

Using X as an adjunct to LMS in tertiary language learning

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ABSTRACT

The use of social media in language education is controversial, as research has yet to explicitly demonstrate whether such tools promote language learning or identify a precise mechanism by which they do so. The current study examines the effectiveness of using a social networking system (SNS) in conjunction with a learning management system (LMS). In other words, this study investigates whether SNS can supplement and enhance the use of the current university LMS for formal e-learning in language education. Furthermore, the paper discusses the role of LMSs as learning tools in tertiary foreign language education. It provides an in-depth analysis of the potential of SNS as an educational tool for learner interaction and engagement. Two convenience samples of university students enrolled in an information and communications technology course in the faculty of foreign languages engaged with an SNS integrated into their curriculum to evaluate its impact on learning. The study employed a quantitative comparative design based on questionnaire data and statistical comparisons of academic performance indicators related to the use of Moodle and X in language learning activities. Some aspects investigated were frequency of use, engagement, motivation, sharing, collaboration, and communication in the educational process. The findings establish a synergy between social networking and education and highlight the benefits of using it alongside other teaching tools, such as an LMS, particularly in promoting perceived levels of participation, learner engagement, and communication in tertiary language learning environments.

Keywords: learning management system, social media, online learning, language learning, learner engagement

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INTRODUCTION

Information and communications technologies (ICTs) play a central role in our global society, affecting both developed and developing nations in almost every part of life, including education, the economy, and the workforce (UNESCO, 2023). In the present era of digital pedagogy, this influence has grown even stronger, as digital tools are now the primary means by which people connect to global markets and educational resources (Livingstone & Pothong, 2022). The relatively low cost of ICTs has enabled schools and universities to create computer labs to facilitate student learning (Tokareva et al., 2019). New terms like *techno-pedagogy* and *digital pedagogy* reflect new ways of learning, dissociating technology-supported education from the traditional sense of pedagogy. Educational institutions have been referred to as *digital environments*, *e-universities*, *e-classes*, and *e-libraries*. This revolutionary development in web-based learning illustrated the remarkable progress in digital pedagogy (Väätäjä & Ruokamo, 2021).

As a result, foreign language teachers around the globe have been encouraged to integrate new technologies (Adnan, 2018), as web tools offer opportunities to participate in online activities with few technical requirements and few difficulties across a growing number of platforms. The ongoing integration of individuals into a globalized digital society necessitates continuously updating knowledge, adapting to novel data influx, acquiring new skills, and gaining seamless access to active media and technological structures. In the past few years, this priority has evolved from basic technological adoption to mastering digital fluency, which is essential for professional and academic success (Bond, 2020). For the modern language learner, particularly in English for specific purposes (ESP), this integration requires the ability to navigate diverse digital environments where linguistic competence and technical proficiency intersect (Väätäjä & Ruokamo, 2021).

LITERATURE REVIEW

Learning management systems (LMS) are complex systems that combine a variety of organizational, managerial, instructional, and technological mechanisms (Moore & Kearsley, 1996). They offered educators the chance to switch classroom learning from a traditional transmission model to a student-centered one. LMSs can bring the classroom online, offering a variety of tools to engage, collaborate, grade, track assignments, and, when used effectively, reach out to students, thus ensuring engagement with the content and curriculum. LMSs are used in universities for distance learning and have been increasingly adopted to support face-to-face classroom activities; an LMS can provide flexibility in the types of learning activities offered and in the supervision of students' achievement (Avcı & Ergün, 2022). However, an LMS does not always accommodate learners' needs or provide a complete range of teaching tools for specialized pedagogical practices in language education contexts (Turnbull et al., 2021).

The popularity of social media among youth has prompted exploration of its use as an adjunct educational tool. The integration and use of social networking technology as an e-learning tool appeals to language learners and teachers, providing learning communities and socialization, although their use is still controversial, as research has not explicitly attested to their positive impact on learning or how they promote language learning under a socio-constructivist learning framework (Van Den Beemt et al., 2020). Their increased use is driven by evidence that social interaction is an important element of valuable learning experiences (Diep et al., 2017). Socio-cultural theory (SCT) suggests that social interactions play a significant role in language learning, forming a network through which knowledge is gained and applied, facilitating collaborative learning in which discourse is shared with peers and instructors (Swain, 2000). These practices are thought to have enhanced second language acquisition and learning, promoting comprehension (Long, 1996). According to SCT, learning is a social development that integrates user interaction, functional and interactive support from the course organizers, and dynamic course content receptive to student learning (Al-Dheleai & Tasir, 2019). Contemporary perspectives on digital pedagogy further emphasize that networked learning environments support continuous interaction, collaboration, and knowledge construction beyond the physical classroom (Conole, 2021).

Recent studies have emphasized that digital language learning environments should be evaluated not only for content delivery but also for interaction quality, learner engagement, collaboration, and opportunities for meaningful communication. These dimensions are increasingly viewed as essential indicators of effective online language learning design (Bond, 2020; Pérez et al., 2023). In tertiary language education, students increasingly expect flexible environments that combine formal

instruction with rapid peer exchange and ongoing access to learning communities. Social networking tools may support this expectation by extending participation beyond scheduled lessons and enabling shorter but more frequent language encounters. This is especially relevant in ESP contexts, where concise communication, audience awareness, and purposeful language use are important professional competencies. In this respect, the combination of LMS structure and social media immediacy may offer a balanced pedagogical model.

The evolution of web-enhanced language instruction has shifted the focus from administrative platforms toward the creation of "hybrid learning ecologies" (Luckin, 2010). Recent research into tertiary ESP suggests that while a traditional LMS like Moodle provides the necessary organizational framework, the addition of a social layer serves as vital connective tissue for learner engagement (Avcı & Ergün, 2022). This integration enables a two-fold pedagogical approach: the LMS facilitates formal content delivery and assessment, while the adjunct social platform fosters spontaneous, peer-to-peer linguistic interaction. Consequently, the synergy between these two environments addresses the limitations of e-learning by providing space for authentic social presence—a critical component for success in contemporary language acquisition (Al-Dheleai & Tasir, 2019). New studies confirm that social media continues to play a significant role in higher education teaching and learning. A systematic review by Pérez et al. (2023) reported sustained international interest in the pedagogical use of social media, particularly regarding learner participation, communication, and collaborative learning. The same review further suggests that social media platforms remain relevant as complementary learning environments that extend formal instruction beyond institutional systems by supporting interaction, collaboration, and student engagement. New discussions of digital pedagogy have also emphasized the value of micro-learning and concise communication in online education. Micro-blogging platforms such as X may encourage students to communicate ideas clearly and efficiently within a limited space, a skill particularly relevant in ESP, where purposeful, context-sensitive communication is important. In addition, while LMS platforms such as Moodle support structured content delivery and longer-form study, social media tools may offer shorter, more frequent opportunities for interaction and language practice. In this sense, the combined use of Moodle and X may contribute to a more seamless learning environment in which learners remain connected to course content beyond scheduled class time. Such a combination is also consistent with Luckin's (2010) ecology of resources model, where learners interact with multiple tools, people, and knowledge sources within a pedagogically guided environment.

The current study investigates the pedagogical potential of X (formerly Twitter) as an adjunctive learning platform for students enrolled in an ESP course. By leveraging the unique interactive features of X, this research places a particular emphasis on learner engagement, spontaneous peer-to-

peer communication, and the longitudinal support of language acquisition. In the 2026 educational context, this investigation is important as it examines whether recurrent, informal communicative interactions can mitigate the 'interaction gap' often found in standardized LMS environments (Avcı & Ergün, 2022). Specifically, this research examines the effectiveness of using a social networking system (SNS) in conjunction with Moodle to determine whether such systems can supplement and enhance institutional LMS platforms in formal e-learning. Furthermore, the study explores the role of LMSs as learning tools in foreign language education. It provides an in-depth analysis of the pedagogical value of using an SNS to support learner interaction, engagement, and communication.

METHODOLOGY

Research Design

A quantitative research approach was adopted to examine students' responses to the use of X in an educational context. Student perceptions regarding the use of the social media tool were documented through an online survey. In addition, student performance data were compared across groups. The study employed a quantitative comparative design based on questionnaire data and statistical comparisons of academic performance indicators related to the use of Moodle and X in language learning activities. The study adopted a comparative design with a control group using Moodle and an experimental group using Moodle alongside X. This design enabled comparisons of academic outcomes and student perceptions across the two delivery models. The intervention extended over multiple semesters, allowing repeated exposure to the tools rather than a short-term trial. Such duration strengthened the applicability of the findings to teaching settings, as participants interacted with the platforms under authentic course conditions. Course performance indicators complemented quantitative survey data to provide a broader understanding of learner responses.

Participants

Participants consisted of 48 undergraduate students in the control group and 250 in the experimental group in the faculty of applied foreign languages in management and economics at University of Ioannina. The primary data collection phase was conducted over four semesters from 2015 to 2018. This longitudinal dataset provides a broader basis for examining the integration of social dimensions into standardized LMS platforms.

Instructional Context and Procedure

Using the wrap-around model (Mason, 1998) of course design, an English as a foreign language course was designed with classroom activities supported by Moodle, or Moodle and X. While all students had access to selected course material and online learning activities on the Moodle

platform in both the control and experimental groups, students in the experimental group also participated in an instructor-facilitated online community via X. Moodle is an open LMS devised to support online learning communities, providing a secure environment through which language learning autonomy and learning scaffolding are enabled. X is an SNS that enhances student-to-student, student-to-instructor, and instructor-to-student interactions.

Students in the experimental group were asked to join a closed group on X to ensure the privacy of course content and posts (Boyd & Ellison, 2007). X was used before or during online learning activities to brainstorm on themes, grammar lessons, and course content presented in Moodle. It was also used to share ideas, facilitate class discussion, communicate with classmates or the instructor, and discuss assignment outcomes. To facilitate the use of X, students were asked to leave one tweet question before or during each class, which the teacher answered orally during the in-class portion of the course delivery.

Instruments

Initially, students were asked to complete a pre-test to validate their language level. The questionnaire was structured in two parts. The first part aimed to explore participants' motivation, engagement, and communication, while the second part examined students' perceptions of the SNS tool for communication and information sharing. The questionnaire comprised 30 questions on demographics, technology use, platform engagement, satisfaction with the tool, motivation, and communication. It contained a combination of Likert-type, yes/no, and closed-ended questions.

Data Analysis

Internal validity was supported by pre-tests that measured the consistency of results over time. Statistical comparisons were conducted to examine differences between the control and experimental groups regarding academic performance and attitudes toward the learning platforms. The analysis focused on quantitative responses from questionnaires and performance indicators from the two student groups.

RESULTS AND DISCUSSION

Comparison of Academic Performance

An independent-samples t-test was conducted to compare the mean performance scores between the control and experimental groups. The experimental group recorded slightly higher mean scores on overall tests and in reading performance, while the control group performed marginally better on writing tasks. However, the p-values indicate that these differences were not statistically significant ($p > .05$). Therefore, no significant differences were identified between the two groups in terms of academic performance (see Table 1).

Table 1. Comparison of grades in the course across the two delivery modes

Performance measure	Control group (mean grade)	Experimental group (mean grade)	p-value
Performance on tests	6.47	6.74	.810
Performance on writing	7.28	7.10	.690
Performance on reading	8.13	8.15	.831

Note. n = 298 (control n = 48; experimental n = 250); mean grades are based on a 10-point scale; & p > .05 indicates no statistical significance

Table 2. Moodle features used by ESP students

Moodle feature	Usage count (n)	Percentage (%)
Hot potatoes quiz	15	29
Quizzes	11	22
Podcasts	10	20
Glossary	8	16
Forums	3	6
Wikis	3	6
Chat	1	2

Note. News forums, YouTube videos, exercises, questionnaires, calendar features, and grades reported 0% usage

Moodle Features Used by Students

The LMS survey was completed by 48 students (mean age = 22.8 years), of whom 35% were male and 65% female. Overall, students viewed Moodle positively as a supportive course platform. However, usage patterns suggest that students mainly engaged with content-delivery and assessment tools rather than interactive features. The most frequently used tools were Hot Potatoes quizzes, podcasts, and glossary functions. By contrast, forums, wikis, and chat tools were used minimally, indicating limited peer interaction through the LMS environment (see [Table 2](#)).

Reasons for Using the Moodle Platform

A series of chi-square tests for independence were conducted to examine whether reasons for using the platform were associated with group membership. Results showed that only the variable familiarity with technology was statistically associated with group membership ($p = .017$). All other variables, including departmental

requirements, motivation, and perceived usefulness, did not differ significantly between groups. This suggests that technological familiarity may influence participation more than other motivational factors (see [Table 3](#)).

Attitudes Toward Learning Platforms

Both groups reported generally positive attitudes toward the use of learning platforms. High levels of agreement were recorded for active learning, enhanced motivation, learning autonomy, and interaction. In particular, both groups strongly agreed that the platforms encouraged interaction, with agreement levels exceeding 97%. The experimental group also reported stronger perceptions of active learning and classroom enhancement, suggesting that students perceived the addition of X as supportive of interaction and participation within the learning experience (see [Table 4](#)).

Experimental Group Attitudes Toward X (Twitter)

Students in the experimental group expressed favorable perceptions of X as a supplementary learning tool. High levels of agreement were reported regarding increased engagement, ease of communication with peers and the instructor, which appeared to support cooperation and encourage classroom discussion through announcements and shared resources. Students also viewed the instructor's involvement through X positively. These findings suggest that students perceived X as supportive of communication, participation, and collaborative learning beyond the formal LMS environment (see [Table 5](#)).

Table 3. Reasons for using the Moodle ESP platform

Reason for use	Control group (%)	Experimental group (%)	p-value
Required by the department	94.7	94.2	.831
Familiarity with technology	83.6	92.7	.017*
Desire to use the specific technology	7.9	8.8	.790
Personal interest	11.2	12.4	.747
Serves my needs	94.1	93.4	.820
Motivates me	75.7	83.9	.081

Note. *p < .05 indicates statistical significance

Table 4. Attitudes toward the usefulness of learning platforms between control and experimental groups

Variable	Moodle group agree (%)	Moodle group disagree (%)	Moodle + X group agree (%)	Moodle + X group disagree (%)
Entertainment	15.8	84.2	17.5	82.5
Learned how to use technology	24.3	75.7	27.0	73.0
Increased motivation	71.1	28.9	67.9	32.1
Learning autonomy	65.8	34.2	62.0	38.0
Student-centered teaching	47.4	52.6	52.6	47.4
Enhanced the technology classroom	57.2	42.8	63.5	36.5
Active learning	82.2	17.8	91.2	8.8
Boosted interaction	97.4	2.6	97.1	2.9

Note. n = 298 (control n = 48; experimental n = 250); "agree" includes responses for "agree" and "totally agree"; "disagree" includes responses for "disagree" and "totally disagree"

Table 5. Experimental group students' attitudes toward X (Twitter)

Variable	Totally disagree (%)	Disagree (%)	Neither agree nor disagree (%)	Agree (%)	Totally agree (%)
My active engagement increased.	4.62	6.15	6.15	40.00	43.08
Communication with fellow students and the instructor was easy through X.	4.62	6.15	9.23	35.38	44.62
X helped develop social skills.	4.62	4.62	36.92	40.00	13.85
X helped develop cooperation between instructors and students.	4.62	4.62	0.00	43.08	47.69
X emphasized the learning of social skills/strategies.	6.15	29.23	24.62	30.77	9.23
X facilitated classroom discussion through announcements, resources, and links.	7.69	1.54	4.62	32.31	53.85
X favored the creation of group work by sharing projects and ideas.	4.62	9.23	13.85	36.92	33.85
The role, intervention, and involvement of the instructor were catalytic.	0.04	0.00	6.10	41.54	47.69
Engagement in class increased using X.	0.06	4.62	1.54	46.15	41.54
The time and effort put into activities were higher.	0.12	33.85	41.54	12.31	0.00

Note. n = 250; disagree includes "totally disagree"; agree includes "totally agree"

Although students reported positive perceptions regarding engagement and communication, no statistically significant differences were observed in exam, writing, or reading performance between the two groups. The evidence from this study suggests that pedagogical engagement facilitated by Web 2.0 tools and social media platforms may support language learning. This is achieved by fostering high-level collaboration, authentic communication, and student involvement through diverse, near-synchronous environments (Van Den Beemt et al., 2020). When we view these results through the idea of "social presence," it is clear that X serves as more than a secondary tool; it acts as a support system that helps students feel less isolated than they typically do when using only an LMS (Turnbull et al., 2021). Integrating these platforms may encourage more frequent language practice. It turns classroom theory into real-world practice, bridging the gap between classroom theory and real-world communicative application (Muali & Karlina, 2025). The findings of the present study generally support this view, as students reported positive perceptions of engagement, communication, and participation when X was used alongside Moodle. Nevertheless, some consider LMSs teacher-centered tools that primarily use technology to convey content to learners, since the teacher often determines the content presented in the LMS course. Considering the properties of LMSs and social media tools such as X, a customizable tool, such as a personal learning environment, could combine the strengths of both and warrant further exploration.

In the present study, Moodle appeared to function effectively as an organized course management system, while students reported that X supported interaction, immediacy, and learner participation. According to the sociocultural model, learning is a social process that involves student interaction, instructor support, and flexible course content. SCT suggests that social interaction is essential for language learning; it acts as a bridge for gaining knowledge and practicing skills with peers and teachers (Swain, 2000). These practices help students understand and learn a second language more effectively and promote comprehension (Long, 1996). In the digital age, this social process has been extended through "networked learning," in which social media platforms provide the

necessary space for these interactions to occur continuously (Conole, 2021). The enhanced communication reported by students in the present study *aligns with* these theories, as X provided extra space for discussion and ideas outside of normal class time. Educational design supports the learning of tasks by arranging the learners' context (Dewey, 1910), considering elements that create interest in the task, and providing incentives for engagement. These findings also highlight the continuing importance of combining structured institutional platforms with interactive digital tools that encourage learner participation, communication, and sustained engagement in contemporary tertiary language education settings.

According to SCT, learning is situated in different environments and may take various forms. Additionally, the zone of proximal development and scaffolding are important in second language learning, as they refer to the learner's potential development through mediation and assistance from teachers or peers (Lantolf & Appel, 1994). While scaffolding via X did not yield higher exam scores, students nevertheless reported positive perceptions regarding confidence, communication, and engagement within the learning process.

Luckin's (2008, 2010) ecology of resources model considers the various resources and the learner's interactions with these resources. The model directs attention to three resources the learner interacts with: knowledge and skills, tools and people, and the environment. In theory, emphasis is placed on the learner's interaction with available resources, thereby improving understanding and knowledge development (Vygotsky, 1978). In Luckin's (2008, 2010) model, the learner's interaction with resources is filtered by technologies and their usability, the teacher's pedagogical framework, and the learning task. In the present study, knowledge and skills were developed through online notes and classroom instruction, while Moodle and X were used to increase potential interaction within an ESP teaching environment. Moodle is one of the most popular learning management platforms in education and continues to evolve through add-ons such as forums, wikis, and chat rooms. A social constructivist approach to learning supports it and can be tailored for language instruction (Prawatmuang, 2021).

Recent research has also shown that social media remains relevant to university teaching and learning, particularly regarding learner participation, communication, and collaborative learning (Pérez et al., 2023). This supports the continued relevance of the present findings. The development of technology and its application in academic fields have redefined literacy, a shift that should be considered when designing ESP courses (Lewis, 2011). In the age of media technologies, students appear to have more diverse needs, goals, and learning preferences than students in the past. The literature suggests that student engagement in a technology-rich society requires social interaction and exploration (Bond, 2020). Learning becomes not only cognitive, but students increasingly seek hands-on and inquiry-based approaches. Student engagement and motivation are built upon effective pedagogy, curriculum, and assessment strategies (Windham, 2005). Windham (2005) argues that, to involve learners in learning, educational curriculum and activities should include interaction, exploration, relevance, multimedia, and instruction. Engagement develops when students actively construct their learning in collaboration with peers and teachers, acquiring new knowledge or developing new approaches to activities. Accordingly, Singh and Thurman (2019) state that student engagement and motivation are constructed through social connections among learners and through curriculum and instruction aligned with their experiences and goals. From a pedagogical perspective, the findings suggest that institutional systems and open communication tools should not necessarily be viewed as competing environments. Instead, they may function in complementary ways. Moodle supported structure, organization, and assessment, while students perceived X as supportive of immediacy, responsiveness, and social participation. For language educators, this distinction is important because successful language learning often relies on both structured instructional support and frequent communicative practice. The study, therefore, supports blended digital models in which carefully moderated social interaction spaces enhance stable institutional platforms.

As seen in the present study, social media such as X may increase social connections with other students and the instructor and may serve as a useful adjunct to student learning and success. Although no statistically significant differences were found in formal reading and writing performance, students reported clear benefits in motivation, participation, communication, and classroom engagement. These findings suggest that the pedagogical value of social media may lie not only in formal academic performance outcomes but also in supporting the affective and interactive dimensions of language learning.

CONCLUSION

The combination of an LMS and an SNS may enhance ESP instruction by encouraging self-directed, autonomous, and interactive learning, while also promoting student

engagement and academic socialization. The findings of the present study suggest that instructional design remains essential in attracting learners' interest and supporting meaningful participation in online and blended learning environments. The results highlight the potential value of technological tools that combine the structured features of LMSs with the interactive and communicative affordances of social media platforms. When integrated appropriately, such tools may contribute positively to language learning by facilitating communication, collaboration, access to resources, and classroom continuity. The findings of the current survey also suggest that students held generally positive attitudes toward online learning and appreciated the use of a familiar, student-friendly social networking environment to supplement web-enhanced English language learning. Although statistically significant gains were not observed in formal test performance, important benefits were reported in learner motivation, participation, and communication. The findings remain relevant in contemporary higher education, where educators continue to explore how formal systems can be combined with learner-centered communication platforms. Although technologies evolve rapidly, the pedagogical principle of combining structure with interaction stays consistent. Overall, the study indicates that social media can serve as a valuable supplementary tool in tertiary language education when aligned with clear pedagogical aims and learner needs, thereby supporting interactive and communicative learning environments.

The limitations of this study are fully acknowledged. The research sample was limited to ESP students enrolled in a higher education course within a specific institutional context. Consequently, the findings should be interpreted with caution and may not be fully generalizable to other educational settings or learner populations. In addition, the study reflects data collected during an earlier phase of social media integration in higher education. Nevertheless, the findings remain relevant to current discussions concerning digitally mediated communication, learner engagement, and supplementary online learning environments. Further studies could diversify the participant sample by including students from different disciplines, institutions, and proficiency levels, and by using larger, more balanced groups. Future research may also examine the long-term effects of using X-supported or other social-media-supported courses on language development, motivation, and academic performance. Moreover, social networking tools other than X may be incorporated into LMS-supported courses, expanding the scope of inquiry into contemporary digital learning environments. Further research could also explore mobile LMS integration, synchronous communication tools, and emerging social platforms to provide a more comprehensive understanding of how students adopt technology in distance and blended language learning contexts. The study contributes to ongoing discussions about the pedagogical role of social media as a complementary component of formal language learning environments in higher education.

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AI statement: No generative AI or AI-based tools were used in preparing this manuscript.

Declaration of interest: The authors declare no competing interest.

Data availability: Data generated or analyzed during this study are available from the authors on request.

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