Unveiling the user acceptance of Moodle in German language education

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Article Info

ABSTRACT

Motivated by the need to understand the role of digital tools such as Moodle in foreign language learning, this study explores the acceptance and use of Moodle by students in the German Language Education Study Program at Universitas Pendidikan Indonesia (UPI). Using a mixed-method approach, we examined students' acceptance of Virtuelles Klassenzimmer (VKZ), a Moodle-based e-learning platform, within the technology acceptance model (TAM) framework. 246 students were surveyed using a structured questionnaire encompassing both quantitative and qualitative components. Quantitative data aligned with TAM constructs (perceived usefulness (PU), perceived ease of use (PEOU), attitude toward using (ATU), and behavioral intention (BI)) were analyzed using mean and standard deviation (SD) values. Qualitative data from open-ended questions on VKZ's advantages and disadvantages were examined using thematic analysis. Results indicate that students generally responded positively to using Moodle in German classrooms, appreciating its benefits in enhancing language learning. However, concerns about Moodle's usability and mobile compatibility were also identified. This study proposes improvements in Moodle's design and functionality to address these issues, emphasizing its potential in language education. Future research should explore these findings in diverse educational contexts to enhance the application of digital tools in language learning.

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1. INTRODUCTION

Integrating technology into teaching approaches is a significant achievement in modern pedagogy. Learning management systems (LMS), particularly Moodle, have drastically changed the educational environment by enabling dynamic, technologically enhanced classrooms that significantly enhance student learning. In language education, where digital platforms can have a significant impact on language proficiency and acquisition [1]–[3], this integration is extremely important.

At Universitas Pendidikan Indonesia (UPI), the German Language Education Study Program has been utilizing Moodle since 2010. Their dedicated online platform, named Virtuelles Klassenzimmer (VKZ) is specifically tailored for German language learning. This platform adopts a blended learning approach, combining digital instruction with traditional classroom methods. This use of Moodle includes a variety of

interactive elements, such as glossaries, forums, and quizzes, which aimed to enhance language proficiency and increase student engagement.

While previous studies have documented that Moodle is useful for improving language proficiency [4]−[6], there is a clear knowledge gap regarding how UPI students enrolled in the German Language Education Study Program perceive and engage with Moodle. This gap emphasizes the necessity for a focused study on students' attitudes and experiences in this specific learning environment. By understanding these perceptions, educators can adjust Moodle's features to better meet the students' needs, which will increase the overall effectiveness of the learning platform.

Understanding the implications of technology in educational contexts requires more than just acknowledging its presence. It necessitates a careful analysis of how students perceive, accept, and use these digital tools in the classroom. The technology acceptance model (TAM), developed by Davis [7], becomes instrumental. TAM, a well-regarded framework in the field of educational technology [8]−[10], provides a structured approach to examine the key factors impacting students' acceptance and usage of Moodle. By using TAM, this study offers deeper insights than surface-level data to analyze the complexity of technology adoption in the context of language education. It allows for a detailed examination of students' perceptions and attitudes towards Moodle. This comprehensive approach is crucial for understanding the broader implications of digital tools in language learning environments.

The TAM is essential for understanding the adoption and use of technology. It is determined that perceived utility (PU) and perceived ease of use (PEOU) are the two primary factors. TAM further suggests that these factors also influence users' attitudes and behavioral intentions (BI) towards technology, hence affecting actual technology use [8], [11]. In this study, TAM is utilized to ascertain how students enrolled in the German Language Education Study Program at UPI perceive Moodle. It specifically examines how their perceptions of Moodle's usefulness and ease of use influence their attitudes towards using (ATU) Moodle and their BI to engage with the platform.

The novelty of this study lies in its specific focus on the German Language Education Study Program at UPI and the application of the TAM framework in this particular setting. While previous research has explored Moodle's impact on language learning [12]−[14], this study is the first to specifically examine students' perceptions and acceptance on Moodle within the framework of German language education. This focused approach fills a significant gap in existing literature by offering new insights into the relationship between technology and language learning.

By examining the relationship between technology adoption and language learning within the TAM framework, this study aims to contribute valuable insights to educators, administrators, and researchers. It seeks to enhance the overall quality of language learning across various educational contexts and to inform effective efficient technological integration strategies in language education. A mixed-methods approach was utilized to gather comprehensive data, employing surveys for quantitative insights into students' perceptions of Moodle's usefulness and usability. Open-ended questions were also employed to collect qualitative data, enabling students to provide in-depth information about their Moodle experiences.

To sum up, this study aims to reveal how students enrolled in the German Language Education Study Program at UPI perceive the usefulness and ease of use of Moodle. It also offers insightful information on the dynamic relationship between technology adoption and language learning outcomes. This study aims to close a research gap by offering a comprehensive platform that enables educators, administrators, and researchers to effectively integrate Moodle and related technologies to improve language instruction in a variety of educational contexts. Overall, the following research questions will be addressed and highlighted in this article:
a) How do students perceive the usefulness of Moodle in German language education?
b) How do students perceive the ease of use when utilizing Moodle in German language education?
c) How is the students' attitude toward the use of Moodle in German language education?
d) How is the students' BI toward the use of Moodle in German education?
e) How do students evaluate Moodle's advantages and disadvantages for German language education?

2. RESEARCH METHOD
2.1. Study design
This study, conducted within the German Language Education Study Program at UPI, utilized a mixed-methods design within the TAM framework to assess students' acceptance of Moodle for German language learning. The use of a survey technique was deemed essential due to the study's large participant pool [15]. The survey was implemented through Google Forms, enabling the efficient collection of both quantitative and qualitative data. Ethical protocols were strictly followed. All participants were made aware that the answers they provided would only be utilized for the study.

2.2. Participants

This study used the convenience sampling method, which facilitated the efficient collection of data from an accessible and substantial cohort of students [16]. It specifically targeted participants from the students enrolled in the German Language Education Study Program at UPI in the academic year 2022/2023. They were selected based on their accessibility and relevance to the research objectives. Among the 278 students registered in the program, 246 (88%) participated in the study, representing a significant portion of the student body.

2.3. Data collection

A structured questionnaire with both quantitative and qualitative components was used to collect data for this study. The quantitative component was developed based on the TAM framework, which provided a structure for assessing student perceptions in four key dimensions: perceived usefulness (PU), PEOU, attitude toward using (ATU), and BI. Each TAM dimension was measured using ten items, employing a four-option Likert scale (1 to 4) for enhanced clarity and precision in capturing participants viewpoints, following best practices in survey design outlined in the literature [17], [18]. For the qualitative component, open-ended questions were employed to gain deeper understanding of students' experiences and perceptions, facilitating thematic analysis [19]. This mixed-method approach enabled a thorough analysis of the factors influencing Moodle adoption and usage in language learning.

2.4. Data analysis

The study's quantitative data were analyzed by computing the mean and standard deviation (SD) for every TAM dimension. The mean provided an average score that represented the central tendency of students' responses, indicating the overall level of agreement on all aspects being measured [20]. The SD demonstrated the heterogeneity in the responses, with lower values showing greater consensus among students, and higher values indicating a wider diversity of viewpoints [21].

A Cronbach's alpha cross-test was used to analyze the reliability of the questionnaire. This test measures the internal consistency of the items in each TAM dimension. More reliability is indicated by higher values, and a Cronbach's alpha value of 0.7 is typically viewed as good [22]. The study's alpha values were notably high and demonstrated strong reliability: 0.89 for PU, 0.93 for PEOU, 0.94 for ATU, and 0.89 for BI. These results, as shown in Table 1, suggest that the questionnaire items were consistent and reliable in measuring the intended constructs.

The qualitative data was examined using thematic analysis, which focused on patterns seen in the open-ended responses. The process of the analysis was structured into the following steps: familiarization, coding, theme identification, theme review and refinement, and themes defining and naming. This approach is based on methods outlined in Belotto [19].

Table 1. Cronbach's alpha reliability index for each TAM constructs

No.	TAM constructs	No. of items	Cronbach's alpha value
1	PU	10	0.89
2	PEOU	10	0.93
3	ATU	10	0.94
4	BI	10	0.89
	Total	40	0.96

3.   RESULT AND DISCUSSION

3.1. The integration of Moodle in German classrooms

Since 2010, Moodle has been integrated as the primary e-learning platform in the German Language Education Study Program at UPI. Named as VKZ, this platform is employed across various semesters. While its usage is not compulsory for all courses, Moodle is consistently utilized for students in the first and second semesters to provide a strong foundation in German language skills. For other semesters, the decision to use Moodle is at the discretion of individual lecturers.

The teaching methodology at VKZ blends conventional classroom techniques with digital learning to create an engaging and productive learning environment for students studying German. Each semester, VKZ offers 16 weeks of courses that are arranged thematically. It starts with introductory content, moves through a number of topic areas, and ends with midterm and final examinations. To promote consistent student engagement, integrated activities like quizzes and glossary contributions are matched with each topic. Exam administration is also facilitated via Moodle with randomly selected questions from a question bank, ensuring academic integrity and fairness [23].

3.2. Respondents' demographic profile

The demographic profile of the participants is presented in Table 2. Of the 246 students from the German Language Education Study Program at UPI, who participated in the survey, the majority were female, constituting 79.3% (195 students), while male participants represented 20.7% (51 students). This gender distribution is reflective of the current enrollment demographics within the program. In terms of year of study, the representation is fairly even, with slightly more students from the 1st and 3rd years (26.42% each), followed by the 2nd year (23.98%) and the 4th year (23.17%). Regarding familiarity with Moodle, only 26.8% (66 students) reported prior knowledge of the platform. A significant 49.6% (122 students) were not aware of Moodle, and the remaining 23.6% (58 students) were uncertain, suggesting a lack of prior exposure to this learning management system among many students.

In terms of practical engagement with Moodle, 28.9% (71 students) had used it previously in their studies, while the majority, 58.5% (144 students), had not. The remaining 12.6% (31 students) were unsure about their past Moodle experience. This indicates that for numerous students, their involvement in the German Language Education Study Program at UPI might have been their first encounter with Moodle.

Table 2. Demographic information 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 experience with Moodle	Yes	28.9
		No	58.5
		Maybe	12.6

3.3. Perceived usefulness

The analysis of the survey responses concerning Moodle's PU in the German Language Education Study Program at UPI, has yielded insightful trends. The findings, which are compiled in Table 3, show that Moodle is usually viewed by students as having a good impact on their performance in language courses; typical scores range from 3.0 to 3.5 on a scale from 1 (strongly disagree) to 4 (strongly agree). These results imply that students see the platform as more than just a repository of course materials; rather, they recognize its many functions in helping them improve their language skills.

The domains of "listening skills" (item #6), "reading skills" (item #7), and "exam preparation" (item #10), each with a mean score of 3.5, are where Moodle has the most significant impact. This implies that the platform's multimedia capabilities and self-assessment features are successfully meeting students' needs for auditory and visual learning as well as for evaluative preparation. These findings are consistent with the body of research that highlights the advantages of interactive, self-paced learning modules in online language learning [12], [24], [25].

Table 3. PU

No	Items	Mean	SD
1	VKZ improves my overall German course performance.	3.3	0.5
2	VKZ boosts my motivation to learn German.	3.4	0.6
3	VKZ positively influences my German learning progress.	3.4	0.5
4	VKZ aids in enhancing my German grammar understanding.	3.4	0.5
5	VKZ helps increase my German vocabulary mastery.	3.4	0.6
6	VKZ assists in improving my German listening skills.	3.5	0.5
7	VKZ aids in enhancing my German reading skills.	3.5	0.5
8	VKZ helps improve my German writing skills.	3.3	0.6
9	VKZ assists in bettering my German speaking skills.	3.0	0.7
10	VKZ supports me in preparing for exams.	3.5	0.5

Based on a review of the previous research, the PU for "listening skills" and "reading skills" is consistent with Moodle's interface's ability to integrate auditory and visual content [23], [26]. Additionally, the favorable reaction to "exam preparation" aligns with research showing that varied practice tasks and fast feedback are crucial for enhancing learning outcomes [27]. On the other hand, "speaking skills" (item #9) has the lowest mean score of 3.0 and the biggest SD (0.7), indicating that Moodle is thought to be less effective in

this skill area. This could be a reflection of the inherent difficulties in reproducing the nuances of spoken language and conversation in an online setting, a problem that is reflected in current academic discourse [28], [29]. The data indicates that Moodle serves various learning activities effectively, but there is room for improvement in its role in teaching speaking abilities. Integration of speech recognition software, peer interaction features, and live conversation simulations could optimize Moodle's effectiveness in this critical aspect of language acquisition as underlined in [4].

3.4. Perceived ease of use

Students' evaluation regarding Moodle's interface and functionality in the context of German language learning may be found by looking at Table 4, which details the platform's PEOU. Based on this table, the responses indicate that students are generally satisfied with Moodle's usability, with mean scores uniformly above the neutral midpoint of the scale. This suggests that students find the platform's layout and user interface to be appealing. This broad support is significant, because ease of use is a fundamental determinant in technology adoption, particularly in educational settings where users may range from tech-savvy individuals to others who are less experienced with digital technologies.

The two items with the highest scores, "clear and structured assignments" (item #3) and "features facilitating student engagement" (item #9), both had 3.5. This indicates a high level of user preference for Moodle's structured approach to course material and its capacity to create a stimulating learning environment. These components are essential for language learning platforms because they provide students with interactive exercises and clear instructions that immediately aid in the process of learning a new language. This keeps students engaged and motivated.

Conversely, the items with the lowest mean scores (3.3) were "navigation system" (item #1), "user-friendly layout" (item #4), and "organized layout and interface" (item #10). These scores still indicate a positive user experience, but they are marginally lower compared to other aspects. This implies that in order to improve the overall user experience, certain elements of Moodle's design might be simplified or made more intuitive.

The consistency in students' feedback regarding the ease of following course activities and accessing content supports findings from the literature that emphasize the importance of easily navigable and accessible e-learning environments [30], [31]. The PEOU as a facilitator of learning engagement is also well-documented in educational technology research. For example, studies have shown that when students find an e-learning platform easy to use, they are more likely to engage deeply with the course content, which can lead to improved learning outcomes [32]–[34]. This relationship emphasizes how crucial usability is to the design of educational technology and backs the idea of iterative design approaches that prioritize the needs of the user.

Table 4. PEOU

No	Items	Mean	SD
1	VKZ has an easy-to-understand navigation system.	3.3	0.5
2	VKZ presents easily-followable course activities.	3.4	0.6
3	VKZ offers clear and structured assignments.	3.5	0.6
4	VKZ has a user-friendly layout and interface.	3.3	0.6
5	VKZ provides easily comprehensible tasks and instructions.	3.4	0.5
6	VKZ offers easily accessible course content.	3.4	0.6
7	VKZ is an adaptable learning tool.	3.4	0.5
8	VKZ displays easily searchable and navigable course content.	3.3	0.5
9	VKZ features facilitate student engagement in course activities.	3.5	0.5
10	VKZ has a logically organized and structured layout and interface.	3.3	0.5

3.5. Attitudes towards using

This section, detailed in Table 5, evaluates students' attitudes towards using Moodle as an educational tool in the German Language Education Program. The data reflects a predominantly positive attitude among students towards using Moodle for their German language courses. With all items averaging above 3, the survey results suggest that the students hold favorable views of Moodle as an effective and beneficial tool in their language learning process.

The strongest affirmation of Moodle's benefits is evident in the item "I believe using Moodle for courses is beneficial" (item #9), which achieved the highest mean score of 3.5. This score indicates that students not only use Moodle but also recognize and value its role in their educational development. Consistently high scores of 3.4 across several statements reveal that students not only appreciate the advantages that Moodle brings to their learning experience but also enjoy and are satisfied with its use. Such positive attitudes are likely to contribute to more engaged and motivated learners, as proposed by educational technology research [26], [35], [36]. However, the slightly lower scores for "I view Moodle as an effective platform for German courses" (item #1) and "I am motivated and enthusiastic about using Moodle to learn

German" (item #10) both at 3.3, while still positive, indicate areas where Moodle's impact on students might be strengthened. This suggests that while Moodle is seen as a useful tool, its effectiveness in certain areas could be perceived as less than optimal.

The moderate spread in responses, as shown by the standard deviations (0.5-0.6), suggests that while the overall sentiment is positive, the degree to which individuals agree with the positive statements varies. This variation points to an opportunity for more personalized user experiences and indicates that some students may require additional support or resources to fully benefit from Moodle's features. The overall positive attitude supports the findings of previous studies that associate students' positive perceptions of e-learning tools with increased user satisfaction and academic achievement [32], [37]. The enthusiasm for Moodle's role in language education supports the notion that favorable attitudes towards educational technology can significantly influence learning outcomes and student success.

Table 5. ATU

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 VKZ offers in German learning.	3.4	0.5
5	I have a positive ATU 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

3.6. Behavioral intention

Table 6 illustrates the survey findings regarding students' intentions to use Moodle for their German language courses in the coming terms. This table offers valuable insights into students' commitment to engaging with the platform. Overall, the mean scores indicate a positive BI towards the continued use of Moodle, with most items scoring above 3 on a scale from 1 to 4. This shows that students are taking the initiative to use Moodle for their language learning requirements, which is a sign of a forward-thinking embrace of the online learning environment.

Item #2, which asks about a combination of Moodle activities and traditional classroom sessions, has a mean score of 3.4, indicating a significant preference for a hybrid learning style. Students demonstrated a commitment to using Moodle in their academic routine as seen by their high scores (3.3 and 3.4, respectively) on the readiness to continue using the platform (item #1) and their desire to finish activities (item #6). With a mean score of 2.4 and a high SD of 1.0, item #3 ("I hope German courses can be fully online through Moodle") considerably deviates from this trend. This reveals a significant gap in the choices of the students, as some are reluctant to switch to an entirely online learning environment. This response might point to a more nuanced view of the student body, where some students may still enjoy both the digital resources and the conventional in-class experience. This result is in line with studies [38], [39], which collectively imply that although students recognize the advantages of online learning, they still value the social interaction and interactive components that come with traditional, in-person learning environments.

Table 6. BI

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 a blend of VKZ activities and classroom sessions.	3.4	0.6
3	I hope German courses can be fully online through VKZ.	2.4	1.0
4	I commit to actively participating in German learning activities via VKZ.	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 tasks available on VKZ next semester.	3.4	0.6
7	I plan to use VKZ as my main platform for learning German.	3.1	0.7
8	I will be more serious and orderly in doing German course tasks on 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 Moodle's features for German learning.	3.3	0.6

Item #7, "I plan to use Moodle as my main platform for learning German," had a lower mean score of 3.1 and a higher SD, indicating that students may not be entirely comfortable depending on Moodle.

Determining the fundamental causes of this reluctance may be essential to resolving any issues and strengthening Moodle's appeal as a comprehensive learning platform. Consistent with the theory of planned behavior [40], the positive BI captured here are strong predictors of actual future behavior, in this case, the continued use of Moodle [33], [41]–[43]. The preference for hybrid learning models aligns with the current educational trend that values the integration of digital tools with face-to-face interactions to enhance the learning experience [44], [45]. These findings contribute to the body of knowledge surrounding the acceptance and use of LMS in higher education, particularly in the context of language learning, where the blend of various instructional modes can be vital to student success.

3.7. Advantages and disadvantages of Moodle

A number of key themes are resulted from the thematic analysis of student responses about the advantages and disadvantages of using VKZ, a Moodle-based platform for learning German. These themes are briefly summarized in Table 7 together with the corresponding frequency of student mentions for each component. This analysis provides insights into how students perceive the effectiveness and usability of the VKZ platform, highlighting both its strengths and areas for improvement.

Table 7. Key advantages and disadvantages of VKZ

No	Key themes of advantages	Count	No	Key theme of disadvantages	Count
1	Learning effectiveness		1	Technical and platform issues	
	- Varied exercises enhancing learning effectiveness	35		- Frequent server disruptions	25
	- Clear organization and structured presentation	19		- Slow performance and delays	20
	- Improved concentration during listening exercises	7		- Challenges with certain question types on mobile devices	12
2	Usability and accessibility		2	Usability and interface challenges	
	- Flexibility in completing tasks	33		- Limited flexibility in completing exercises on smartphones	18
	- Easy access and navigation	29		- Issues with drag-and-drop exercises	14
	- User-friendly interface	14		- Difficulty editing errors or typos in submissions	9
3	Interactive learning experience		3	Communication and feedback	
	- Daily exercises related to class material	21		- Lack of direct interaction and immediate clarification with instructors	17
	- Varied learning features	14		- Limited feedback on essay-type answers	14
	- Incorporation of multimedia elements	9		- Confusion arising from errors in answer keys or system interpretation	11
4	Immediate feedback and performance evaluation		4	General frustrations and concerns	
	- Immediate feedback	16		- Frequent errors and disruptions, especially near deadlines	23
	- Visible results	16		- Technical challenges impacting timely task submission	16
	- Practicality and efficiency in the learning	5		- Challenges in understanding grading criteria and feedback	8

3.7.1. Advantages of Virtuelles Klassenzimmer

Regarding the aspect of learning effectiveness, the use of VKZ, a Moodle based learning platform in the German Language Education Study Program at UPI, has been praised for its capacity in providing varied and relevant exercises that are essential for learning German language. Specifically, students appreciated VKZ's ability to enhance learning focus and comprehension during listening activities. VKZ enables students to replay listening materials, improving concentration and facilitating more productive learning environments. Additionally, students also appreciated the structured and comprehensive presentation of learning materials provided by VKZ. This finding aligns with previous research that emphasizes the importance of well-structured and varied learning content in language acquisition [46], [47].

Concerning the usability and accessibility, students emphasized the VKZ's user-friendly interface and easy access. This accessible feature of VKZ emphasizes its importance in maintaining students' motivation and ensuring continuous learning, which is in line with various studies on e-learning that underscores the significance of accessibility in sustaining motivation and ensuring ongoing learning [32], [48]. Additionally, students also valued the flexibility offered by Moodle, allowing them to access learning content at their preferred times and locations. This flexibility, enabling students to access learning materials and complete assignments at their own pace and convenience, holds crucial importance in modern education [26], [49].

In relation to the aspect of interactive learning experience, VKZ's provision of regular daily exercises, corresponded with material covered in class, supports continuous learning and practice. Students valued these opportunities for regular practice, which align with studies emphasizing the necessity of focused, regular practice in the learning of a new language [50], [51]. Additionally, students also appreciated

the availability of interactive learning tools, such as of timers, animated pictures and memes. These resources included a variety of exercises, such as vocabulary, listening, and reading tasks; along with variety of question types, such as cloze test, multiple choice, and matching. They found that these features made learning more interesting and engaging. Moreover, the opportunity to attempt exercises multiple times was perceived as enhancing students' learning experience and contributing to a more supportive and flexible learning environment. These findings support the idea that an interactive learning environment can positively impact language proficiency [52], [53].

Another noteworthy feature mentioned by students as one of VKZ's strengths in learning German is regarding the aspect of immediate feedback and performance evaluation. The platform's ability to provide immediate feedback upon task completion not only encourages self-assessment but also acts as a motivator for continuous improvement and significantly enhances the learning experience [27], [54]. Students are allowed to promptly evaluate their progress, identify areas for improvement, and adjust their learning strategies accordingly.

3.7.2. Disadvantages of Virtuelles Klassenzimmer

The students identified technical issues, including server instabilities and poor mobile device compatibility, as significant challenges. Students mentioned experiencing difficulty with specific questions type, particularly those involving drag-and-drop tasks, while using a smartphone. These limitations not only disrupt the learning process but also raise concerns over equitable access, particularly for students who dependent on mobile technology an issue highlighted in recent studies on e-learning [32], [34].

Students also reported usability and interface challenges affecting VKZ's effectiveness. They highlighted non-editable responses and encountered difficulties with certain features on mobile devices. This suggests the need for a redesign to increase flexibility and inclusiveness. This finding is supported by various studies, which emphasize the crucial role of interactive and accessible platforms that prioritize user-friendliness [31], [55]. Furthermore, students also experienced navigational difficulties on mobile devices and system lags, indicating the need for a more intuitive and reliable interface. This directly influences student learning experiences, which is a recurring theme in educational technology research [56], [57].

Another key theme of weaknesses in using VKZ for learning German language that is quite frequently mentioned by students relates to communication and feedback. Students raised concerns about the system flagging minor errors when using the quiz feature, occasionally marking correct answers as incorrect. Additionally, they also complained about the lack of constructive feedback for essay-type questions, which hinders the learning process. The difficulties experienced by students in online are often caused by poor communication with instructors and a lack of guidance on how to use the platform [58], [59]. Existing literature also emphasizes the significance of timely and constructive feedback in enhancing learning outcomes [27], [60].

The final key theme regarding VKZ's weaknesses is relating to students' general frustrations and concerns. Students reported feeling troubled due to frequent platform errors or server downtime at critical times such as assignment deadlines or exams. These issues highlight the need for improving the reliability and performance of the Moodle platform to ensure a seamless learning experience. They also feel worried about getting unfair grades due to system errors, limited time duration for completing assignments, and the potential cheating which could harm academic integrity, as also found in the studies of [61], [62]. Previous studies also highlighted the importance of having dependable learning platforms to create a good learning environment and maintain academic integrity [31], [63].

4.   CONCLUSION

This study reveals a positive acceptance among students regarding the integration of Moodle in German language learning. It confirms Moodle's strengths in PU, ease of use, and students' positive attitudes and BI towards its use. These findings highlight the critical role of user-friendly and engaging digital tools in enhancing educational outcomes. The study also identifies areas for improvement, particularly in the usability and mobile compatibility of Moodle. Addressing these issues could further enhance Moodle's effectiveness. The research is limited by its focus on one institution's German language program, potentially restricting the generalizability of findings to other contexts or language programs.

The insights gained from this study underscore the importance of prioritizing enhancements in server stability, mobile optimization, and interface improvements to foster an intuitive and user-centric environment. For future research, it may be valuable to investigate the application of these insights in diverse educational settings or explore additional factors influencing technology integration in language education. This can help in developing more effective strategies for incorporating digital tools in various teaching contexts. Additionally, examining the long-term impacts of such integrations on student learning outcomes could provide further valuable insights.

ACKNOWLEDGEMENTS

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