r)	Interpretation
0.00	No correlation
0.01 - 0.20	Very low/Very weak correlation
0.21 – 0.40	Low/Weak correlation
0.41 – 0.70	High/Strong Correlation
0.71 – 0.90	Very high/Strong correlation
0.91 – 1.00	Very high correlation/Very strong
1.00	Perfect Correlation

Results

Respondents' Demographic Profile

Table 4 displays the demographic profile of the participants. Out of 246 students from the German Language Education Program who took part in the survey, 79.3% (195 students) were male and 20.7% (51 students) were female. The program's total enrollment demographics are in line with this gender distribution. In terms of year of study, the respondents were fairly evenly distributed, with 26.4% from the 1st year (2022), 24.0% from the 2nd year (2021), 26.4%

from the 3rd year (2020), and 23.2% from the 4th year (2019). These distributions reflect balanced participation across different academic years, providing a comprehensive view of students' attitudes and behavioral intentions towards Moodle.

Table 4. Demographic Profile of Respondents

No.	Information	Percentage (N = 246)
1	Gender	
	Male	79.3%
	Female	20.7%
2	Year of study	
	1st year	26.4%
	2nd year	24.0%
	3rd year	26.4%
	4th year	23.2%
3	Prior knowledge of Moodle	
	Yes	26.8%
	No	49.6%
	Maybe	23.6%
4	Experience using Moodle	
	Yes	28.9%
	No	58.5%
	Maybe	12.6%

Concerning familiarity with Moodle, 26.8% of students (66 students) stated that they had previous experience with the platform, while 49.6% (122 students) had no previous exposure to it. The remaining 23.6% (58 students) were unsure. This suggests that a substantial proportion of students lacked prior familiarity with Moodle before engaging in their studies. Regarding practical aspects experience with Moodle, 28.9% (71 students) reported using the platform before, while the majority (58.5%, or 144 students) had not. The remaining 12.6% (31 students) were unsure about their prior experience. This data suggests that for many students, their participation in the German Language Education Study Program may have been their first exposure to Moodle as a learning management system. The results should not be included in this section, unless the research required combination of both findings and discussion in one section.

Students' Attitude Towards the Use of Moodle in German Language Learning

The analysis of survey responses regarding students' attitudes toward using Moodle (VKZ) in the German Language Education program at FPBS UPI explicitly shows that, on average, students have a positive attitude toward using Moodle as a platform for their German courses. The mean scores for students' attitudes, as shown in Table 5, ranged from 3.3 to 3.5 on a 4-point scale, indicating general approval. Specifically, the data reveals that students perceive Moodle favorably in terms of its effectiveness, user-friendliness, and contribution to an engaging learning experience, thus answering the first research question affirmatively

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Table 5. Descriptive Statistics of Students' Attitudes Toward Moodle

No.	Items	Mean	SD
1	I view VKZ as an effective platform for German courses	3.3	0.5
2	I consider VKZ meaningful in improving my German skills	3.4	0.5
3	I am satisfied with the learning experience through VKZ	3.4	0.6
4	I appreciate the comfort and flexibility that VKZ offers in German learning	3.4	0.5
5	I have a positive attitude toward using VKZ for German courses	3.4	0.5
6	I enjoy using VKZ for German courses	3.4	0.6
7	I am motivated and enthusiastic about using VKZ to learn German	3.3	0.6
8	I find using VKZ enjoyable for enhancing my German skills	3.4	0.6
9	I believe using VKZ for courses is beneficial	3.5	0.5
10	I am enthusiastic about courses using VKZ	3.3	0.6
	Total	3.62	0.06

The analysis of students' attitudes toward using Moodle (VKZ) reveals an overall positive outlook, as indicated by the mean scores and standard deviations across various items. The highest mean score, 3.5 (SD = 0.5), is observed for item #9. This suggests that, generally, students regard Moodle as a valuable tool for their German language courses. The low standard deviation indicates that there is minimal variation in students' responses, reinforcing the idea that the benefits of using Moodle are widely recognized by the participants.

Further, students report positive experiences regarding enjoyment and motivation. Item #8 received a mean score of 3.4 (SD = 0.6), indicating that many students find the platform engaging. Similarly, item #7 also received a mean score of 3.3 (SD = 0.6). These scores suggest that Moodle not only contributes to the development of students' German language skills but also helps maintain their motivation and engagement. The moderate standard deviations (0.6) show that while the general trend is positive, there is some variation in how students perceive Moodle's enjoyment and motivational impact (Gamage et al., 2022).

The lowest mean score, 3.3 (SD = 0.6), appears for item #10. This indicates that while students have a favorable view of Moodle overall, there is more variation when it comes to their enthusiasm for courses that incorporate the platform. It suggests that while Moodle is appreciated, there may be mixed feelings about how effectively it supports individual course experiences or the teaching methods employed in those courses (Gamage et al., 2022). The standard deviation suggests that responses to this item vary more, implying that some students may not feel as enthusiastic about using Moodle within certain courses.

However, an interesting finding emerges when we examine how students' perceptions differ based on their year of study. When we compare the attitudes of students from different class years, it becomes apparent that second-year students tend to have slightly higher scores than those in the first and third years.

Table 6. Comparison of Students' Attitudes Toward Moodle by Year of Study

Year of Study	Average Score
First Year	3,60
Second Year	3,65
Third Year	3,61

From the table above, we can see that second-year students have a slightly higher average attitude (BI) score of 3.65, compared to 3.60 for first-year students and 3.61 for third-year students. This variation in scores is intriguing because it shows that although students generally have a positive attitude toward Moodle, there are subtle differences in how positive they feel about the platform depending on their level of experience in the program. This trend may be explained by the fact that second-year students, having used Moodle for a longer period, are more familiar with the platform and better understand its features. In contrast, first-year students might still be adjusting to the platform, and third-year students might feel that Moodle no longer offers many new learning tools or features to enhance their educational experience.

Students' Behavioral Intention Towards the Use of Moodle in German Language Learning

Students' plans to utilize Moodle for their next German classes are shown in Table 6, which is part of the survey results. Students' dedication to using the platform is seen in this table. With most items scoring over 3 on a scale from 1 to 4, the mean values suggest a favorable behavioral intention towards the continued usage of Moodle. This demonstrates that students are actively using Moodle to fulfill their language learning needs, reflecting an increasing acceptance of online learning.

Table 7. Descriptive Statistics of Students' Behavioral Intentions Toward Moodle

No.	Items	Mean	SD
1	I am ready to continue using VKZ for German courses next semester	3.3	0.6
2	I hope German courses can be conducted in a blended format, combining VKZ activities with face-to-face classroom sessions	3.4	0.6
3	I hope German courses can be fully conducted online through VKZ	2.4	1.0
4	I commit to actively participating in every German learning activities via VKZ in the future	3.2	0.6
5	I plan to maximize time and effort to utilize VKZ as a German learning support	3.3	0.5
6	I intend to always complete every task available on VKZ next semester	3.4	0.6
7	I plan to use VKZ as the main platform for learning German	3.1	0.7
8	I will be more serious and organized in completing every task and activity in the German courses through VKZ	3.3	0.6
9	I am dedicated to using VKZ's learning opportunities for German	3.3	0.5
10	I am interested in exploring the features of Moodle's feature for German learning	3.3	0.6
	Total	3.2	0.64

With an average score of 3.4, item #2 demonstrates a clear preference for a blended learning approach, incorporating both Moodle activities and traditional classroom sessions. The students' high ratings (3.3 and 3.4, respectively) on their confidence in continuing to use the platform (item #1) and their motivation to complete tasks (item #6) indicate that they are committed to using Moodle in their academic routine. Item #3 significantly departs from the general trend, reflecting students' hesitation toward fully online learning through VKZ, as it received the lowest mean score (2.4) and the largest standard deviation (1.0) among all behavioral intention items. This divergence highlights the importance of blended learning approaches for this student population and should be discussed further in relation to student preferences and pedagogical needs. Some students may still value traditional in-class instruction alongside digital tools; thus,

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this reaction could indicate a more complex picture of the student population as a whole. This result is in line with Riaz (2023), which taken as a whole, suggests that students still place a high importance on the interpersonal communication and hands-on activities that accompany conventional, face-to-face classrooms, even if they are aware of the benefits of online education.

A lower mean score of 3.1 and a bigger standard deviation for Item #7 suggests that students may not feel completely at ease relying on Moodle. To fix any problems and make Moodle more appealing as an all-inclusive learning platform, it may be necessary to identify the root reasons for this hesitation. Consistent with the theory of planned behavior (Conner, 2020), in this instance, the continuing usage of Moodle is strongly predicted by the positive behavioral intentions indicated here (Al-Maroof & Al-Emran, 2018; Alonso et al., 2015; Davis, 1989a). A growing number of schools are adopting hybrid methods of instruction, which combine online resources with traditional classroom instruction, in an effort to provide students with a more well-rounded education (Hrastinski, 2019). Within the realm of language learning, where a combination of different types of teaching might be crucial for students to succeed, these results add to what is known about the use and acceptability of LMSs in higher education.

Additionally, the behavioral intention data reveals some notable trends, especially when we compare the intentions to use Moodle across different year groups. Interestingly, the second-year students again show the highest behavioral intention scores when compared to first and third-year students.

Table 8. Comparison of Students' Behavioral Intentions Toward Moodle by Year of Study

Year of Study	Average Score
First Year	3,55
Second Year	3,59
Third Year	3,58

Table 8 presents a comparison of students' behavioral intentions toward using Moodle based on their year of study. The data shows that second-year students have the highest average score (3.59), followed closely by third-year students (3.58), and first-year students (3.55). This suggests that students in the second and third years have stronger intentions to continue using Moodle for their German courses compared to first-year students. The slightly higher score for second-year students may indicate greater familiarity and comfort with Moodle, having used it for a longer period, while first-year students may still be in the adjustment phase and might not yet fully appreciate the benefits of the platform. This trend reflects the increasing confidence and reliance on Moodle as students progress through their studies.

The higher behavioral intention scores among second-year students could be explained by their increased familiarity with Moodle and their ability to integrate it more effectively into their learning routine. These students might feel more comfortable using Moodle as they have had more exposure to the platform throughout their academic journey. On the other hand, first-year students might still be adjusting to Moodle and may not yet fully appreciate the range of features it offers for language learning, which could account for their slightly lower behavioral intention score. This finding aligns with the earlier observation that second-year students tend to have a more consistent and positive experience with Moodle, indicating that as students' progress through their studies, their confidence and commitment to Moodle as a learning tool seem to grow. Interestingly, the scores among third-year students are also high, suggesting that students who have been using Moodle for a while are likely to continue utilizing it for their language learning needs, even if they do not plan to rely solely on it.

Relationship Between Attitudes and Behavioral Intentions

The relationship between students' attitudes and their behavioral intentions toward using Moodle in German language education was examined using Spearman's correlation because the data did not follow a normal distribution. The analysis revealed a significant positive correlation of 0.679 ($p < 0.05$), indicating that students with more favorable attitudes toward Moodle are more likely to have stronger intentions to continue using the platform. This finding explicitly answers the third research question by showing that a positive attitude toward Moodle is strongly associated with an increased behavioral intention to use it, which supports the Technology Acceptance Model (TAM).

Table 9. Correlation Analysis Between Students' Attitudes and Behavioral Intentions

Variable	Correlation Coefficient (r)	Significance (p)	Categories Relationship
Attitudes and Behavioral Intentions	0.679	0.000	Strong Positive Relationship

This result shows that students with more favorable attitudes towards Moodle are more likely to demonstrate higher behavioral intentions to use the platform in their academic activities. Positive attitudes, likely driven by satisfaction with Moodle's features such as interactive quizzes, discussion forums, and multimedia materials directly correlate with the students' motivation to engage with the platform consistently. These results underscore the importance of creating a positive learning experience through Moodle to increase student acceptance of the platform.

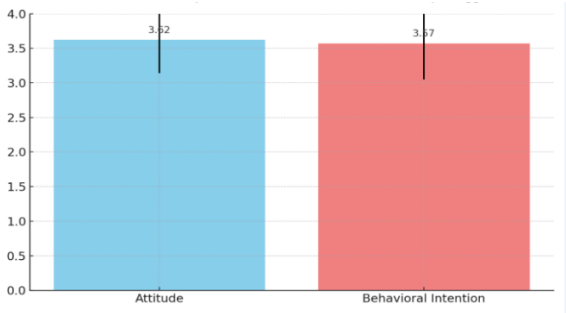


Figure 1. The average distribution of students' attitude and behavioral intentions towards the use of Moodle.

Building upon these findings, the descriptive analysis of the data further illustrates the overall positive trend, as seen in Figure 1. The majority of students exhibited a positive attitude toward the use of Moodle, which is reflected in the average score of 3.62 (on a 4-point Likert scale) for the attitude variable. Similarly, the behavioral intention variable recorded a high average score of 3.57, indicating a strong desire among students to use Moodle as a learning aid.

This alignment between positive attitudes and strong behavioral intentions provides additional evidence of the pivotal role Moodle plays in supporting the learning process. These results emphasize the potential of Moodle to not only serve as an effective technological tool but also to foster a positive and engaging learning environment for students learning German.

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Discussion

The findings of this study indicate that students exhibit a positive attitude and strong behavioral intention to use Moodle, consistent with previous literatures on technology adoption in education. The positive relationship between students' attitudes and their intentions to use Moodle aligns with the Technology Acceptance Model (TAM), which suggests that favorable attitudes towards technology drive higher usage intentions (García-Murillo et al., 2023). The average attitude score of 3.62 confirms that most students support the use of Moodle as a tool for language learning, highlighting its effectiveness in engaging students and improving the learning process (Sayginer, 2023).

Moodle's interactive features, such as discussion forums, quizzes, and multimedia materials, enhance the learning experience and foster independent learning, as noted in previous studies (Al Kurdi et al., 2020). While students generally hold positive views, differences were found based on their year of study. Second-year students, with greater exposure to Moodle, exhibited a slightly more positive attitude (3.65) compared to first- and third-year students. This suggests that experience with the platform contributes to increased satisfaction and comfort in using it (Wijaya et al., 2022). This highlights the importance of consistent Moodle usage from the first year to improve students' adaptation to the platform.

Regarding behavioral intention, students showed a high commitment to continuing Moodle use with an average score of 3.57. As behavioral intentions predict future usage (Ploj-Virtič et al., 2021), this demonstrates that Moodle's interactive and user-friendly features motivate students to remain engaged. Research conducted by Belda-Medina & Calvo-Ferrer (2022) supports these findings, showing that ease of use and active participation influence students' intentions to use educational technology.

The correlation analysis revealed a significant relationship between students' attitudes and their behavioral intention ($r = 0.679$, $p < 0.05$), confirming that positive attitudes toward Moodle increase intentions to use it. This supports TAM's assertion that user attitudes directly impact adoption behavior (Wan et al., 2024). Moreover, previous studies by Ramadan & Efnita (2024) also found that a positive attitude toward e-learning technology correlates with students' intent to continue its use.

While this relationship supports the TAM framework, the relatively modest difference between attitude (3.62) and behavioral intention (3.57) suggests a more nuanced adoption behavior. Although students are generally positive about Moodle, their behavioral intention may be moderated by contextual factors such as digital readiness, availability of offline alternatives, and pedagogical preferences. This indicates that the adoption process is not purely attitudinal, but also shaped by institutional support, curriculum design, and the perceived necessity of online learning. Thus, while TAM explains the foundational relationship, further exploration is needed to integrate external factors influencing actual technology usage in education.

These results emphasize the importance of fostering an engaging and rewarding learning environment to enhance students' acceptance of technology. For practical implications, it is recommended that educators and program managers further integrate Moodle into the learning process. Features like discussion forums and quizzes can boost student engagement, while proper training from the start can help students feel more confident in using Moodle, thereby improving their attitude towards it (Irawati et al., 2020). Despite these promising findings, the study's limitations, such as its focus on a single program at UPI, may affect the generalizability of the results. Future research should explore different universities or programs and include qualitative approaches like interviews or focus groups were utilized to obtain a deeper understanding of students' experiences with Moodle.

This study contributes to understanding how Moodle supports language learning and highlights the need for educational institutions to effectively integrate technology to enhance student engagement. The findings are consistent with research by Rahma et al. (2024), showing that Moodle's interactive features improve student learning in language courses. However, contrasting findings from Oproiu (2015) suggest that while Moodle enhances autonomy, its impact on speaking skills remains unclear. These discrepancies may stem from differences in how Moodle features are utilized, with our study emphasizing interactive elements like discussion forums and quizzes, which seem to support writing and comprehension skills more effectively.

This suggests that the adoption of Moodle as an educational tool can be encouraged through active engagement, user-friendly features, and effective integration into the curriculum. Further research should explore how different technological tools can be used to improve language learning across various contexts.

Conclusion

This study revealed that students in the German Language Education program at UPI generally hold positive attitudes toward the use of Moodle (average score: 3.62) and demonstrate strong behavioral intentions to continue using it (average score: 3.57). These findings answer the first and second research questions, showing that Moodle is perceived favorably and students are motivated to engage with it in their language learning. Furthermore, the third research question is addressed by the significant correlation between attitude and behavioral intention ($r = 0.679$, $p < 0.05$), confirming that positive attitudes are associated with a greater intention to use the platform.

Theoretically, this study contributes to the Technology Acceptance Model (TAM) literature by validating its applicability in the context of language learning, where student attitudes and behavioral intentions are influenced not only by perceived usefulness and ease of use, but also by pedagogical experiences across academic levels. It emphasizes that sustained exposure and engagement with a learning platform like Moodle foster higher acceptance over time.

Practically, the results highlight the need for educational institutions to invest in the consistent and strategic integration of Moodle features—such as discussion forums and multimedia tools—into language learning curricula. Training and support should be provided from the early stages of university education to enhance student familiarity and optimize platform usage. Future research should expand the scope to other departments and institutions and incorporate qualitative methods to gain deeper insights into user experiences and contextual factors influencing Moodle adoption.

However, this study also noted limitations, including the limited scope of the German Language Education study program at Universitas Pendidikan Indonesia (UPI). These results may limit the generalizability of the findings to other study programs or institutions. Therefore, further research is recommended involving qualitative approaches, such as in-depth interviews, to understand students' subjective experiences and compare the contexts of Moodle use in different educational context. In conclusion, the findings highlight the importance of creating engaging learning environments through platforms like Moodle. These platforms not only support language learning but also motivate active student engagement. Educational institutions are encouraged to integrate interactive features more widely and provide adequate training to ensure optimal use of the platform.

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