



## Determinants Affecting Students' Satisfaction In The Use of Learning Management Systems on Instructional Content, Interaction, and Accessibility

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### ABSTRACT

An Learning Management Systems (LMS) is important in boosting knowledge acquisition and information management in the digital world. This investigation examines factors affecting students' satisfaction with each aspect of the LMS instructional content, interaction, and accessibility. Using a quantitative research design, data was collected through an online survey from 104 undergraduate students at Universitas Pendidikan Indonesia. The results showed that over half of the participants were satisfied or highly satisfied with LMS features such as interaction, accessibility, and instructional content. 89.4% of students were satisfied with direct communication from the LMS in interaction. When asked about accessibility, 99% of respondents praised the platform's flexibility and ease of use. For the instructional component, 90 percent of students expressed satisfaction with the quality and accessibility of the materials provided. These findings are significant for educational institutes to enhance learning management system features as per user requirements, enabling more flexible and interactive learning approaches. Research related to learning management systems introduced at a tertiary institution to improve learning effectiveness during the pre- and post-COVID-19 period requires deep analysis, including different particulars shaped in the higher education landscape by the impact of the pandemic. This study significantly contributes to developing technology-based education policies in the digital age.

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### 1. INTRODUCTION

In the digital era, LMS have become essential platforms for managing, delivering, and evaluating educational processes. LMS are software applications or web-based platforms designed to enhance educational processes' planning, delivery, management, and evaluation (Aldossari & Chen, 2019). LMS are integral to modern education because they can organize diverse learning resources, such as videos, slides, and interactive media, and deliver them in a structured manner. These systems enable educators to regulate content delivery, minimize cognitive load, and simplify complex topics through various resources (Sweetman, 2021). LMS allow students to access educational materials remotely, promoting self-paced learning and reducing cognitive overload (Lalitha & Sreeja, 2020; van Merriënboer & Sluijsmans, 2009). Furthermore, LMS create an engaging learning environment by offering interactive features, segmenting content for easier assimilation, and facilitating prompt feedback (Jovanović et al., 2017; Nizam Ismail et al., 2021; Boulton et al., 2018; Holmes, 2018; Ustun et al., 2021).

The utilization of LMS has grown significantly, particularly with advancements in technologies such as artificial intelligence (AI), virtual reality (VR), and blockchain. These technologies have transformed educational practices, enhancing collaboration between students and instructors (Hussein et al., 2020). Advanced technologies improve teaching effectiveness and learning interactivity, allowing institutions to equip students with the skills needed for the global economy (Alshehri et al., 2020). Such technologies support transitioning from traditional classroom-based learning to more flexible, technology-driven methods. Education remains fundamental to national development, and governments worldwide have invested heavily in educational technology to enhance learning outcomes and address societal challenges (Al-Mamary, 2022; Al-Mamary et al., 2021). Adopting LMS has become crucial, particularly during the COVID-19 pandemic. The rapid shift to online

learning exposed the critical need for systems like SPOT (*Sistem Pembelajaran Online Terpadu*), which provided continuity in education during disruptions. However, despite their potential, many students face challenges with LMS usage. Common issues include inadequate instructional content, limited interaction capabilities, and poor device accessibility. These limitations undermine the potential of LMS to deliver equitable and effective learning experiences. Instructional content quality remains a core concern for LMS users. Poorly designed materials often fail to engage students or support their learning effectively (Khan et al., 2021). Moreover, interaction, a key factor in meaningful learning, is frequently inadequate in LMS environments, leading to feelings of isolation. Accessibility further compounds these issues, as students may struggle with device compatibility or inconsistent internet access. These barriers hinder the full utilization of LMS features and impact user satisfaction.

Advanced LMS features, such as adaptive learning systems and gamification, offer promising solutions but are often underutilized due to poor implementation strategies or lack of user training (Petrina, 2004; Nguyen, 2020). Additionally, the digital divide remains a significant obstacle, particularly in under-resourced regions with limited access to technology and reliable internet. These disparities highlight the importance of tailoring LMS features to meet diverse user needs. Modern LMS incorporate advanced technologies to enhance the user experience (Ndegeya, 2019; Akbar et al., 2019; Nguyen, 2019, 2020; Nguyen et al., 2015). AI-driven systems personalize content delivery based on individual learning profiles, while gamification elements motivate student engagement through badges, leaderboards, and rewards. Integration with tools like video conferencing and collaborative platforms has further expanded the versatility of LMS (Nizam Ismail et al., 2021). However, challenges remain in aligning these capabilities with user expectations. Research indicates that LMS effectiveness depends on content quality, interaction opportunities, and accessibility. These dimensions are frequently interrelated but are rarely studied holistically.

SPOT, an LMS platform utilized in Indonesia, exemplifies these dynamics. While SPOT supports online learning through features that promote accessibility and interaction, its ability to meet diverse user needs requires further investigation. By examining the quality of instructional content, interaction capabilities, and accessibility, this study seeks to evaluate SPOT's effectiveness and provide actionable recommendations for improvement. While LMS are widely recognized as tools for enhancing educational outcomes, significant gaps in understanding their effectiveness remain. Existing research often focuses on technological capabilities without adequately addressing user satisfaction or the interplay of key factors like instructional content, interaction, and accessibility (Fung & Yuen, 2012). Studies tend to isolate these dimensions, overlooking their cumulative impact on the user experience (Jovanović et al., 2017). The COVID-19 pandemic has further underscored these gaps. While many studies have explored the immediate challenges of transitioning to online education, there is limited understanding of how these shifts have reshaped long-term perceptions of LMS utility and effectiveness (Kapasia et al., 2020). This highlights the need for comprehensive research integrating user-centric perspectives with technological evaluations (Strain-Moritz, 2016).

While its integration of advanced features has been beneficial in the context of SPOT, its effectiveness in meeting diverse user needs requires further evaluation (Turebekova, 2023; Nguyen & Tran, 2018; Wang et al., 2022). This study focuses on key determinants of instructional content, interaction, and accessibility to comprehensively understand user satisfaction with SPOT. This study primarily investigates the factors influencing student satisfaction with LMS, focusing on SPOT as a case study. It seeks to evaluate the quality of instructional content by assessing how the design and presentation of materials impact satisfaction, analyze interaction capabilities to understand the role of interactive features in fostering meaningful engagement among students, instructors, and peers, and explore accessibility by examining how platform features enhance usability across different devices and user groups. Additionally, the study aims to provide actionable recommendations based on empirical evidence to improve LMS functionality and user experience. By addressing these objectives, the research fills critical gaps in the literature. It contributes to developing more effective, user-centric LMS, offering insights particularly valuable for educational institutions navigating the complexities of digital transformation in the post-pandemic era.

## 2. MATERIAL AND METHOD

### *Research Design and Participants*

This study employs a quantitative research design, utilizing a population survey to collect data on a large group of individuals' attitudes, behaviors, and perceptions. The aim is to identify the factors influencing learner satisfaction with using LMS, specifically SPOT (*Sistem Pembelajaran Online Terpadu*), focusing on three key

dimensions: instructional content, interaction, and accessibility. Surveys are a well-established method in social science research, allowing for the systematic collection of information and insights into social realities and individual experiences (Lavrakas, 2008). By employing this approach, researchers can gather empirical evidence to evaluate the effectiveness of LMS in facilitating educational outcomes. Although surveying an entire population is often impractical, using a representative sample provides a feasible alternative. A carefully selected random sample enables researchers to infer conclusions about the larger population while maintaining statistical reliability (Alharbi & Drew, 2014). For this study, the sampling unit consists of students from the Faculty of Curriculum and Educational Technology at Universitas Pendidikan Indonesia. These participants were randomly chosen to ensure diverse representation and minimize selection bias.

The survey instrument was formally introduced during the first semester of the 2022/2023 academic year. The survey's design ensured that it captured comprehensive data related to the three focus areas: instructional content, interaction, and accessibility. By leveraging this structured approach, the study aims to generate actionable insights into how LMS like SPOT can be optimized to meet the needs and expectations of learners, ultimately enhancing their overall satisfaction and engagement with digital education platforms.

### Data Collection

The survey forms were distributed online and shared with students through social media groups. A total of 104 respondents voluntarily completed the questionnaire. Data collection occurred from October to December 2022, targeting students enrolled in the Educational Technology study program. The survey comprised twenty questions created using Google Forms and was designed to gather comprehensive insights into various factors. Invitations to participate in the study were disseminated via WhatsApp groups, ensuring broad outreach to undergraduate students. The survey's primary focus was identifying and analyzing the factors influencing student satisfaction with LMS, specifically in their usage following the COVID-19 pandemic. The flowchart depicting the data collection process is presented in Figure 1.

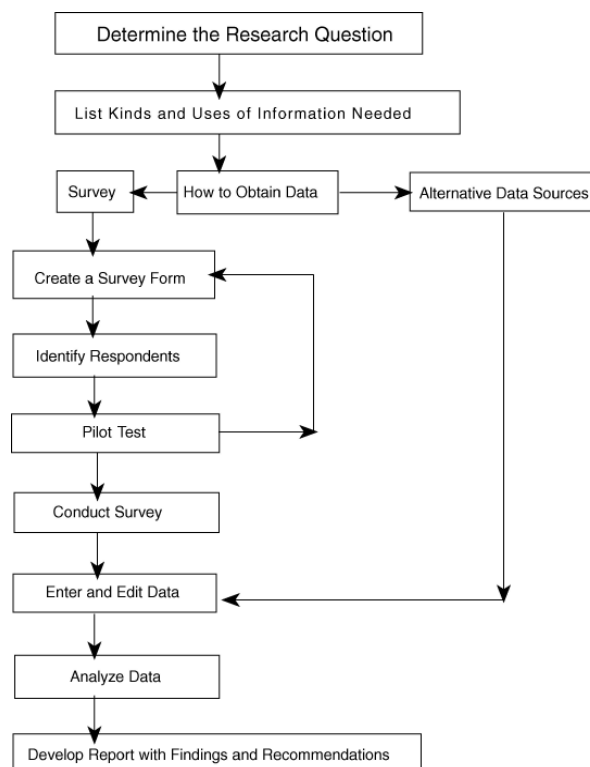


Figure 1. Flowchart of Data Collection (Rasoft Inc., 1997)

### ***Instrument Design***

The survey instrument in this study was meticulously designed to gather detailed data on student satisfaction with SPOT, the LMS at Universitas Pendidikan Indonesia. Developed using Google Forms, the questionnaire was divided into three focus areas: instructional content, interaction, and accessibility, ensuring that each section addressed specific aspects of the user experience. Questions related to instructional content evaluated the clarity, relevance, and engagement of learning materials, while the interaction section assessed the platform's ability to support meaningful collaboration and communication. Accessibility questions focused on usability, device compatibility, and adaptability to varied technological needs.

A four-point Likert scale measured satisfaction levels to capture comprehensive responses, supplemented by open-ended questions for qualitative feedback. A pilot test with a small student group ensured the survey's clarity and effectiveness, leading to adjustments based on their input. The questionnaire link was distributed via popular departmental social media platforms like WhatsApp, leveraging its widespread use among students to enhance participation. This digital approach facilitated access convenience and ensured efficient data collection.

### ***Data Analysis***

The survey data on student satisfaction with SPOT were analyzed using descriptive statistical methods to identify trends and patterns across three key factors: instructional content, interaction, and accessibility. The initial step involved cleaning the dataset to remove incomplete or inconsistent responses. Descriptive statistics, including means, percentages, and standard deviations, summarized responses, offering an overview of satisfaction levels within each focus area. Likert scale responses were grouped into "satisfied" and "dissatisfied," allowing comparative analysis of satisfaction trends. Tools like SPSS enabled further validation through correlation analysis, examining how the three factors influenced overall satisfaction.

### ***Limitations***

Several limitations of this study must be acknowledged. These include its limited generalizability to broader populations with diverse academic disciplines or institutional contexts, a narrowed scope focusing on specific factors while excluding others that may influence satisfaction, and a restricted qualitative depth that could have provided more nuanced insights into students' experiences and perspectives. Recognizing these limitations highlights opportunities for future research to build on the findings of this study. Expanding the sample size, exploring additional satisfaction factors, adopting longitudinal designs, and conducting comparative analyses with other LMS platforms could enhance the robustness and applicability of future studies. Despite these limitations, the study provides a valuable foundation for understanding student satisfaction with SPOT and offers actionable insights for improving LMS functionality and user experience.

## **3. Result**

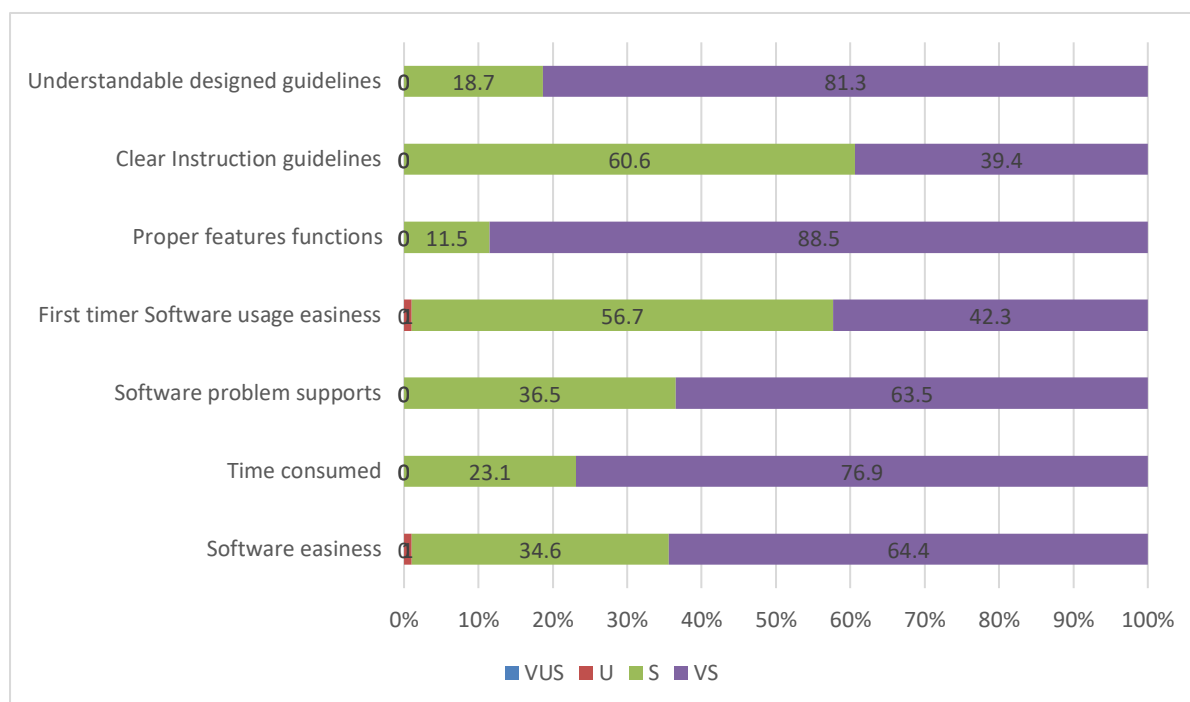
### ***Factors Influencing students' satisfaction***

#### ***Instruction information***

The ease of use of the software can be evaluated by measuring the time required to locate materials or information (Birru et al., 2004; Kujur & Singh, 2017; Nguyen, 2019, 2020; Wang et al., 2015). Shorter times indicate that the software is designed to be user-friendly, saving users time and preventing confusion about navigation or functionality. Software is highly usable when it minimizes obstacles, allowing users to focus on learning rather than struggling with the interface (Davis et al., 1992).

This study assessed SPOT based on its usage in the instructional process following the COVID-19 pandemic. At the undergraduate level, most course materials were available in digital formats. As learning transitioned online during the pandemic, instructors and students used digital and physical materials. Figure 2 presents data on the use of LMS for instructional content during the study. Results indicate that 34.5% of students were satisfied and 66.6% were very satisfied with the online resources provided through the LMS, while only 2% preferred synchronous meetings. These findings suggest that 90% of students were satisfied with the LMS as a digital resource, contrasting traditional learning environments where such satisfaction levels are less

common. This highlights the effectiveness of SPOT in supporting online learning during the transition period.



**Figure 2.** Instruction Information sub-dominant factors on Students Satisfaction survey results

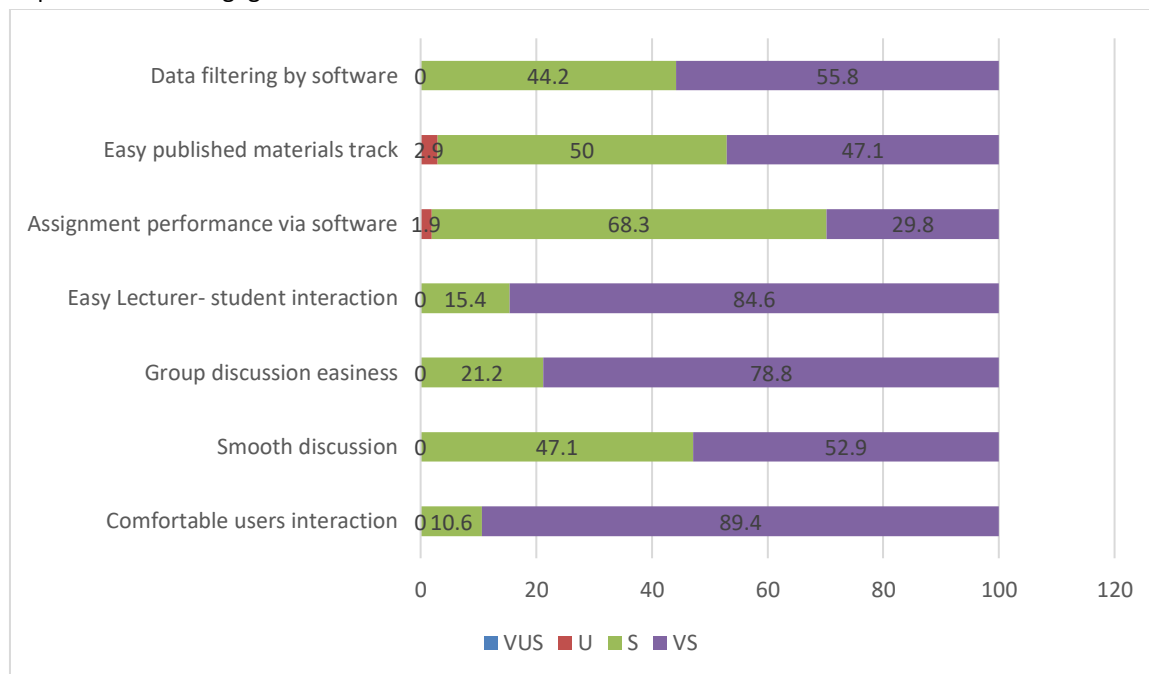
However, after the outbreak of the COVID-19 pandemic, educational institutions shifted traditional learning to online learning, and all students were required to register for online classes using LMS. As a result, teachers and students alike had to use online learning systems. This study participants used online courses and digital devices through the SPOT LMS (see Figure 2). Of 104 students served, 98% were familiar, and only 2% had never taken an online course. This signifies that students possess differing degrees of experience and prowess with online platforms and education-based systems.

In addition, 90% of respondents were satisfied with the instructional information provided by SPOT when evaluated across multiple dimensions. These characteristics are software simplicity, where (34.6% satisfied and 64.4% were very satisfied), time efficiency (23.1% satisfied and 76.9% very satisfied), and lastly, supports the problem where (36.5% satisfied and 63.5% were very satisfied). The first use of software also scored 1.8 out of 5 for 56.7% satisfaction compared to 5 for high satisfaction of %42.3, and correct feature functionality was 11.5% satisfied and 88.5% very satisfied. The clear instructional guidelines scored 60.6% (n=60) satisfied, 39.4% (n=39) highly satisfied, whereas intelligibly designed guidelines scored 18.7% (n=18) satisfied, 81.3% (n=82) very satisfied. These findings underscore the success of SPOT LMS in addressing students' needs, especially in providing clear, functional, and user-friendly instructional resources, confirming its position as an essential asset during the transition to virtual learning.

### Interaction

According to Delahunty et al. (2014), interaction is one of the most critical aspects of online learning. It encompasses the exchange of course-related information and knowledge among students, with or without the direct involvement of an instructor (Swan, 2001). When students encounter misconceptions or difficulties understanding a topic, their peers often serve as the most accessible and immediate source of clarification. Such interactions significantly enhance learning outcomes through group discussions and collaborative conversations.

Peer discussion and effective communication are two of the most influential factors in the success of online learning environments (Musa & Othman, 2012). When students find it easy and intuitive to engage with others, they are more likely to use the software frequently and derive greater satisfaction from the platform. This highlights the importance of fostering seamless and meaningful interaction within online learning systems to improve student engagement and academic success.



**Figure 3.** Interaction sub-dominant Factors on Student Satisfaction Survey Results

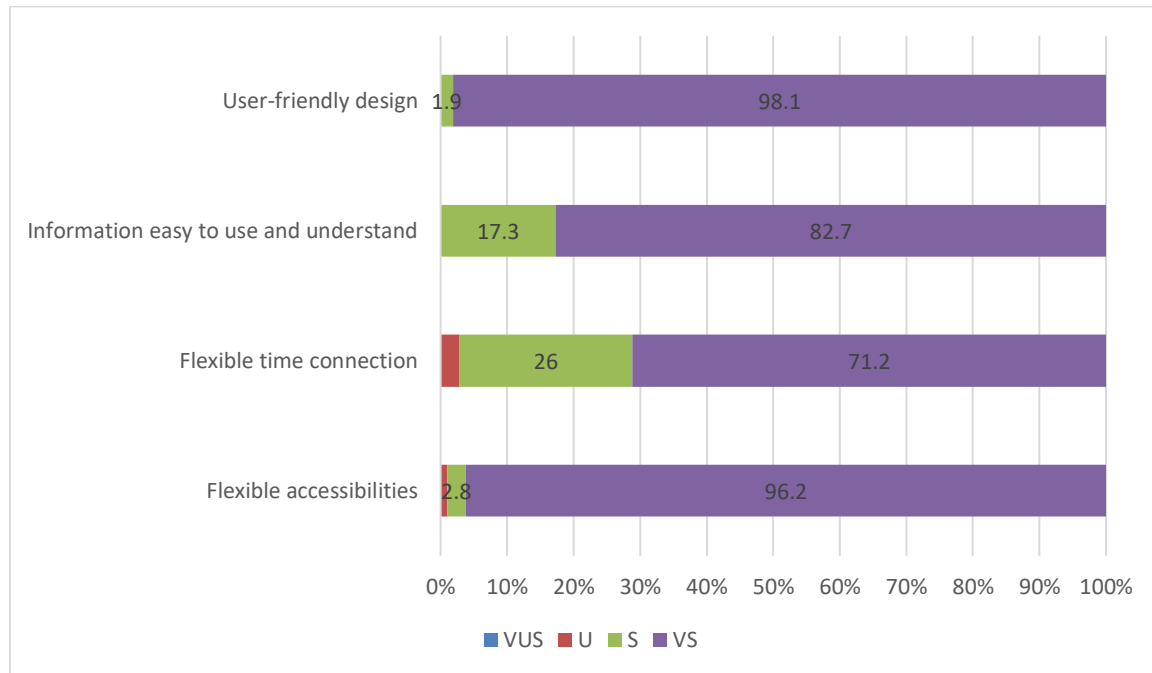
As online learning becomes more common, educational institutions struggle to choose the best online learning platform that meets the needs of students and instructors. They are used mainly for online course creation and delivery, direct online interactions, course material distribution, and assessment.

SPOT LMS, for example, is a digital platform used by the participants of this study, especially when looking at the aspect of interaction (Figure 3). According to the data, 10.6% of students were satisfied, and 89.4% were very satisfied with interaction features in direct online classes that LMS supported. Furthermore, 47.1% were satisfied, while 52.9% were very satisfied with the smoothness of the discussion scaffold on the platform. About group discussion, 21.2% were satisfied, and 78.8% were very satisfied. Satisfaction levels were similar at 15.4% satisfied and 84.6% very satisfied for two-way communication between lecturers and students. Satisfaction and high satisfaction for performance assignments were 68.3% and 29.8%, respectively. Moreover, 50% of students were satisfied, and 47.1% were very satisfied with the overall utility of the LMS, whereas 44.2% were satisfied and 55.8% were very satisfied with the software’s data filtering capabilities. This analysis is consistent with the conclusion that the SPOT LMS was, on average, a satisfactory medium for encouraging and supporting interaction in the learning process from a pedagogical perspective (from the students' standpoint).

**Accessibility**

Accessibility is not merely a high-level technical goal but also a core responsibility for software developers, who are tasked with designing systems that can be accessed seamlessly across various devices. In the current technological era, most software is developed to be compatible with multiple platforms, including smartphones, laptops, tablets, and even smartwatches, while striving to eliminate barriers faced by individuals with disabilities. Accessibility for users with disabilities often requires software compatibility with specialized

assistive devices, ensuring inclusivity for all users. Lazar et al. (2011) define a website as accessible when it can be used at any time and on any device, meeting the diverse needs of its users. Similarly, Nguyen et al., (2015) emphasize that users value software that provides seamless connectivity and interoperability across multiple devices, as carrying a laptop or relying on a single device at all times is impractical. This underscores the importance of designing systems that ensure universal access and cater to modern users' dynamic and flexible needs.



**Figure 4.** Accessibility sub-dominant Factors on Student Satisfaction Survey Results

Figure 4 illustrates the accessibility of the LMS used by participants in this study for online learning. All students (100%) reported utilizing the platform to access learning resources, submit assignments, engage with peers, and take tests. Specifically, regarding accessibility, 1% of students reported being unsatisfied, 2.8% were satisfied, and 96.2% were very satisfied with their ability to access learning resources, submit homework, and take exams independently of direct interaction with others. Regarding flexible access, 2.8% of students were unsatisfied, 26% were satisfied, and 71.2% were very satisfied with the platform's ability to provide a flexible connection during courses. Additionally, 17.3% of students expressed satisfaction, and 82.7% were very satisfied with the ease and clarity of information provided on the platform. Regarding the LMS's user-friendly design, 1.9% of students were satisfied, while 98.1% reported being very satisfied. Overall, the data indicate that 99% of students were highly satisfied with the accessibility features of the LMS, whereas only 1% reported dissatisfaction. These results emphasize the platform's success in providing accessible and user-friendly tools for online learning (Figure 4).

#### **Students' satisfaction results towards SPOT LMS**

Figures 5–7 demonstrate that 98% of survey respondents expressed satisfaction or high satisfaction with the online learning experience provided by the LMS regarding instructional content. Additionally, 99% of respondents reported being satisfied or very satisfied with the platform's interaction capabilities, and 99% were highly satisfied with the accessibility features of the LMS during the instructional process. Furthermore, the findings reveal that 30% of students were satisfied, while 69% were very satisfied with the overall features of SPOT's LMS, highlighting its effectiveness in supporting online learning.



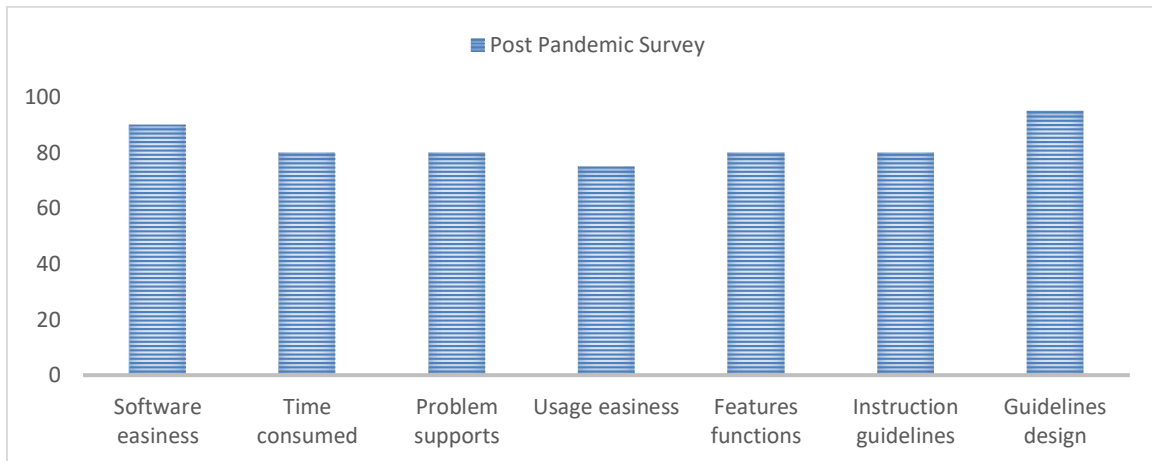


Figure 5. Survey results on Instruction information

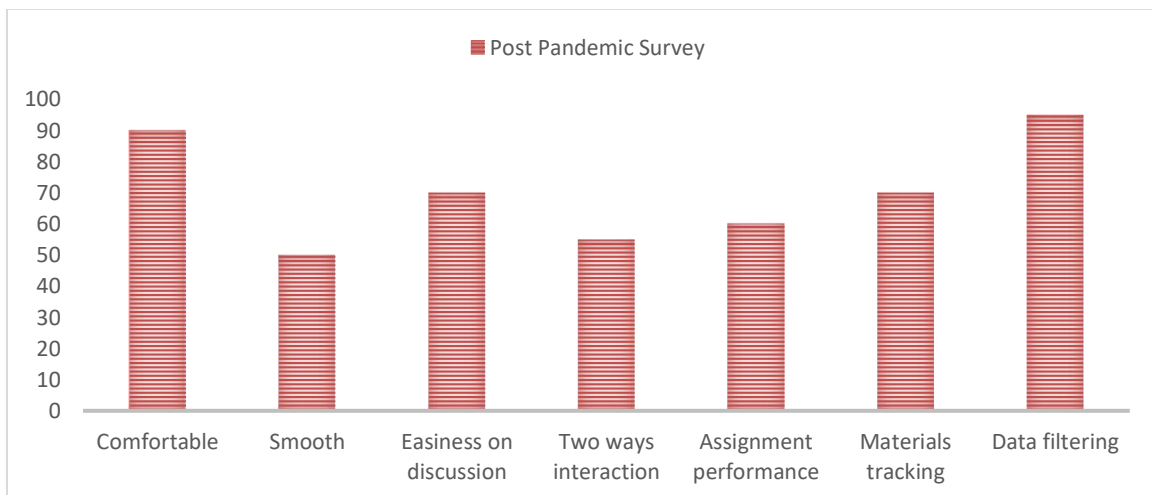


Figure 6. Survey results on Interaction

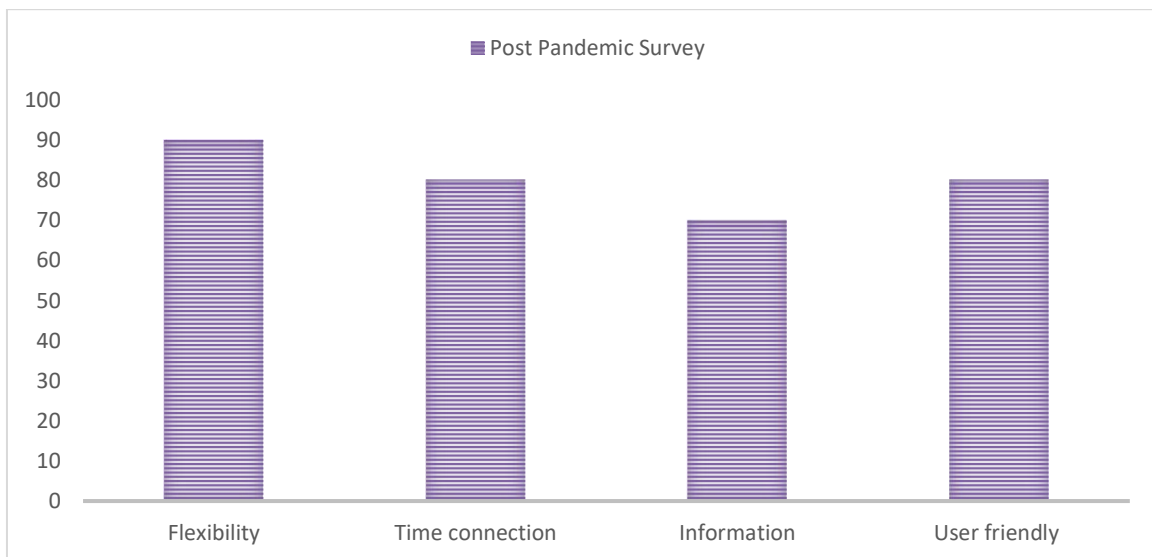


Figure 7. Survey results on accessibility



The analysis reveals that the most significant factors contributing to student satisfaction are updated features and efficient functions that enhance engagement with instructors and peers. The LMS effectively supported 90% of participants by enabling connectivity and facilitating interactions during direct online classes. Moreover, 89% of participants rated their interactions with professors and peers as moderate to high, emphasizing the importance of the platform's interactive capabilities.

Two additional factors, psychological and management concerns, were also highlighted. Prior research indicates that 95% of students experienced fewer psychological difficulties (such as boredom, nervousness, and frustration) during online learning compared to traditional learning environments (Hussein et al., 2020; Praetorius et al., 2018). Furthermore, 99% of participants reported fewer challenges balancing learning with other life activities, although approximately half faced time management issues, aligning with the findings of Fidalgo et al. (2020).

This study aligns with recent research on LMS-based online learning and student satisfaction during the COVID-19 pandemic (Aristovnik et al., 2020; Hasan & Bao, 2020). Aristovnik et al. (2020) found that while students expressed concerns about study-related challenges, they generally felt less bored, nervous, and frustrated. Hasan and Bao (2020) further identified that online learning enhanced students' psychological motivation. These findings underscore the importance of well-designed LMS platforms in supporting positive learning experiences and addressing psychological and management concerns in online education.

#### 4. Discussion

The COVID-19 pandemic has changed the global education landscape as we knew it, quickly forcing transitions from in-person classes to online or blended alternatives. This change was especially noticeable in higher education, where institutions were forced to transition to Emergency Remote Teaching (ERT) to maintain continuity in education. During the period of learning from home, a study was conducted at Universitas Pendidikan Indonesia (UPI) on the experiences of undergraduate students in online learning and the role of the LM) as a medium in the transition during this period.

Previous studies have shown that the pandemic accelerated the transition to online education and increased the significance of educational technology (Chakraborty et al., 2020). This transition provided serious difficulties beyond logistical considerations, including keeping a cognitive presence less prevalent in online environments than in-person experiences (Aguilera-Hermida et al., 2021). Such effective features of LMS are crucial to keep the students engaged and achieve positive learning results (Ali et al., 2023).

Through surveys and focus group discussions, the UPI study found that the student's satisfaction with the features of the LMS, which they used for the learning process, was a decisive factor for their satisfaction or otherwise with the overall online learning process. Study results correspond with studies indicating the relationship between LMS usability and student satisfaction (Ali et al., 2023). However, operational issues like irregular access to the internet, unavailability of computers, and variations in technological resources brought attention to the digital divide that was further unearthed during the pandemic (Paudel, 2020; SWARGIARY, 2023). These maladaptive responses may be reduced by reallocating resources towards sustainability and institutional approaches that create equal opportunities to access technology (Vargo et al., 2020).

The research also found that students' communication methods were in flux, with text messaging becoming a dominant way to connect. Given that students are increasingly comfortable using a diverse range of channels for communication, institutions might have to update their strategies to meet students where they are (Puljak et al., 2020; Trevisan et al., 2023). Using inclusive and appropriate communication methods is critical for successful connections with students.

Apart from practical and communicative aspects, discussions in focus groups indicated blended learning strategies to improve the online experience. Even though digital modules (e.g., LMS) can contribute to a more flexible way of learning, face-to-face learning and practical and experimental activities can help fill the gaps in cognitive involvement and collaborative learning (Edginton & Holbrook, 2010; Korkealahto et al., 2021; Rovai & Jordan, 2004). The UPI study provides a nuanced picture of online learning dynamics, drawing on quantitative

and qualitative methodologies. These findings highlight the importance of LMS features, adaptive communication strategies, and equitable access to resources within effective online education. This research sheds vital information for educational institutions striving to cope with the post-pandemic learning environment and further develop their digital learning settings (Mishra et al., 2020).

The educational landscape had to shift gears massively in the wake of the COVID-19 pandemic, with learning institutions relying heavily on LMS to facilitate the vast amounts of online learning needed. The primary factors, which are grapes of student satisfaction that lead students to a good experience, depend on instructional contents, interactivity, and device accessibility based on discussions from focus group sessions gained from LMS platforms. These results are consistent with previous studies emphasizing the significance of these criteria in improving the online learning experience (Hussein et al., 2020; Hamid et al., 2022). Studies, such as Hamid et al. (2022), show the direct effect of the quality of LMS features for interaction, as well as the quality of the instructional content, on student satisfaction, whilst Jiang et al. (2021) emphasize the importance of effective online platforms, especially in times of crisis.

The difficulties experienced by undergraduate students during the pandemic (from technical issues to psychological and economic strains) further strengthen the imperatives for colleges and universities to invest in improved LMS functionality. Studies by (Rajab et al., 2020; Auliana, 2023) have called for collaborative efforts between institutions, educators, and students to help reduce the barriers separating these groups and thus also increase the utility of LMS platforms. Interestingly, many students reported greater satisfaction with online learning during the pandemic than (at least) one academic semester before showing the transition's complexities and other external impacts (Hung, 2021; Haşegan et al., 2022). This pattern is consistent with the results reported by Kapasia et al. (2020) and Aristovnik et al. (2020), which suggest that the flexibility of online learning is a positive attribute.

Furthermore, the pandemic has demonstrated that transitioning to online education requires university decision-makers to interact with students to help discover what may be preventing technology adaptation. Active and effective online learning environments, for example, greater engagement and access to LMS users (Pham & Dau, 2022; Dinh & Nguyen, 2020), endorse virtual classrooms. Moreover, institutions must bridge the digital divide about online education as many have unequal access to technology, which serves as a roadblock on the road to equitable education (Paudel, 2020; SWARGIARY, 2023). This indicates a lack of more inclusive policies and better infrastructure to accommodate a wider student demographic. Focus group discussions highlighted how communication preferences are changing, with students opting for text-based communication rather than traditional email correspondence. This preference requires institutional communication approach revision for effective engagement (Puljak et al., 2020; Trevisan et al., 2023). Proactively addressing these changing modes of communication will improve student satisfaction and strengthen the ties between institutions and the people they serve. In the field of education, to maximize online learning, universities should routinely evaluate the nature of their existing distance education programs, particularly concerning the aspects of student satisfaction. Educational reforms like enhancing pedagogical methods, incorporating interactive elements, and strengthening accessibility will aid academic performance and general satisfaction (Simamora, 2020; Almusharraf & Khahro, 2020).

In summary, the switch to online learning during the past COVID-19 pandemic has highlighted some important aspects of LMS platforms and their user satisfaction. Suppose we hone instructional quality and interactivity while preserving accessibility and mitigate some of the barriers to doing so, such as those imposed by the digital divide and communication preferences that have evolved since the advent of online learning. In that case, universities can create more effective and equitable online learning environments. These failures mean that addressing the changing landscape of students' needs in a post-pandemic world will be an ongoing process that involves constantly monitoring and adapting online strategies.

## 5. CONCLUSION

Now becoming adaptable to the change in the world from brick/mortar to a realm of life, This study aims to study the SPOT Learning Management system (LMS) in terms of the different factors of student satisfaction during these online classes shift due to the COVID-19 pandemic. Satisfaction levels were high: 98% of students were satisfied with instructional content, 99% with interaction capabilities, and 99% with accessibility. These findings also highlight SPOT's success in addressing its target users, namely, undergraduate students, with its intuitive design, low-friction interaction features, and device-agnostic approach. Challenges such as time management and balancing education against personal commitments were recognized, demonstrating areas for potential development. The study suggests the continued improvement of LMS platforms to encourage a better learning experience. Universities must use these insights to harness new technologies, active teaching spaces, and solutions to satisfaction barriers. Agile feedback loops help improve the quality of the online learning experience by helping educators understand student needs and address challenges. The current research adds significantly to the literature on online education. It identifies LMS platforms like SPOT as the most crucial entity in Universities coping with the predictive paradigms of higher education. Further research is needed to address long-term effects and best practices toward a broader influence of the functionality of LMS in these various schools.

## 6. REFERENCES

- Aguilera-Hermida, A., Quiroga-Garza, A., Gómez-Mendoza, S., Villanueva, C., Avolio, B., & Avci, D. (2021). Comparison of students' use and acceptance of emergency online learning due to COVID-19 in the USA, Mexico, Peru, and Turkey. *Education and Information Technologies*, 26(6), 6823–6845. <https://doi.org/10.1007/s10639-021-10473-8>
- Akbar, M. A., Sang, J., Khan, A. A., Mahmood, S., Qadri, S. F., Hu, H., & Xiang, H. (2019). Success factors influencing requirements change management process in global software development. *Journal of Computer Languages*, 51(1), 1121130. <https://doi.org/10.1016/j.cola.2018.12.005>
- Aldossari, S. M., & Chen, K. C. (2019). Machine learning for wireless communication channel modeling: An overview. *Wireless Personal Communications*, 106(1), 41–70. <https://doi.org/10.1007/s11277-019-06275-4>
- Alharbi, S., & Drew, S. (2014). Using the technology acceptance model in understanding academics' behavioral intention to use learning management systems. *International Journal of Advanced Computer Science and Applications*, 5(1), 143–155. <https://doi.org/10.1016/j.cola.2018.12.005>
- Ali, Q., Abbas, A., Raza, A., Khan, M., Zulfiqar, H., Iqbal, M., et al. (2023). Exploring the students' perceived effectiveness of online education during the COVID-19 pandemic: Empirical analysis using structural equation modeling (SEM). *Behavioral Sciences*, 13(7), 578. <https://doi.org/10.3390/bs13070578>
- Al-Mamary, Y. H. S. (2019). Measuring information systems success in Yemen: Potential of DeLone and McLean's model. *International Journal of Scientific & Technology Research*, 8(7), 793–799.
- Al-Mamary, Y. H. S. (2020). Using structural equation modeling approach to investigate the impact of technological factors on user satisfaction. *Quality Access to Success*, 21(178), 90–95. [https://www.researchgate.net/publication/343389680\\_Using\\_Structural\\_Equation\\_Modeling\\_Approach\\_to\\_Investigate\\_the\\_Impact\\_of\\_Technological\\_Factors\\_on\\_User\\_Satisfaction](https://www.researchgate.net/publication/343389680_Using_Structural_Equation_Modeling_Approach_to_Investigate_the_Impact_of_Technological_Factors_on_User_Satisfaction)
- Al-Mamary, Y. H. S. (2022). Examining the factors affecting the use of ICT in teaching in Yemeni schools. *Journal of Public Affairs*, 22(1), e2330. <https://doi.org/10.1002/pa.2330>
- Al-Mamary, Y. H. S., Abdulrab, M., Alwaheeb, M. A., & Alshammari, N. G. M. (2020). Factors impacting entrepreneurial intentions among university students in Saudi Arabia: Testing an integrated model of TPB and EO. *Education + Training*. <https://doi.org/10.1108/ET-04-2020-0096>

- Al-Mamary, Y. H. S., Al-Nashmi, M. M., Shamsuddin, A., & Abdulrab, M. (2019). Development of an integrated model for successful adoption of management information systems in Yemeni telecommunication organizations. *International Journal of Scientific & Technology Research*, 8(11), 3912–3939. <http://www.ijstr.org/final-print/nov2019/Development-Of-An-Integrated-Model-For-Successful-Adoption-Of-Management-Information-Systems-In-Yemeni-Telecommunication-Organizations.pdf#>
- Al-Mamary, Y. H., & Shamsuddin, A. (2015). Testing of the technology acceptance model in the context of Yemen. *Mediterranean Journal of Social Sciences*, 6(4), 268–269. <https://doi.org/10.5901/mjss.2015.v6n4s1p268>
- Al-Mamary, Y. H., Abdulrab, M., Jazim, F., Khan, I., & Al-Ghurbani, A. M. (2021). Factors influencing the use of technology in higher education in Saudi Arabia: A conceptual framework and future research directions. *Journal of Public Affairs*, 7(5), 2683–2695. <https://doi.org/10.1002/pa.2683>
- Al-Mamary, Y. H., Shamsuddin, A., Hamid, N. A., Al-Maamari, & Mohammed, H. (2015). Adoption of management information systems in the context of Yemeni organizations: A structural equation modeling approach. *Journal of Digital Information Management*, 13(9), 429–444. [https://www.researchgate.net/publication/293653734\\_Adoption\\_of\\_Management\\_Information\\_Systems\\_in\\_Context\\_of\\_Yemeni\\_Organizations\\_A\\_Structural\\_Equation\\_Modeling\\_Approach](https://www.researchgate.net/publication/293653734_Adoption_of_Management_Information_Systems_in_Context_of_Yemeni_Organizations_A_Structural_Equation_Modeling_Approach)
- Almusharraf, N., & Khahro, S. (2020). Students' satisfaction with online learning experiences during the COVID-19 pandemic. *International Journal of Emerging Technologies in Learning*, 15(21), 246. <https://doi.org/10.3991/ijet.v15i21.15647>
- Alshehri, A., Rutter, M. J., & Smith, S. (2020). The effects of UTAUT and usability qualities on students' use of learning management systems in Saudi tertiary education. *Journal of Information Technology Education Research*, 19(8), 891. <https://doi.org/10.28945/4659>
- Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on the life of higher education students: A global perspective. *Sustainability (Switzerland)*, 12(20), 1–34. <https://doi.org/10.3390/su12208438>
- Auliana, R. (2023). The factors that influence student satisfaction during online learning on the subject of culinary in the bachelor of applied culinary program of UNY. *Pedagogia Jurnal Pendidikan*, 13(1), 43–55. <https://doi.org/10.21070/pedagogia.v13i1.1539>
- In *International Conference on Hybrid Learning* (pp. 306–316). Springer. [https://doi.org/10.1007/978-3-642-32018-7\\_29](https://doi.org/10.1007/978-3-642-32018-7_29)
- Hamid, S., Zaki, H., & Senik, Z. (2022). Students' satisfaction and intention to continue online learning during the COVID-19 pandemic. *Malaysian Journal of Society and Space*, 18(3). <https://doi.org/10.17576/geo-2022-1803-09>
- Hasan, N., & Bao, Y. (2020). Impact of “e-Learning crack-up” perception on psychological distress among college students during COVID-19 pandemic: A mediating role of “fear of academic year loss.” *Children and Youth Services Review*, 118(2), 110–123. <https://doi.org/10.1016/j.childyouth.2020.105355>
- Hațegan, C., Hodoroagea, A., Talaș, D., Milevoj, K., Petrović, B., Sivickiene, R., et al. (2022). Students' satisfaction with online learning at the beginning of the SARS-CoV-2 pandemic. *Journal of Educational Sciences & Psychology*, 12(74)(1), 10–23. <https://doi.org/10.51865/jesp.2022.1.03>
- Holmes, N. (2018). Engaging with assessment: Increasing student engagement through continuous assessment. *Active Learning in Higher Education*, 19(1), 23–34. <https://doi.org/10.1177/1469787417723230>
- Hung, L. (2021). Enhancing learners' satisfaction to improve retention in online classes: Current practices at a center of foreign languages in Vietnam. *European Journal of Open Education and E-Learning Studies*, 6(2). <https://doi.org/10.46827/ejoe.v6i2.3936>

- Hussein, E., Daoud, S., Alrabaiah, H., & Badawi, R. (2020). Exploring undergraduate students' attitudes towards emergency online learning during COVID-19: A case from the UAE. *Children and Youth Services Review, 119*(3), 105699–105720. <https://doi.org/10.1016/j.childyouth.2020.105699>
- Jiang, H., Islam, A., Gu, X., & Spector, J. (2021). Online learning satisfaction in higher education during the COVID-19 pandemic: A regional comparison between Eastern and Western Chinese universities. *Education and Information Technologies, 26*(6), 6747–6769. <https://doi.org/10.1007/s10639-021-10519-x>
- Jovanović, J., Gašević, D., Dawson, S., Pardo, A., & Mirriahi, N. (2017). Learning analytics to unveil learning strategies in a flipped classroom. *Internet and Higher Education, 33*, 74–85. <https://doi.org/10.1016/j.iheduc.2017.02.001>
- Kapasias, N., Paul, P., Roy, A., Saha, J., Zaveri, A., Mallick, R., & Chouhan, P. (2020). Impact of lockdown on learning status of undergraduate and postgraduate students during COVID-19 pandemic in West Bengal, India. *Children and Youth Services Review, 116*, 105194–105210. <https://doi.org/10.1016/j.childyouth.2020.105194>
- Khan, I., Khan, N., Jazim, F., Tabry, Y. H., Abdulrab, M., & Al-Ghurbani, A. M. (2021). The effect of external factors in the use of technology among Ha'il university academic faculty: Evidence from Saudi Arabia. *Journal of Applied Research in Higher Education. https://doi.org/10.1108/JARHE-04-2021-0140*
- Korkealehto, K., Lakkala, M., & Toom, A. (2021). Enrolled or engaged? Students' perceptions of engagement and oral interaction in a blended learning language course. *The JALT CALL Journal, 17*(1), 1–22. <https://doi.org/10.29140/jaltcall.v17n1.268>
- Kujur, F., & Singh, S. (2017). Engaging customers through online participation in social networking sites. *Asia Pacific Management Review, 22*(1), 16–24. <https://doi.org/10.1016/j.apmr.2016.10.006>
- Lalitha, T. B., & Sreeja, P. S. (2020). Personalized self-directed learning recommendation system. *Procedia Computer Science, 171*, 583–592. <https://doi.org/10.1016/j.procs.2020.04.063>
- Lavrakas, P. J. (2008). *Encyclopedia of survey research methods*. Sage. <https://doi.org/10.4135/9781412963947>
- Lazar, J., & Jaeger, P. (2011). Reducing barriers to online access for people with disabilities. *Issues in Science and Technology, 27*(2), 69–83.
- Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open, 1*, 100012. <https://doi.org/10.1016/j.ijedro.2020.100012>
- Musa, M. A., & Othman, M. S. (2012). Critical success factors in e-learning: An examination of technology and student factors. *International Journal of Advances in Engineering & Technology, 3*(2), 2231–1963. [https://www.researchgate.net/publication/235966913\\_Critical\\_Success\\_Factors\\_in\\_E-learning](https://www.researchgate.net/publication/235966913_Critical_Success_Factors_in_E-learning)
- Ndegeya, R. M. (2019). Comparison of learning management systems. Available at <http://urn.fi/URN:NBN:fi:amk-2019061016388>.
- Nguyen, N. T. (2019). Optimizing factors for accuracy of forecasting models in food processing industry: A context of cacao manufacturers in Vietnam. *Industrial Engineering & Management Systems, 18*(4), 808–824. <https://doi.org/10.7232/iems.2019.18.4.808>
- Nguyen, N. T. (2020). Performance evaluation in strategic alliances: A case of Vietnamese construction industry. *Global Journal of Flexible Systems Management, 21*(1), 85–99. <https://doi.org/10.1007/s40171-019-00230-9>
- Nguyen, N. T., & Tran, T. T. (2019). Raising opportunities in strategic alliance by evaluating efficiency of logistics companies in Vietnam: A case of Cat Lai port. *Neural Computing & Applications, 31*(11), 7963–7974. <https://doi.org/10.1007/s00521-018-3639-2>
- Nguyen, N. T., Tran, T. T., Wang, C. N., & Nguyen, N. T. (2015). Optimization of strategic alliances by integrating DEA and grey model. *Journal of Grey System, 27*(1), 38–49.

- Nizam Ismail, S., Hamid, S., Ahmad, M., Alaboudi, A., & Jhanjhi, N. (2021). Exploring students' engagement towards the learning management system (LMS) using learning analytics. *Computer Systems Science and Engineering*, 37(1), 73–87. <https://doi.org/10.32604/csse.2021.015261>
- Paudel, P. (2020). Online education: Benefits, challenges and strategies during and after COVID-19 in higher education. *International Journal on Studies in Education*, 3(2), 70–85. <https://doi.org/10.46328/ijonse.32>
- Petrina, S. (2004). Sidney Pressey and the automation of education, 1924–1934. *Technology and Culture*, 45(2), 305–330. <https://doi.org/10.1353/tech.2004.0085>
- Pham, L. T., & Dau, T. K. T. (2022). Online learning readiness and online learning system success in Vietnamese higher education. *The International Journal of Information and Learning Technology*, 39(2), 147–165. <https://doi.org/10.1108/IJILT-03-2021-0044>
- Praetorius, A.-K., Klieme, E., Herbert, B., & Pinger, P. (2018). Generic dimensions of teaching quality: The German framework of the three basic dimensions. *ZDM Mathematics Education*, 50(2), 407–426. <https://doi.org/10.1007/s11858-018-0918-4>
- Puljak, L., Čivljak, M., Haramina, A., Mališa, S., Čavić, D., Klinec, D., et al. (2020). Attitudes and concerns of undergraduate university health sciences students in Croatia regarding complete switch to e-learning during COVID-19 pandemic: A survey. *BMC Medical Education*, 20(1). <https://doi.org/10.1186/s12909-020-02343-7>
- Rajab, M. H., Gazal, A. M., & Alkattan, K. (2020). Challenges to online medical education during the COVID-19 pandemic. *Cureus*, 12(7). <https://doi.org/10.7759/cureus.8966>
- Rasoft Inc. (1997). *Reproduced from how to plan and implement a successful survey*. Windermere.
- Rovai, A. P., & Jordan, H. M. (2004). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *International Review of Research in Open and Distance Learning*, 5(2), 1–13. <https://doi.org/10.19173/irrodl.v5i2.192>
- Simamora, R. (2020). The challenges of online learning during the COVID-19 pandemic: An essay analysis of performing arts education students. *Studies in Learning and Teaching*, 1(2), 86–103. <https://doi.org/10.46627/silet.v1i2.38>
- Strain-Moritz, T. E. (2016). *Perceptions of technology use and its effects on student writing*. Culminating Projects in Teacher Development. 8. [https://repository.stcloudstate.edu/ed\\_etds/8](https://repository.stcloudstate.edu/ed_etds/8)