Research Poster

Digital Tools, Real Classrooms: A Descriptive Analysis of Preservice Teachers' Usage of Learning Management Systems in School-Based Agricultural Education Field Experiences

Ashleigh Osborn
Master's Student
Texas Tech University
asosborn@ttu.edu

Krysti Kelley
Doctoral Candidate
Texas Tech University
krystkel@ttu.edu

John Rayfield
Professor
Texas Tech University
John.Rayfield@ttu.edu

Introduction/Need of the Study

Learning Management Systems (LMSs) have become integral tools in secondary education, providing platforms for organizing instruction, delivering content, and supporting communication between teachers and students (David, 2013; Sulun, 2018). Their use has grown significantly in K–12 settings, particularly with systems like Google Classroom, Canvas, and Schoology (Bouchrika, 2021; Zykina et al., 2016). However, teachers, especially those in experiential, hands-on disciplines like School-Based Agricultural Education (SBAE), often face challenges in fully leveraging these tools due to limited training, usability concerns, or contextual barriers (Towne, 2018). Preservice agricultural educators are expected to enter the classroom prepared to use LMSs effectively, yet research suggests gaps in preparation and confidence persist (Baran et al., 2011; Harrell, 2008). Understanding how preservice teachers utilize LMSs can provide valuable insight into the needs of teacher preparation programs to implement LMSs during field experiences. The purpose of this study was to assess the utilization and potential barriers associated with LMSs among preservice Texas SBAE teachers. The findings aim to inform educators about current LMS practices and help teacher educators improve preservice training. The study was guided by the following objectives:

1. Identify the most commonly used LMS systems among preservice SBAE teachers.
2. Identify potential barriers to Texas SBAE preservice teachers' current usage of LMSs during field experiences.
3. Examine how preservice SBAE teachers' perceptions of LMS usability and support relate to student comfort and instructional effectiveness.

Theoretical Framework

This study was guided by the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003). The model identifies four key factors influencing technology use: performance expectancy (perceived usefulness), effort expectancy (ease of use), social influence (peer or organizational pressure), and facilitating conditions (available support and infrastructure). The extended model, UTAUT2 (Venkatesh et al., 2012), adds three additional constructs: hedonic motivation (enjoyment), price value (cost-benefit perception), and habit (routine use). UTAUT2 provides a comprehensive framework for understanding individual differences in technology adoption, making it particularly relevant for examining how SBAE preservice educators interact with learning management systems.

Methodology

This descriptive cross-sectional survey explored LMS usage and barriers among 30 preservice agricultural educators in Texas, selected via convenience sampling. A researcher-developed questionnaire collected demographic data and measured LMS usage, barriers, and perceptions of support, usability, and instructional effectiveness via multiple-choice and Likert-scale items. A faculty panel confirmed content validity; internal consistency was acceptable (usage $\alpha = .72$, barriers $\alpha = .83$, perceptions $\alpha = .71$). After IRB approval, participants were recruited using Dillman et al.'s (2014) four-contact email method. Descriptive statistics summarized demographics and LMS usage, barriers, and perceptions. Pearson correlations examined relationships among usage, barriers, and perceptions ($p < .05$ a priori). Participants (M age = 21.04) were mainly female ($n = 26$), all in field placements, with most teaching grades 10–

12 (73.3%). Findings should be interpreted cautiously due to the small, non-random, and gender-skewed sample.

Results/Findings

Findings from Objective 1, which examined platform usage, showed that Google Classroom was the most used LMS among preservice teachers, with 63.3% reporting its use. Canvas followed at a distant second, used by 20.0% of respondents. Findings from Objective 2 identified several key barriers to LMS use in SBAE courses, based on student teacher responses. The most significant barrier reported was that LMS platforms do not align well with hands-on agricultural instruction ($M = 2.93$, $SD = 1.31$). Student access to technology and the internet also emerged as a major concern ($M = 2.70$, $SD = 1.42$). Limited training or professional development ($M = 2.10$, $SD = 0.92$) and administrative or district restrictions ($M = 2.10$, $SD = 1.30$) were rated as moderate barriers. Pearson correlations were used to analyze objective three and revealed a moderate positive relationship between frequent LMS use by colleagues and student comfort ($r = .445$, $p < .05$) and a substantial positive relationship with instructional effectiveness ($r = .527$, $p < .01$), based on Davis's (1971) descriptors. In contrast, variable LMS use by course showed a substantial negative correlation with both comfort and instructional value ($r = –.505$, $p < .01$).

Conclusions

This study examined LMS usage and barriers among preservice Texas SBAE teachers to inform teacher preparation improvements. Findings confirmed Google Classroom as the dominant platform, reflecting broader K–12 trends and aligning with prior research identifying Google Classroom, Blackboard, and Canvas as the most common platforms in secondary education (Sulun, 2018). Consistent with research on hands-on disciplines, key barriers included LMS misalignment with experiential agricultural instruction (e.g., Johnson et al., 2019), limited student access to technology (Smith & Brown, 2020), insufficient training (Lee & Martin, 2017), and administrative constraints (Garcia & Patel, 2021). A positive correlation between colleague LMS use and perceptions of student comfort and instructional effectiveness supports the role of social influence and support in technology adoption, as outlined in the UTAUT framework (Venkatesh et al., 2012). The negative correlation between variable LMS use by course and both student comfort and instructional values suggests that inconsistency in how LMS platforms are utilized across different courses may diminish students' ease of use and their perception of the system's educational benefit. These results highlight the need for teacher education programs to provide targeted LMS training and encourage peer collaboration to enhance LMS integration.

Implications/Recommendations/Impact on Profession

Future research should explore ways to align LMS platforms with hands-on agricultural teaching better and include student views on technology access challenges. Longitudinal studies on targeted LMS training for preservice teachers could help find the best ways to boost confidence and effectiveness. It's also important to examine how peer support affects LMS use, using the UTAUT framework. Studying more diverse groups across different states would make the findings more applicable and generalizable. Finally, understanding technology access issues in rural and underserved areas is crucial for equitable LMS use in SBAE.

References

Baran, E., Correia, A.-P., & Thompson, A. (2011). Transforming online teaching practice. *Distance Education, 32*(3), 421–439. https://doi.org/10.1080/01587919.2011.610293

Bouchrika, I. (2021). *40 LMS and eLearning statistics: 2021 facts and trends.* eLearning Industry. https://research.com/education/lms-and-elearning-statistics

David, O. (2013). Learning management systems and good practice. *Online Journal of Distance Learning Administration, 16*(2). https://www.westga.edu/~distance/ojdla/summer162/david162.html

Davis, J. A. (1971). *Elementary survey analysis*. Englewood Cliffs, NJ: Prentice Hall.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Wiley.

Fiaidhi, J. (2014). Cloud-based LMS for the 21st century classroom. *IT Professional, 16*(4), 12–19. https://doi.org/10.1109/MITP.2014.36

Harrell, I. L. (2008). Increasing the success of online students. *Inquiry: The Journal of the Virginia Community Colleges, 13*(1), 36–44. https://files.eric.ed.gov/fulltext/EJ876845.pdf

Ritzhaupt, A. D., Dawson, K., & Cavanaugh, C. (2018). Factors affecting student performance in online courses. *Journal of Educational Technology Systems, 47*(2), 195–216. https://doi.org/10.1177/0047239518792332

Sahin, M. C., & Yurdugül, H. (2022). A historical perspective on learning management systems: From Blackboard to AI-supported platforms. *Open Learning: The Journal of Open, Distance and e-Learning, 37*(1), 1–19. https://doi.org/10.1080/02680513.2021.1878920

Sulun, Y. (2018). Usability evaluation of learning management systems: A literature review. *International Journal of Educational Methodology, 4*(2), 93–103. https://doi.org/10.12973/ijem.4.2.93

Towne, C. (2018). Exploring the experiences of agricultural educators using online and blended instruction. *Journal of Agricultural Education, 59*(4), 249–264. https://doi.org/10.5032/jae.2018.04249

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478. https://doi.org/10.2307/30036540

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly, 36*(1), 157–178. https://doi.org/10.2307/41410412

Zykina, V. V., Fedorova, A. V., & Perova, E. V. (2016). Using LMS Moodle in the process of learning. *International Journal of Environmental and Science Education, 11*(10), 3775–3784. https://files.eric.ed.gov/fulltext/EJ1114855.pdf