Factors influencing the adoption of learning management systems in language education: A duoethnographic study in Japanese universities

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ABSTRACT

In the past decade, universities have increasingly invested in Learning Management Systems (LMSs) to enhance language learning, aiming for efficiency and flexibility. However, LMS adoption alone does not guarantee success; multiple factors include instructor attitudes toward technology and system quality have been found to be relevant. This paper delved into the factors that shaped LMS adoption by examining teacher perceptions and experiences and LMS attributes. This paper discusses a study utilizing duoethnography to explore the personal challenges English as a foreign language teachers face when adopting LMSs in Japanese universities. Employing the Technology Acceptance Model (TAM), the study empirically assesses how teacher perceptions and experiences impact LMS adoption. Personal diaries, journals, reflections, and artwork from two instructors at Japanese universities were collected. The findings highlight three key external factors, system quality, perceived selfefficacy, and facilitation conditions, significantly influencing teachers' responses to LMS adoption. These results support prior research on LMS adoption factors and reaffirm the TAM's credibility in understanding teachers' technology adoption behavior. This study contributes to the literature, aiding administrators and teachers in addressing these issues within language learning programs. This study concluded by outlining administrator training strategies, tools for assessing teacher computer proficiency, and creating conducive conditions for LMS utilization.

INTRODUCTION

Since the turn of this century, a significant shift has occurred in how computers are employed for educational purposes. This change directly results from the increased use of computers in education. Within this transformation, e-learning has emerged as a preferred approach for modern teaching tools, utilizing cutting-edge technology. By integrating computer and internet technologies into educational

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methods and providing diverse teaching tools, Learning Management Systems (LMSs) facilitate enhanced and swifter communication between educators and students in a virtual setting, promoting efficiency in educational procedures. Foreman (2017) defines LMS technology as typically accessible via a web browser. It streamlines learning management, automates tasks, and facilitates content organization, tracking, and reporting. Ultimately, this saves time and resources for organizations. In his book, The LMS Guide Book: Learning Management Systems Demystified, Foreman (2017) categorizes the popular merits of good LMSs as having some or all of the following features: centralized learning hub, efficient content delivery, accessibility and flexibility, assessment and feedback, communication and collaboration, progress tracking, customization, data analytics, security and privacy, and scalability. Despite the extensive features LMSs provide for teaching and learning and significant university investments in LMSs, there remain barriers preventing higher education teachers from fully harnessing their potential. While there are apparent advantages associated with utilizing LMSs, numerous instructors still have reservations about incorporating them into their teaching methods (Wichadee, 2015; Zanjani et al., 2016). The factors influencing instructors' acceptance of technology encompass educators' viewpoints, self-confidence, teaching objectives, accessibility of resources, support systems, and time (Baturay et al., 2017; Siyam, 2019).

The focus of the current study was on the perceptions and experiences of teachers of English as a foreign language (EFL) in Japanese higher educational institutions. The study aimed to achieve two primary objectives: (i) identify the factors influencing the usage behavior of EFL teachers regarding Learning Management Systems (LMS), and (ii) determine the causal relationships that underlie these factors. The central expectation was that gaining insights into the factors influencing faculty members' usage behavior of Learning Management Systems (LMS) could provide valuable information for developing, selecting, training, maintaining, and investing in these systems. In pursuit of this goal, the present study employed the Technology Acceptance Model (TAM) as a foundational model to forecast EFL teachers' intention and usage of LMSs in higher education institutions. By conducting a qualitative ethnographic study among two university teachers of English across several higher education institutions in Japan; this study revealed significant findings regarding faculty attitudes in situations where the use of Learning Management Systems (LMSs) is mandatory. Based on these findings, the discussion examines the key determinants of LMS usage.

LITERATURE REVIEW

Learning Management Systems

Learning Management Systems (LMSs) offer a range of tools and features, such as course management tools, online group chats and discussions, document sharing (including lecture materials, homework, and assignments), PowerPoint presentations, video clip uploads, grading, and course evaluations to support teaching and learning. Over time, LMSs have become more intricate in terms of educational content, technological resources, and interaction options. This has led to growing concerns about the quality of the user interface and how tasks are performed within these systems (Fathema et al., 2015). The definition of "usability" varies depending on the context. From a practice perspective, usability is the system's capacity to assist

users in effectively, efficiently, and satisfactorily completing their tasks. Users emphasize that when evaluating LMS usability, the focus should shift from the from the administrative role of the system to that of the teacher's role.

From a user's perspective, or more specifically, a teacher's perspective, the question arises as to what may make teachers reluctant to use LMSs. In other words, what are the primary obstacles to using an LMS for instructional language-learning purposes? One key obstacle in teaching English as a foreign language at Japanese universities is a lack of teacher agency in selecting tools that are compatible with a LMS (Ferreira & Peloghitis, 2023). It appears counterintuitive that teachers are not permitted to choose the instructional and communication tools (ICT) they are most adept and experienced at using to help their students achieve because they are obliged to use tools mandated by institutional media administration. Another key obstacle to institutions embracing commercial platforms such as Google for Education is limited media administrator customization, potentially impacting the use of commercial LMS (Sharifov & Mustafa, 2020). One potential explanation is due to budgetary constraints; institutional clients must pay for ongoing licensing to maintain and customize features. Another explanation that aligns with budgetary constraints and lack of customization of LMS for meeting teaching goals could be a lack of human resources at institutional media centers.

In a case study of 20 Kenyan lecturers in higher education using Moodle as a LMS, Kiget et al. (2014) recognized user-friendliness as a crucial element influencing the usability of e-learning systems. A significant portion of the survey participants concurred that the usability of an e-learning system relies on its user-friendliness. Over 40% of the participants thought that a lack of a usability policy negatively impacted the effective use of e-learning systems such as Moodle. More user-friendliness was needed to access menus and commands and facilitate interaction between the user and the e-learning system.

In their 2016 study, Porter et al. highlighted two considerations regarding the impact of time management and using LMSs. Initially, the authors pointed out that augmented time commitments linked to crafting educational materials compatible with the LMS were a hindrance to acceptance and utilization by educators. Secondly, the educators pointed out in the study underscored the significance of system uptime in shaping their attitudes toward usability, referring to the duration during which the system functions correctly. A case shared by a participant in the study involved a scenario where the learning management system experienced downtime the evening before final exams were scheduled. As detailed in Porter et al.'s study, instances like this amplify frustration levels among teachers, diminishing user confidence in the systems.

Another instructional obstacle hindering the utilization of LMSs pertains to the challenges associated with system complexity and usability. Scholars have engaged in discussions regarding whether the intricacy of a technology or system influences its adoption, acceptance, and usage. However, researchers have a consensus that perceived usability significantly affects learning effectiveness and users' experiences (Mkhize, Mtsweni, & Buthelezi, 2016; Orfanou, Tselios, & Katsanos, 2015). Zaharias and Pappas (2016) even contended that the complexity of learning management systems posed challenges for scholars and decision-makers in evaluating system effectiveness.

The TAM Model and Research Question

The current research employed the TAM (Davis, 1989) as a theoretical framework to examine the adoption and utilization of learning management systems by faculty members in higher education. Davis (1989) originally formulated the TAM to elucidate users' acceptance behavior regarding general computing technologies. Over time, the TAM has gained widespread acceptance as a validated model for investigating technology acceptance and adoption across various disciplines (Binyamin et al., 2019; Brito, 2017; Saroia & Gao, 2019; Walker et al., 2016).

Previous studies have identified TAM as the most influential, widely utilized, and highly predictive model for IT adoption (Adams, Nelson & Todd, 1992; Davis, et al., 1989; Lee, Kozar, & Larsen, 2003; Venkatesh & Bala, 2008; Venkatesh & Davis, 2000). Although TAM was originally designed to investigate technology acceptance decisions across various organizational settings and user populations, its role in higher education has been limited in the past (Teo, Lee & Chai, 2008). There was a growing trend of employing TAM as an explanatory tool to study e-learning processes (Park, 2009). This study goes beyond previous TAM research by applying it specifically to the higher education sector. Furthermore, it contributes to TAM literature by suggesting an extension of the original TAM model in a qualitative framework. The study explores the impact of several external variables on the five original TAM constructs. The research question is discussed as follows.

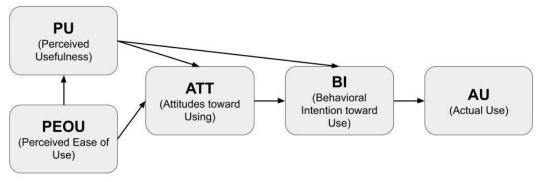


Figure 1. Technology Acceptance Model (TAM)

The TAM model revolves around several constructs: Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude toward Using (ATU), Behavioral Intention to Use (BI), and Actual Use (AU) (see Figure 1). First, PEOU refers to the degree to which an individual believes that using a particular technology will be free from effort, indicating that the simpler a technology is perceived, the more likely it is to be adopted. On the other hand, PU is centered on the belief that using a particular technology will enhance performance, capturing the technology's value proposition. Then, ATU reflects the user's overall attitude towards using the technology. It is influenced by their perceptions of usefulness and ease of use. Moreover, BI assesses the user's intention to use the technology in the future. A positive intention is a strong predictor of actual usage. Finally, ASU represents the user's actual use of the technology. It is often used to evaluate the effectiveness of the technology. In summary, TAM provides a structured framework for assessing users' perceptions and intentions regarding technology, ultimately influencing their adoption and usage behaviors.

To provide a better understanding of the exploration of LMS acceptance among faculty teaching English as a foreign language at tertiary institutions in Japan,

the variables of the TAM were used to explore the effects of barriers and successes of usage behavior. More specifically, as depicted in Figure 1, the model was used to explore the effects of external influences on the five original TAM constructs. The current study aimed to uncover obstacles to adopting and utilizing learning management systems. As such, external factors were incorporated as potential influences on users' perceptions of the system's usefulness and ease of use. The Technology Acceptance Model (TAM) is commonly utilized in quantitative studies. However, it also serves as a theoretical framework for qualitative research, as Watty, McKay, & Ngo highlighted in 2016. In this context, the TAM guided the qualitative study of the adoption of learning management systems in higher education. This approach of employing the TAM for qualitative analysis of the acceptance and usage of learning management systems aligns with earlier studies conducted by Noval and Johnson in 2018, Watty et al. in 2016, and Zhou and Teo in 2017.

METHODOLOGY

Duoethnography

Based on the literature review, the researchers in this study used a duoethnographic method to explore the use of learning management systems in the context of teaching English as a foreign language (EFL) at the participants' universities in 2023. Duoethnography, a collaborative form of autoethnography, involves participants reflecting on their own experiences in relation to the research topic. This innovative approach combines elements of autobiography and ethnography. In contrast to autoethnography, which focuses on a single researcher's perspective, duoethnography examines the way two individuals understand and interpret the same phenomenon differently or similarly (Ferreira & Peloghitis, 2023; Ferreira & Throne, 2022; Norris & Sawyer, 2016, as cited by Eldridge in 2012).

The field of education research has shown a notable lack of duoethnographic studies, with few methodological examples of composing process in this area. Consequently, a detailed description of the data artifacts used and the process of analysis is necessary. In this duoethnographic study, the construction involved two distinct personal narratives, utilizing both visual and written artifacts as data sources. These artifacts comprised artistic sketches by one participant and digital digital journal extracts by the other. Additionally, the written data included practitioner journals, ande reflections on the sketches. For data analysis, MAXQDA 20 software was employed to code all artifacts. The initial coding phase involved a literature review, with the resulting codes applied to analyze the participants' artifacts. Subsequently, new codes specific to this study's experiences were incorporated. Considering the limited number of participants, we were cautious in identifying overarching themes from the data patterns. Therefore, our study's findings and analysis are presented in comparison with the themes and patterns identified in previous research, while also highlighting new insights unique to the experiences of each participant in this study.

Research Question

The research focus was two teachers' use of learning management systems for teaching English as a foreign language at Japanese universities. The research question

was formulated as follows: How do teachers experience and perceive the use of learning management systems in teaching English as a foreign language in Japanese higher education, as analyzed through the lens of the TAM?

Data Representation

In auto- and duoethnography, the presentation of data can take various forms, ranging from literary works (such as journals, reflections, and poems) to different types of artistic expressions (including collages, sketches, and paintings). In the current duoethnographic study, the authors employ an array of ethnographic vignettes created by themselves as artifacts. These vignettes are used to provide a retrospective understanding of their personal experiences in relation to the research question. The current research utilized specific areas of focus that correspond to the Technology Acceptance Model's constructs - Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), Behavioral Intention to use (BI), and Actual Use (AU). These defined areas were instrumental in steering the processes of analyzing data into codes and the subsequent narrative derived from those codes.

John

In examining John's experiences and perceptions of using Learning Management Systems (LMS) for teaching, the flow of the Technology Acceptance Model (TAM) constructs offers valuable insights. This progression, as depicted in Figure 1, ranges from Perceived Ease of Use to Actual Use. John's initial interactions with the LMS, as outlined in his first sketch (see Figure 2) and elaborated in Appendix 1, reveal his challenges and perspectives. Specifically, for Perceived Ease of Use, John's "grappling" vividly portrays his initial struggles with LMS teaching. Regarding Perceived Usefulness, he expresses concerns about the LMS, suggesting it diminishes students' time for interpersonal interactions. He articulates this view through phrases like "incessant demands" and "relentless reliance," which also reflect a negative Attitude Toward Using the system. Finally, in considering the last two TAM constructs, Behavioral Intent and Actual Use, John's descriptions like "compulsory" and "struggling" encapsulate his overall experience with the mandatory nature and the practical challenges of using the LMS.



Figure 2. Entitled Looming Faceless Figures

Figure 3 and Appendix 2 present a more nuanced interaction between two key Technology Acceptance Model (TAM) constructs: Perceived Usefulness (PU) and Attitude toward Using (ATU). In these documents, John acknowledges the widely held belief in the efficacy of LMS and technology in education. He describes these tools as "the antidote for struggling language learners," praising their potential for "efficiency, continuity, and adaptability". However, John simultaneously expresses skepticism, likening the promises of LMS to "empty shadows" in his sketch. Yet, he remains hopeful, as symbolized by the "wind of change" depicted by moving curtains in his sketch, which he interprets as a metaphor for potential "transformation and progress" in the face of administrative challenges. These reflections underscore the complexities inherent in the constructs of Behavioral Intention (BI) and Attitude Toward Using (ATU), as John navigates his experiences and expectations with LMS in an educational setting.



Figure 3. Entitled The March Towards the Crucifixion

Dan

Dan's experience with the Technology Acceptance Model (TAM) is best interpreted in the context of the specific Learning Management System (LMS) he used and the particular tasks he performed using that system. For example, Dan found it particularly challenging to communicate with individual students through Moodle, attributing this difficulty to several factors. He had to use Moodle at two universities, each employing distinct software versions. This resulted in vastly different processes for identifying a specific student. A notable issue at one university was his inability to locate a student, as he did not have access to their official name written in Sino-Japanese script. Ultimately, Dan chose not to utilize the communication feature in Moodle and instead opted for face-to-face interactions with individual students.

While Moodle, and to a lesser extent CoursePower, functioned adequately as digital repositories, Dan did not perceive (PU) these LMSs as useful for conducting writing courses. His main concerns were the labor-intensive and time-consuming nature of grading and responding to individual student work, along with the potential security risks these processes posed to his personal computer system because Moodle required each student document to be downloaded in order for him to respond in a digital manner. Dan's negative Behavioral Intent (BI) led him to replace Moodle and CoursePower with a more robust alternative albeit non-sanctioned LMS, better suited for delivering detailed feedback to each student. In situations where he could not make this substitution, he resorted to providing general feedback at the beginning of each class, typically displayed on a presentation slide.

As the academic year progressed, Dan's perception of the usefulness of the Moodle LMS at his largest university steadily decreased. What should have been simple one-minute operations, such as importing task assignments and documents from previous modules, became increasingly problematic, ranging from 15-minute delays to an hour, or sometimes failing altogether. These delays not only disrupted his workflow but often led to him forgetting his initial task. With no viable alternative teaching methods available, Dan felt increasingly exasperated by the end of the semester and seriously contemplated reverting to a paper-based approach.

DISCUSSION AND CONCLUSION

In this duoethnographic study, John and Dan's experiences with Learning Management Systems (LMS) are explored through the lens of the TAM. Their narratives, articulated through various mediums, including sketches, vignettes, and reflective texts, provide a rich comparative analysis of their perceptions and interactions with these systems.

John's journey through the TAM constructs is visually and narratively expressed. His initial struggles with the LMS are captured in sketches and detailed in the appendices particularly highlighting his grappling with the Perceived Ease of Use (PEOU). His reflections on the Perceived Usefulness (PU) of the LMS are tinged with concerns about its impact on student interaction, describing it through phrases like "incessant demands". This is further elaborated when John juxtaposes his recognition of the LMS's potential benefits against his skepticism, illustrated by metaphors like "empty shadows". These elements reflect a complex attitude towards the LMS, balancing acknowledgment of its efficacy with reservations about its practical implementation.

In contrast, Dan's experience is contextualized within specific scenarios of using two particular LMSs, Moodle and CoursePower, at different universities. His challenges, such as difficulty communicating with students through Moodle and the time-consuming nature of grading, are conveyed through narrative descriptions. Dan's increasing frustration is evidenced by the evolution of his perceptions over the academic year, particularly noting the inefficiency and technical issues he encountered. His narrative underscores a gradual shift from attempting to adapt to these systems to considering alternative methods, including a non-sanctioned, free-touse LMS and a return to paper-based teaching.

The key contrast between John and Dan's representations lies in their mediums and focus. John employs a more symbolic and metaphorical approach, using sketches and figurative language to convey his experiences and attitudes. On the other hand, Dan presents a more straightforward, narrative-driven account, focusing on specific challenges and practical implications. While John's account delves into the emotional and philosophical aspects of LMS use, Dan's narrative is anchored in operational difficulties and pragmatic considerations.

Both narratives, however, converge on the theme of grappling with the limitations and challenges posed by LMS. They both express a trajectory from initial interaction to a more critical assessment of each system's effectiveness, particularly in relation to their teaching needs and personal experiences. This shared theme highlights educators' individual yet overlapping journeys in navigating the complexities of technology in the academic environment.

John and Dan's experiences align with the literature, highlighting usability as a crucial factor in LMS acceptance. John's "grappling" with LMS and Dan's challenges with Moodle's interface resonate with findings from Fathema et al. (2015) and Kiget et al. (2014), emphasizing the importance of user-friendly interfaces and the impact of usability on effective e-learning system use.

The literature review points to concerns about aligning LMS features with teaching goals, a theme echoed in Dan's narrative. His dissatisfaction with Moodle's grading and feedback functionality mirrors concerns about LMS not meeting specific instructional needs, as noted in the limited media administrator customization case in Sharifov & Mustafa's (2020) study.

Dan's decision to switch to an alternative LMS due to negative experiences reflects the literature's emphasis on the importance of system uptime and reliability (Porter et al., 2016). John's descriptions of LMS as "compulsory" and his struggles also align with the literature's findings on the augmented time commitments and frustrations experienced by educators.

The findings in this study also resonate with the research by Ferreira (2019), which found that the significance of establishing a responsive system for faculty's Information and Communication Technology (ICT) requirements is paramount. It is crucial to provide timely ICT support and workshops for faculty development. The disconnect in communication among department leaders, curriculum designers, and leaders in educational technology is also a critical issue. Teachers need to be involved in the selection of digital tools that align with educational goals, as emphasized by Becuwe et al. (2017). Additionally, requiring the use of specific software without input from the teachers can result in a diminished sense of control over the tools and a decreased inclination to adopt new digital technologies, as noted by Shelton (2017).

John and Dan's narratives provide a personal and practical perspective on educators' challenges and perceptions of LMS, aligning with the broader themes identified in the literature. Their experiences highlight the importance of usability, the alignment of LMS functionalities with teaching needs, and the impact of system reliability and teacher autonomy on technology acceptance. However, their stories offer unique insights, particularly John's symbolic representation of his struggles. This adds depth to the understanding of educators' experiences with LMS beyond the technical and functional aspects often emphasized in academic literature.

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APPENDICES

Appendix 1 - Interpretation of Image 1 - *Looming Faceless Figures*

Image 1 was finalized in late June, shortly following the 2023 Spring semester midterms. The image portrays a subjective perspective, enveloping the viewer with a shroud of shadowy figures. This vantage point helps to deeply immerse the viewer and evoke a sense of anxiety. The faceless figures symbolize the unknown. When initially conceived, the portrayal and symbolism of these figures were not immediately apparent. They may serve as a striking metaphor of the students I teach, grappling with the incessant demands from their college instructors and the learning management systems they need to adopt. The relentless reliance on technological tools to teach language skills, often at the expense of organic classroom interactions, fosters an environment that struggles to nurture genuine bonds and interpersonal relationships. The amount of time spent logging on, using the software, and completing tasks using the newly learned protocols unique to each learning management system takes away from the time spent talking with one another and establishing a presence inside the classroom. The sketch depicts this characterization by positioning students adjacent to one another in the bottom half of the picture. No figures are touching one another, which illustrates the isolated classroom environment. Moreover, the zombie-like quality of the figures reflects how some teachers perceive their students working on compulsory language learning tasks delivered from a learning management system. Students mechanically punch keys and gaze into their computer screens, trapped in an almost hypnotic trance. The spiraling motif emanating from the center of the sketch poignantly captures the hypnotic effect these tasks can exert on our students.

Appendix 2 - Interpretation of Image 2: The March Towards the Crucifixion

The March Towards the Crucifixion is a painting that delves into the complexities of authority, change, and the use of technology. At first glance, the viewer is confronted with a scene of students marching in a single straight line toward a door at the end of the hallway with a crucifixion symbol. This march illustrates how technological innovation is often heralded as the antidote for struggling language learners, similar to how religion offers redemption for struggling sinners. A typical mantra of many LMSs is that their technology will offer the most efficient, continuous, and adaptive learning. Several additional elements in the painting provide a different critique/ For example, the shadows of the students are more prominent than their actual forms, which reflects the perceptions of LMSs. The towering shadows are accurate reflections of the students. For example, students may see themselves advancing more quickly than they actually are, and teachers or administrators espouse the myths that a LMS can significantly improve language acquisition. However, these promises are typically empty like the shadows, particularly if teacher training or quality control is not emphasized.

Another point is that there is no clear vanishing point - several points are being utilized on the far wall. The different vanishing points illustrate contrasting interpretations of the march and the students' destination. As is often the case, teachers typically have a vision for integrating technology into the classroom, but this often conflicts with what administrators and students want or need. The ambiguity in the perspective underscores the tension between those who directly engage with

students and those who create the framework. Lastly, the wind blowing through the two windows is a powerful symbol of change. The windows act as apertures to the outside world, representing opportunities for transformation and progress. The wind, a dynamic force of nature, signifies the inevitability of change and the need for adaptability within the educational system. As it rustles the curtains, it challenges the stagnation that can occur when institutions resist evolving. *The March Towards the Crucifixion* compels viewers to contemplate the complexities of education, the weight placed on students, and the contrasting perspectives of those within the system. The presence of change, represented by the wind, serves as a reminder that education cannot remain static; it must adapt to the evolving needs of the learners and society. This painting invites us to reflect on our role in shaping the educational journey and the responsibility we bear in ensuring it remains a transformative and nurturing experience rather than a burdensome procession.