Transforming Teaching Through Blackboard Ultra Adoption: Lecturer Training, Pedagogical Integration and Sustainable LMS use in Higher Education

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Abstract: The increasing integration of learning management systems (LMSs) into higher education has intensified the need for lecturers to develop technological competence alongside the pedagogical and disciplinary knowledge required for meaningful digital teaching. This study examined lecturers' perceptions of Blackboard Learn Ultra training, their self-reported implementation of tools and strategies introduced during training, and the conditions they perceived as supportive of continued LMS use at a South African university. The empirical study used a post-training, cross-sectional survey design. An online questionnaire containing closed- and open-ended items was completed by 51 lecturers from a sampling frame of 200 lecturers who had participated in institutional Blackboard development initiatives. Quantitative data were analysed using descriptive statistics, with an exploratory principal component analysis (PCA), correlations and group comparisons reported cautiously because of the modest sample size relative to the 19 Likert items. Qualitative responses were analysed inductively using thematic analysis. TPACK was used as an interpretive framework rather than as a measure of change over time. Results showed that 84.3% of participants reported implementing Blackboard tools or strategies and 88.2% reported moderate or extensive integration. High ratings were recorded for confidence in using Blackboard (M = 4.45), relevance to teaching context (M = 4.45), and understanding how to integrate Blackboard into teaching (M = 4.31). The exploratory PCA identified three components explaining 75.28% of the variance; detailed PCA and group-comparison evidence is provided in Tables 1 and 2. Qualitative findings highlighted hands-on practice, assessment and grading, interactive learning, content organisation, time for consolidation, discipline-specific application and continuing support. The findings describe lecturers' perceptions and self-reported implementation following training; they do not establish causal effects of training or developmental change over time.

Keywords: Blackboard Learn Ultra; Learning Management System; Lecturer Training; TPACK; Professional Development; Technology-Enhanced Learning; Higher Education

1. Introduction

Learning management systems (LMSs) have become central to higher education, supporting content delivery, communication, assessment, feedback and collaboration. However, institutional access does not guarantee sustained or pedagogically meaningful use. Research on LMS adoption indicates that lecturers' use is shaped by factors such as perceived usefulness, ease of use, self-efficacy and institutional support (Matarirano et al., 2021; Almogren, 2022; Parnealsivam & Khalid, 2024).

The use of an LMS does not in itself demonstrate pedagogically meaningful technology integration. From a TPACK perspective, effective integration requires lecturers to connect technological knowledge with pedagogical and disciplinary knowledge when selecting and applying digital tools to teaching, learning and assessment (Mishra & Koehler, 2006; Mujallid, 2021).

In a South African study, Matarirano et al. (2021) found that Blackboard adoption was interalia influenced by behavioural intention, perceived usefulness, self-efficacy and other individual factors, while training and technical support were important institutional enablers. Similarly, Almogren (2022) found that continued Blackboard use was associated with perceived usefulness, ease of use and satisfaction. Lecturers may nevertheless experience technical difficulties, resistance to change and uncertainty about platform functionality despite receiving training (Parnealsivam & Khalid, 2024).

Meaningful LMS adoption therefore extends beyond access to technology or initial acceptance. Professional development, opportunities for practical application and continuing institutional support are important conditions for lecturers to use LMS tools purposefully within their teaching contexts (Huang et al., 2024; Fütterer et al., 2024; Parnealsivam & Khalid, 2024).

Professional development is therefore central to LMS adoption, but should extend beyond once-off technical training. Technology-focused professional development can strengthen knowledge, skills, collaboration and active learning (Huang et al., 2024), while technology integration develops over time and is shaped by contextual factors (Fütterer et al., 2024). The TPACK framework provides a useful lens for understanding this progression,

emphasising that effective technology integration requires the interaction of technological, pedagogical and content knowledge rather than technological proficiency alone (Mishra & Koehler, 2006; Mujallid, 2021).

Blackboard adoption should not be considered only in terms of whether lecturers report using the LMS, but also in relation to the purposes for which its tools are used. Administrative activities such as uploading notes, announcements and marks indicate platform use, whereas interactive learning activities, formative assessment, feedback, collaboration and purposeful alignment between technology, pedagogy and disciplinary content provide stronger indications of pedagogically oriented use (Mishra & Koehler, 2006; Mujallid, 2021).

At the university examined in this study, Blackboard training formed part of an institutional capacity-development strategy supporting the transition to Blackboard Learn Ultra. The study investigated lecturers' perceptions of the training, their self-reported implementation of Blackboard tools and practices, the challenges they experienced, and the support they considered necessary for continued implementation. It was guided by the question: What are lecturers' perceptions of Blackboard Learn Ultra training and their self-reported implementation of Blackboard tools and practices, and what conditions do they identify as supportive of continued and pedagogically purposeful LMS use?

2. Literature Review and Conceptual Framework

2.1 From LMS Acceptance to Sustained Adoption

Technology-acceptance research helps explain lecturers' LMS adoption. Matarirano et al. (2021) found that Blackboard use was influenced by behavioural intention, perceived usefulness, subjective norm, self-efficacy, enjoyment, anxiety and job relevance, demonstrating that adoption is shaped by cognitive, affective and contextual factors. Almogren (2022) extends this perspective by showing that continued Blackboard use is associated with actual use, satisfaction, perceived usefulness and ease of use. Adoption should therefore extend beyond initial acceptance or compliance to sustained and educationally meaningful use.

However, training alone does not guarantee fuller utilisation. Parnealsivam and Khalid (2024) found that technical difficulties and incomplete understanding of Blackboard continued to constrain lecturers despite prior training, highlighting the importance of ongoing professional development, management support and context-sensitive implementation. Similarly, Mella-Norambuena et al. (2025) found that LMS adoption research remains dominated by TAM and frequently focuses on behavioural intention rather than actual use. This distinction is important for the present study, which examines lecturers' self-reported implementation following training while recognising that self-report evidence cannot establish the quality, frequency or sustainability of actual LMS use.

2.2 Professional Development for Technology Integration

Professional development can build lecturers' confidence and technical skills, but meaningful integration also requires opportunities to practise, contextualise and extend learning. Huang et al. (2024) highlight the importance of active learning, collaboration, expert support, feedback and reflection, while Fütterer et al. (2024) show that technology integration develops during professional development and is shaped by contextual conditions. Introductory LMS training is therefore important but may be insufficient on its own; lecturers also require support for pedagogically purposeful applications such as assessment, student engagement and course design (Parnealsivam & Khalid, 2024). This is particularly relevant in African higher education, where LMS integration is influenced by accessibility, usability and broader implementation challenges (Maluleke & Maake, 2025). South African evidence further highlights timely support, clear communication and realistic consideration of lecturer workload as important conditions for successful LMS implementation (Biccard & Makgato-Khunou, 2024).

2.3 TPACK as the Interpretive Framework

TPACK comprises TK, PK and CK and their intersections: technological pedagogical knowledge (TPK), technological content knowledge (TCK), pedagogical content knowledge (PCK) and integrated TPACK (Mishra & Koehler, 2006). The framework exposes a limitation of purely technical LMS training. A lecturer may know how to create a test, configure the Gradebook or open a discussion forum without knowing when that tool is pedagogically appropriate, how it should align with outcomes, or how it can support the knowledge practices of a particular discipline.

Mujallid (2021) argues that higher education professional development should integrate technological competence with pedagogical knowledge rather than treating online teaching as the transfer of conventional practices to a digital platform. In the present study, TPACK is used as an interpretive rather than a psychometric framework. Navigation, tool operation and configuration primarily indicate TK; alignment of Blackboard activities with learning outcomes and assessment indicates TPK; and discipline-specific application indicates movement towards an integrated TPACK. The framework therefore helps distinguish platform proficiency from pedagogically purposeful adoption.

3. Methodology

3.1 Design and Participants

The study was conducted within the context of a multi-year institutional Blackboard capacity-development initiative. However, the empirical study used a post-training, cross-sectional survey design, capturing lecturers' perceptions and self-reported Blackboard implementation at a single point in time. The sampling frame comprised 200 lecturers who had completed one of the university's Blackboard-related training initiatives between 2022 and 2025, of whom 51 participated (25.5% response rate). The design was intended to describe reported experiences and implementation following training rather than to measure change over time or establish a causal effect of training on Blackboard adoption. Women constituted 62.7% of the sample and men 37.3%. Participants represented six faculties: Social Sciences and Humanities (27.5%), Science and Agriculture (19.6%), Management and Commerce (17.6%), Health Sciences (17.6%), Education (11.8%) and Law (5.9%). Of those who reported campus, 60.4% were based at the East London Campus and 39.6% at the Alice Campus.

Participants had completed either the self-paced and facilitated Digital Teaching and Learning Series (DTLS) skills programme (51.0%) or in person Blackboard Learn Ultra training (49.0%). Prior Blackboard experience ranged from none (19.6%) and basic (41.2%) to intermediate (33.3%) and advanced (5.9%).

3.2 Instrument, Ethics and Analysis

Data were collected through an online questionnaire comprising demographic and training-background items, implementation questions, 19 five-point Likert-scale statements and three open-ended questions. The Likert items examined training relevance and clarity, hands-on opportunities, confidence, Blackboard usefulness, pedagogical integration, assessment alignment, student engagement, tool selection, content presentation and post-training support. The open-ended questions asked participants to identify the most valuable aspects of training, areas requiring improvement and recommendations for future initiatives. Participation was voluntary, and respondents were informed of the study purpose and confidential treatment of their responses.

Quantitative data were analysed using descriptive statistics. An exploratory principal component analysis (PCA) with Varimax rotation was conducted on the 19 Likert items. Sampling adequacy was assessed using the Kaiser-Meyer-Olkin statistic and Bartlett's test of sphericity, and internal consistency was assessed using Cronbach's alpha. Given the modest sample size (n = 51) relative to the 19 items, the PCA is treated as exploratory rather than as a definitive validation of the factor structure. Table 1 reports the available component loadings, eigenvalues, variance explained, factor means, standard deviations and reliability coefficients. Pearson correlations were examined among the extracted components, and exploratory group comparisons were conducted by training type; the available descriptive and significance statistics are reported in Table 2. These analyses are interpreted cautiously and are not used to establish comparative effectiveness or causal effects of either training approach. The open-ended questionnaire responses were analysed inductively using thematic analysis. Responses were read repeatedly to identify recurring ideas, which were coded and grouped into broader categories and higher-order themes. Themes were reviewed against the original responses to ensure that they remained grounded in participants' accounts. As individual responses could reflect more than one theme, qualitative frequencies represent coding occurrences rather than mutually exclusive participant totals. TPACK was subsequently used as an interpretive framework rather than to predetermine the themes.

To supplement the survey-based evidence with institutional behavioural context, annual Blackboard Course Tool Usage reports for 2022-2026 were examined descriptively. These aggregate reports record the number of modules in which selected Blackboard tools were used. The analytics were not linked to individual survey respondents, training type, frequency of use, or quality of pedagogical implementation and were therefore used as contextual evidence of institutional utilisation rather than as an outcome measure of training effectiveness.

4. Results

4.1 Implementation and Perceptions

Blackboard implementation following training was high. Forty-three participants (84.3%) reported implementing tools or strategies learned during training, six (11.8%) reported partial implementation, and two (3.9%) reported no implementation. Regarding overall integration, 54.9% reported moderate use and 33.3% extensive use, while 11.8% reported limited integration. In addition, 93.9% indicated that they would recommend the training to colleagues.

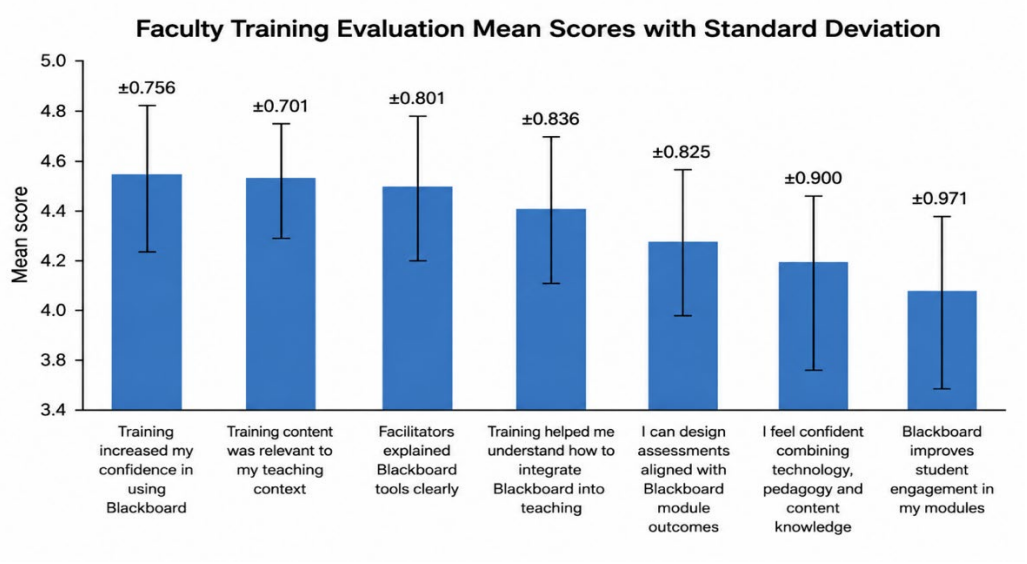


Figure 1: Selected descriptive results for the 19-item questionnaire.

The strongest ratings concerned confidence, contextual relevance and facilitator clarity. The comparatively lower ratings for student engagement and confidence in combining technology, pedagogy and content are analytically important: lecturers were positive about the training, but perceived pedagogical impact was less pronounced than training confidence and relevance.

4.2 Institutional Blackboard tool utilisation, 2022-2026

Institutional Course Tool Usage reports provide additional behavioural context for the self-reported implementation findings. Recorded utilisation expanded markedly across the annual reports. Folder use increased from 4 recorded modules in 2022 to 1,767 in 2026; File from 3 to 1,218; Assessment from 1 to 900; and Web Link from 1 to 231. Learning Module use was first recorded in the comparable data in 2024 (4 modules) and reached 272 in 2026, while Discussion increased from 2 modules in 2023 to 257 in 2026. Survey (47 modules) and Journal (14 modules) were reported in the 2026 dataset. Table 3 and Figure 2 summarise these patterns.

Table 1: Recorded Blackboard tool utilisation by tool, 2022-2026

Tool	2022	2023	2024	2025	2026
Folder	4	6	15	322	1,767
File	3	6	12	261	1,218
Assessment	1	6	15	228	900
Learning Module	0	0	4	45	272
Discussion	0	2	6	53	257
Web Link	1	1	4	62	231
Survey	—	—	—	—	47
Journal	—	—	—	—	14

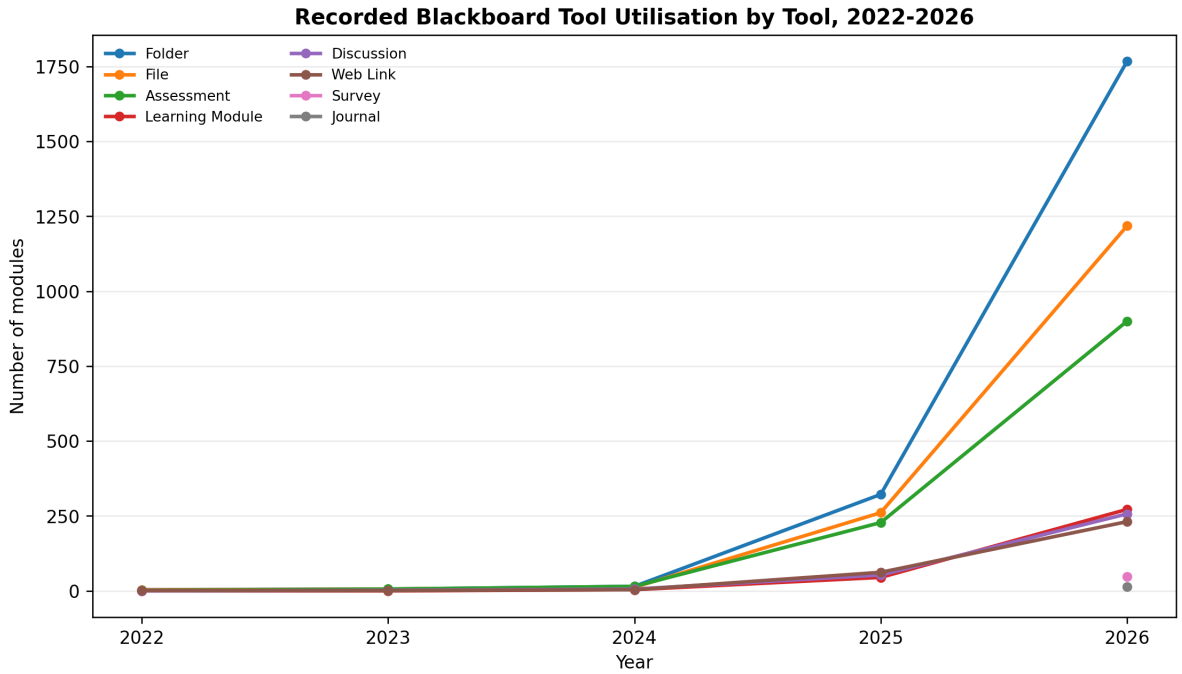


Figure 2: Recorded Blackboard tool utilisation by tool, 2022-2026

Note: Figures represent the number of modules in which each Blackboard tool was recorded as used. Survey and Journal were not reported in the comparable 2022-2025 datasets. Differences in the scope of the annual datasets should be considered when interpreting change over time.

4.3 Factor structure and group differences

The exploratory PCA produced a KMO value of .894 and a significant Bartlett's test of sphericity, $\chi^2(171) = 915.93$, $p < .001$. A three-component solution was examined and accounted for 75.28% of the total variance. Factor 1, Blackboard Training Skills Development, included items related to teaching effectiveness, student engagement, active learning, monitoring progress, assessment innovation, tool selection, content presentation and support. Factor 2, Blackboard Training Experience, reflected clarity, pacing, facilitation, practical opportunity and confidence. Factor 3, Blackboard Training Retention and Transfer, represented contextual relevance, integration into teaching, alignment with outcomes and assessment, and confidence combining technology, pedagogy and content. The detailed component evidence is presented in Table 1. Because the sample is small relative to the number of items, this structure should be regarded as exploratory and interpreted with caution rather than as a confirmed measurement model.

The three exploratory components demonstrated high internal consistency (α = .945, .909 and .919 respectively). They were strongly and positively correlated: Skills Development with Training Experience ($r = .680$, $p < .001$), Skills Development with Retention and Transfer ($r = .797$, $p < .001$), and Training Experience with Retention and Transfer ($r = .799$, $p < .001$). The strength of these correlations also suggests conceptual overlap among the components and reinforces the need for cautious interpretation.

Table 2: Exploratory PCA evidence for the 19 Likert-scale items

Item	Factor loading		
	1	2	3
10. Blackboard improves student engagement in my modules.	.830		
11. Blackboard supports active and collaborative learning.	.796		
12. Blackboard helps me monitor student learning progress more effectively.	.766		
9. Blackboard makes my teaching more effective.	.706		
15. I can use Blackboard to present course content in engaging ways.	.696		
16. I can integrate Blackboard activities that support student participation and interaction.	.686		
19. I feel adequately supported after completing the training.	.681		
14. I can select Blackboard tools that support my teaching strategies effectively.	.679		
13. Blackboard enables me to implement innovative assessment practices.	.619		
2. The training sessions were easy to follow and clear.		.819	
4. The pace of the training supported my learning needs.		.777	
3. The facilitators explained Blackboard tools clearly.		.744	
5. The training provided sufficient opportunities for hands-on practice.		.727	
6. The training increased my confidence in using Blackboard.		.625	
8. The training helped me align online teaching activities with learning outcomes and assessments.			.770
17. I can design assessments using Blackboard that align with module outcomes.			.764
18. I feel confident combining technology, pedagogy, and content knowledge in my teaching practice.			.667
7. The training helped me understand how to integrate Blackboard into my teaching practice.			.637
1. The training content was relevant to my teaching context.			.537
Eigen Value	11.72	1.73	.844
Variance Explained	30.6	22.8	21.9
Factor Mean	3.99	4.28	4.18
Factor Standard Deviation	.744	.691	.732
Reliability	.945	.909	.919

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Note: Extraction method: Principal Component Analysis; rotation: Varimax with Kaiser Normalization; rotation converged in 7 iterations. Blank cells reflect loadings not displayed in the supplied rotated component matrix. Given n = 51 for 19 items, the solution is treated as exploratory.

Participants had completed either DTLS training or Blackboard Learn Ultra training. As shown in Table 2, the exploratory comparison indicated a higher Skills Development score for DTLS participants (M = 37.92, SD = 4.11) than for Blackboard Learn Ultra participants (M = 33.92, SD = 8.20), p = .031. No statistically significant training-type differences were observed for Training Experience (p = .305) or Retention and Transfer (p = .147). Because participants were not randomly assigned to training approaches and no pre-training baseline or behavioural LMS measure was available, these results should not be interpreted as evidence that one training approach was more effective than the other. They are reported as exploratory group differences only.

Table 2: Exploratory training-type group comparisons for the three PCA-derived factors

	Training Course	Mean	Std. Deviation	Std. Error Mean	Sign
Factor 1: Blackboard Training Skills Development	DTLS Training	37.92	4.11	.807	.031
	BB Learn Training	33.92	8.20	1.64	
Factor 2: Blackboard Training Experience	DTLS Training	21.92	2.46	.483	.305
	BB Learn Training	20.92	4.24	.848	
Factor 3: Blackboard Training Retention and Transfer	DTLS Training	21.65	2.54	.499	.147
	BB Learn Training	20.16	4.46	.893	

Note: Group comparisons are exploratory. Participants were not randomly assigned to training approaches, no pre-training baseline was available, and the results do not establish comparative effectiveness or causality.

4.4 Qualitative Findings

Inductive analysis of the open-ended responses produced five higher-order themes. These themes represent interrelated dimensions of lecturers' reported experiences of Blackboard training and implementation rather than sequential stages of adoption. They were derived from participants' responses rather than imposed from TPACK; TPACK was subsequently used to interpret their pedagogical significance.



Figure 3: Themes identified in the findings

Firstly, participants valued learning by doing. Assessment creation, question development, rubrics, Gradebook, sandbox activities and Capstone tasks were repeatedly identified as valuable. Secondly, assessment was simultaneously a strength and a continuing development need: lecturers valued assessment training but requested more time for Gradebook navigation, overall grade calculations and marks management. Thirdly, participants consistently argued that training should not be a once-off event. They recommended annual

refreshers, follow-up workshops, advanced sessions, short instructional videos, manuals and responsive technical support. And fourthly, participants increasingly framed their needs in pedagogical rather than technical terms. They valued discussions, quizzes, polls, live assessments, conditional release and multimedia for student participation. Still, they requested more discipline-specific examples, stronger alignment with learning outcomes and greater attention to integrating technology with pedagogy. Fifth, institutional conditions affected transfer. Blackboard - ITS integration, system stability, workload, protected time, and accessible faculty-level support emerged as practical conditions for sustained use.

5. Discussion

The findings indicate a positive relationship between lecturers' reported training experiences and their self-reported Blackboard implementation, but the study design does not establish that training caused the reported implementation. The high implementation rate shows that most respondents reported applying tools or strategies covered during training, while the exploratory correlations indicate associations among Training Experience, Skills Development, and Retention and Transfer. The qualitative findings further identify practical, pedagogical and institutional conditions that participants perceived as important for continued implementation.

5.1 Adoption, Continued Use and Institutional Support

The findings are consistent with Matarirano et al. (2021), who showed that Blackboard adoption among South African lecturers is shaped by perceived usefulness, ease of use, self-efficacy and related acceptance factors. In the present study, lecturers rated Blackboard's contribution to teaching effectiveness positively, while implementation was high. Yet adoption was not frictionless. Requests for continuing technical support, improved system integration and opportunities to revisit learning indicate that competence alone does not determine sustained use.

The institutional Course Tool Usage reports (See Fig 2) add an important behavioural layer to these perceptions. Across the annual reports, recorded use broadened from predominantly basic content-management functions towards substantially greater use of Assessment, Learning Module and Discussion tools by 2026. This pattern is consistent with wider institutional uptake and diversification of Blackboard functionality. It does not, however, demonstrate that the training programmes caused the increase, because the annual analytics differ in scope and cannot be linked to the individual lecturers who completed the survey or to a specific training route.

This pattern also aligns with Almogren (2022), whose study highlights the importance of perceived usefulness, ease of use, satisfaction and actual use in lecturers' intention to continue using Blackboard. In the present study, participants' responses suggest that opportunities to apply training to authentic teaching tasks and access support for unfamiliar or complex functions are valued features of professional development. These findings should be interpreted as lecturers' perceptions rather than evidence that such features caused continued LMS use.

Parnealsivam and Khalid (2024) similarly found that extensive training does not necessarily lead to full exploitation of Blackboard functionality when lecturers experience technical challenges, incomplete understanding or resistance to change. Their recommendation for ongoing training and management support closely mirrors the current participants' calls for refresher development, just-in-time resources and accessible post-training assistance. The convergence across studies strengthens the argument that LMS adoption should be treated as an institutional capability-development process rather than an individual compliance event.

5.2 TPACK: From Technical Competence to Pedagogical Integration

TPACK provides a useful interpretive lens for the difference between confidence in using Blackboard and confidence in combining technology, pedagogy and content. Participants reported confidence in platform-related activities such as navigation, content creation, assessment configuration and interactive tools. However, the lower mean for integrated technology-pedagogy-content confidence (M = 3.90), together with requests for discipline-specific examples, suggests that respondents perceived pedagogical integration as more challenging than technical platform use. Because TPACK was not measured longitudinally, these findings should not be interpreted as evidence of progression from TK to integrated TPACK over time.

The growth in recorded Assessment, Learning Module and Discussion use is also relevant to the TPACK interpretation. These tools can support assessment, structured learning and interaction beyond basic content distribution. Their presence in a module does not by itself demonstrate integrated TPACK, but the diversification

of tool use provides institutional context for participants' reports that they were applying Blackboard to assessment, participation and course organisation.

This finding supports Mujallid's (2021) argument that professional development for online teaching should integrate technological and pedagogical knowledge. It also explains why participants wanted training built around authentic academic scenarios rather than additional lists of Blackboard functions. For example, redesigning a discipline-specific assessment for formative feedback, using conditional release to scaffold preparation, or constructing a discussion that requires disciplinary reasoning would require lecturers to connect TK with PK and CK.

The implication is significant: the objective of professional development should not be maximal feature exposure. It should be the intentional and purposeful selection and application of LMS affordances to teaching problems. In this sense, adoption becomes pedagogical when lecturers can justify why a tool is appropriate, align it with learning outcomes and assessment, and adapt it to the knowledge practices of their discipline.

5.3 Professional Development as a Continuing Process

Participants' strongest recommendations concerned time, practice and continuity. This is consistent with Huang et al. (2024), who identify active learning, collaboration, expert support, feedback and reflection as important features of technology-enabled professional development. It is also compatible with Fütterer et al. (2024), who show that technology integration changes during professional development and is sensitive to contextual conditions.

The exploratory Skills Development difference between DTLS and Blackboard Learn Ultra participants should not be interpreted as evidence that one programme was more effective. Participants were not randomly assigned, there was no pre-training baseline, and the groups may have differed in prior experience, duration, pedagogical emphasis or opportunities for practice. The result is therefore best treated as a signal for future investigation. Future comparative evaluation could examine whether different combinations of self-paced learning, facilitated guidance, hands-on practice and discipline-specific application are associated with different outcomes using larger samples, baseline measures and behavioural LMS evidence.

5.4 Integrating the Five Research Themes

The five themes should be understood as interrelated dimensions of lecturers' experiences rather than as sequential phases of adoption. Together, they highlight practical digital competence, assessment and administrative capability, continuing professional development, pedagogical integration, and an enabling institutional environment. From a TPACK perspective, the findings suggest that Blackboard professional development should extend beyond technical proficiency by creating opportunities for lecturers to apply technology purposefully within teaching, assessment and disciplinary contexts. Given the cross-sectional design, these dimensions are not presented as a developmental pathway or as evidence that lecturers progress through predetermined stages over time.

6. Conclusion and Recommendations

This study found that Blackboard Ultra training was positively perceived and accompanied by substantial self-reported implementation among respondents. The quantitative findings were complemented by five themes: developing practical digital competence; enhancing assessment and administrative capability; sustaining learning through continuous professional development; moving from technical training to pedagogical integration; and creating an enabling institutional environment. These themes represent interrelated dimensions of lecturers' reported experiences rather than stages through which lecturers were shown to progress.

Through a TPACK lens, the findings point to the value of professional development that connects technological competence with pedagogy and disciplinary content. Future development should retain hands-on sandbox activities; differentiate introductory, intermediate and advanced opportunities; provide refresher and just-in-time resources; organise workshops around authentic disciplinary teaching and assessment problems; provide time for practice and reflection; and strengthen Gradebook, Blackboard-ITS and faculty-level support. Future evaluation should assess application using evidence beyond training attendance and self-report.

The study is limited by its single-institution, post-training cross-sectional design, a response of 51 lecturers from a sampling frame of 200, and the absence of a pre-training baseline or comparison condition. Although aggregate institutional Course Tool Usage reports for 2022-2026 provide behavioural context and show substantial growth and diversification in recorded Blackboard tool utilisation, these analytics cannot be linked to individual survey respondents, training routes, frequency of use or pedagogical quality. Reported implementation therefore cannot be assumed to represent the depth or sustainability of actual course use, and neither the survey nor the aggregate analytics establish that training caused the observed institutional pattern. The exploratory PCA is also limited by the modest sample size relative to the 19 items, and its factor structure and group comparisons should therefore be interpreted cautiously. Future research should use larger samples and combine baseline and follow-up measurement with participant-linked LMS analytics, course-design review and student evidence. Within these limitations, the findings identify lecturer-perceived characteristics and institutional conditions that may inform future Blackboard professional development.

Ethics Declaration

Ethical approval was obtained from the University of Fort Hare Inter-Faculties Research Ethics Committee (IFHREC-26/05-0264). The anonymous SurveyMonkey questionnaire was distributed electronically to lecturers who had completed Blackboard training between 2021 and 2025, with multiple reminders sent. An information sheet and consent form outlined the study purpose, voluntary participation, confidentiality, anonymity and the right to withdraw. Facilitators and supervisors could not identify participants, and findings were reported only in aggregate. Anonymised data were archived electronically at the University for research purposes.

AI Declaration

AI tools, including Elicit and ChatGPT, were used to assist with literature searching, language refinement and editorial support. Nano Banana was used in the creation or modification of visual material. The authors reviewed and edited all AI-assisted outputs and take responsibility for the manuscript. References, analyses and factual claims were checked by the researchers against the underlying sources and study data

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References

Almogren, A. S. (2022) Art education lecturers' intention to continue using the Blackboard during and after the COVID-19 pandemic: An empirical investigation into the UTAUT and TAM model. Frontiers in Psychology, 13, 944335. https://doi.org/10.3389/fpsyg.2022.944335

Biccard, P., & Makgato-Khunou, P. (2024) Lecturers' perceptions of a learning management system migration at an open distance learning institution. International Journal of E-Learning & Distance Education/Revue internationale du e-learning et la formation à distance, 38(2). https://doi.org/10.55667/ijede.2024.v38.i2.1300

Fütterer, T., Backfisch, I., & Lachner, A. (2024) Teachers' trajectories of technology integration during participation in an online professional development program. Zeitschrift für Erziehungswissenschaft, 27, 769–801. https://doi.org/10.1007/s11618-024-01251-6

Huang, L., Liang, M., Xiong, Y., Wu, X., & Lim, C. P. (2024) A systematic review of technology-enabled teacher professional development during COVID-19 pandemic. Computers & Education, 223, 105168. https://doi.org/10.1016/j.compedu.2024.105168

Matarirano, O., Jere, N. R., Sibanda, H. S., & Panicker, M. (2021) Antecedents of Blackboard adoption by lecturers at a South African higher education institution—Extending GETAMEL. International Journal of Emerging Technologies in Learning, 16(1), 60–79. https://doi.org/10.3991/ijet.v16i01.16821

Mishra, P., & Koehler, M. J. (2006) Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Mujallid, A. (2021) Instructors' readiness to teach online: A review of TPACK standards in online professional development programmes in higher education. International Journal of Learning, Teaching and Educational Research, 20(7), 135–150. https://doi.org/10.26803/ijlter.20.7.8

Parnealsivam, J. A/P, & Khalid, F. B. (2024) Benefits and challenges of using Blackboard® with strategies to overcome them. International Journal of Academic Research in Business and Social Sciences, 14(8), 819–838. https://doi.org/10.6007/IJARBSS/v14-i8/22450

Mella-Norambuena, J., Chiappe, A., & Badilla-Quintana, M. G. (2025) Theoretical and empirical models underlying the teaching use of LMS platforms in higher education: A systematic review. Journal of Computers in Education, 12, 997–1023. https://doi.org/10.1007/s40692-024-00336-9

Maluleke, A. F., & Maake, G. (2025) Examining the impact of learning management systems in African higher education: A systematic review. African Journal of Inter/Multidisciplinary Studies, 7(1). https://doi.org/10.51415/ajims.v7i1.1550