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Building Digital Adaptation Chains in Higher Education: From Digital Learning Readiness to Retention through Resilience and Competency Development

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Abstract: Digitised higher education increasingly relies on platform-based teaching, assessment, and reporting systems, yet this shift can intensify academic workload and create retention risks when lecturers face persistent digital frictions. This study develops and tests a mechanism-based digital adaptation chain to explain how Digital Learning Readiness (DLR) becomes workforce-sustainable in digitised higher education. Using survey data from 248 lecturers in private nursing higher education institutions and analysing the model with PLS-SEM, the study estimates a serial mediation process linking readiness to lecturer retention intention through academic resilience and competency development. The results support the proposed mechanism: DLR strengthens academic resilience, resilience enables competency development, and competency development emerges as the most proximal driver of retention intention. Notably, readiness alone is insufficient to sustain retention when it is not converted into adaptive capacity and enacted competence, consistent with a "readiness is not enough" interpretation. By shifting readiness research from adoption preparedness toward sustainability mechanisms, the study contributes a process explanation of workforce stability in digital education. The findings offer actionable guidance for institutions and policymakers to sequence interventions, engineering readiness, scaffolding resilience, and institutionalising competency development to ensure that digital transformation remains people-sustainable.

Keywords: Digital Learning Readiness, Academic Resilience, Competency Development, Lecturer Retention, Digitised Higher Education, Digital Transformation, Adaptation Chain, Workforce Sustainability

INTRODUCTION

Digitised higher education has become the default mode for teaching, assessment, and academic administration. Digital learning is no longer a supplementary tool; it restructures the academic work system. Learning management systems, e-assessment platforms, analytics dashboards, and reporting infrastructures reorganise how lecturers teach, document,

coordinate, and respond to institutional requirements (Masiello et al., 2024; Si, 2024; Tahir et al., 2025). These infrastructures embed expectations for continuous reachability, data-compliant documentation, and rapid responsiveness. While they promise efficiency and transparency, they also generate hidden digital labour troubleshooting, repeated data entry across systems, platform updates, and frequent micro-interruptions that fragments attention and reduces time for deep work and sustained professional learning (Marsh et al., 2022; Mdhluli, 2025; van Zoonen & Sivunen, 2024).

These changes elevate lecturer retention from a narrow HR issue to a workforce sustainability challenge. Retention underpins continuity of teaching quality, curriculum stewardship, and assessment integrity, especially where programme delivery relies on stable expertise and institutional memory (Mather & Bam, 2025; Menzies, 2023). Persistent turnover disrupts routines, increases replacement and onboarding costs, and redistributes workload to remaining staff, often intensifying strain in already digitised work settings (Choubey & Agrawal, 2025; McPherson et al., 2025). For this reason, digital transformation should not be evaluated only through adoption or usage indicators; it must also be assessed by whether the academic workforce can sustainably function within technology-mediated governance arrangements (Mabotha & Ngcamu, 2025; Nazyrova et al., 2025). This broader sustainability lens aligns with responsible management perspectives that emphasise capability-based human resource governance as a foundation for long-term organisational viability (Pawirosumarto, 2026).

A key tension remains unresolved in technology-in-education research. Dominant narratives imply that stronger digital learning readiness (DLR)—access, baseline skills, and preparedness—should enable smoother adoption and better outcomes (Polat, 2024; Reyes-Millán et al., 2023; Weng & Wirda, 2025). Yet institutions often observe that lecturers can be functionally "ready" while simultaneously reporting stronger withdrawal intentions when adaptation demands intensify. Readiness may increase exposure to platform monitoring, rapid-response norms, and compliance pressure without guaranteeing sustainable coping (Li & Cheng, 2026; van Zoonen et al., 2025; Zhou et al., 2025). This puzzle suggests that readiness is not an endpoint; it is an input that must be translated into adaptive functioning if digitised learning is to remain viable.

Two gaps motivate this study. First, DLR scholarship frequently relies on direct-effect logic and adoption-centred outcomes, offering limited explanation of the mechanism through which readiness becomes sustainability-relevant under continuous digital change (Hamadi & El-Den, 2023; Okoye et al., 2025; Ramírez-Correa et al., 2025). Second, workforce sustainability outcomes—particularly lecturer retention intention—remain underexamined relative to student outcomes or technology acceptance indicators (Danxin et al., 2024; Kuuyelleh et al., 2025). Retention is not peripheral: it signals whether digitised learning systems remain organisationally viable when adaptation costs accumulate.

To address these gaps, this study develops and tests a digital adaptation chain linking DLR to lecturer retention intention through two sequential mechanisms: academic resilience and competency development. DLR is conceptualised as an input capability that reduces uncertainty and strengthens perceived control in technology-mediated work. Academic resilience is positioned as an adaptive psychological resource that supports persistence and recovery under technological and workload strain (Isnainy & Zainaro, 2024; Zaimoğlu & Dağtaş, 2025). Competency development represents capability enactment—the sustained strengthening and application of role-relevant skills for digitised teaching and assessment (Redecker & Punie, 2017; Teece, 2007). Competency development is expected to be the most proximal driver of retention intention because enhanced capability strengthens professional efficacy and confidence in navigating digitised work demands (Komariyah & Tadjie, 2025). Accordingly, this study examines whether a serial mechanism—DLR → resilience →

competency development → retention explains how readiness becomes sustainability-relevant in digitised higher education.

This paper contributes by (1) proposing a mechanism-based adaptation chain that explains why readiness alone may not secure retention, (2) testing a serial mediation model that moves beyond adoption-centric assumptions, and (3) translating the model into a sequenced intervention logic that supports people-sustainable digital transformation.

Conceptual background & hypotheses

Digital Learning Readiness as a preparedness capability

Digital Learning Readiness (DLR) refers to lecturers' preparedness to conduct and sustain digital teaching and assessment through adequate access, baseline digital skills, positive orientation toward technology use, and perceived enabling support (Kumar et al., 2025; Scherer et al., 2021). In digitised higher education, DLR functions as a preparedness capability: it reduces uncertainty about platform use, lowers the perceived difficulty of digitally mediated tasks, and strengthens lecturers' confidence that they can meet technology-related work requirements (Hu et al., 2025a; Olivares Olivares et al., 2021; Scherer et al., 2021). However, DLR should be treated as a necessary input rather than a guarantee of sustainability. Readiness equips lecturers to enter and operate within digital learning systems, but sustained functioning depends on how lecturers cope with ongoing frictions, system glitches, compliance demands, rapid response expectations, and continuous workload adjustments (Bondanini et al., 2020; Zhao & Watterston, 2021). As such, DLR is expected to support adaptation primarily by enabling resilience as an adaptive psychological resource.

H1: *Digital Learning Readiness positively influences academic resilience. (DLR → Resilience, +)*

Academic resilience as an adaptive resource

Academic resilience reflects lecturers' capacity to cope, recover, and continue functioning effectively when facing change, overload, and technology-related disruptions such as system glitches, workflow breakdowns, and escalating digital compliance demands (Britt et al., 2016; Tarafdar et al., 2015). In digitised higher education, resilience is not only a wellbeing attribute but an adaptive resource that determines whether lecturers can sustain engagement during extended adaptation phases, when digital work pressures persist rather than occur as one-time shocks (Bakker & de Vries, 2021; Xanthopoulou et al., 2007). Resilient lecturers are more likely to tolerate initial inefficiencies, manage frustration, and maintain motivation to engage with new tools and routines. This persistence enables learning-by-doing: lecturers experiment, iterate, and refine digital pedagogical and assessment practices instead of withdrawing when difficulties arise (Argote & Miron-Spektor, 2011; Salanova et al., 2011). Accordingly, resilience should facilitate competency development by supporting continued effort and constructive trial–error under digitally mediated work conditions.

H2: *Academic resilience positively influences competency development. (Resilience → Competency Development, +)*

Competency development as capability enactment

Competency development refers to sustained improvement and application of role-relevant knowledge and skills that enhance lecturers' effectiveness in digitised teaching, assessment, and academic administration (Eraut *, 2004). It is conceptually distinct from training participation. Training indicates exposure to learning activities, whereas competency development captures transfer and enactment—whether new skills are integrated into routine practice, improve instructional delivery, strengthen assessment integrity, and streamline digital administrative work (Janssens et al., 2024; Nīmante et al., 2025; Shi et al., 2025). In digitised

higher education, competency development includes digital pedagogy (designing technology-enabled learning), digital assessment practices (feedback, integrity controls, platform-based evaluation), and administrative competence (documentation, reporting, and platform governance) (Sava et al., 2024; Trujillo-Juárez et al., 2025). As lecturers build and enact these competencies, they are more likely to experience higher self-efficacy and clearer role fit, and to perceive their career as sustainable within the institution's digitised work system (Hu et al., 2025b; Sun & Yoon, 2025; Veles & Takagi, 2026). These mechanisms should strengthen intentions to remain.

H3: *Competency development positively influences lecturer retention intention. (Competency Development → Retention, +)*

Serial mediation: the digital adaptation chain

This study argues that DLR alone is unlikely to secure lecturer retention unless it is converted into adaptive functioning and enacted as capability in daily digitised work. Readiness provides entry capacity—lecturers can access systems and perform baseline tasks—but it does not automatically protect them from persistent digital frictions, workload intensification, and compliance pressures that accumulate over time (Malik et al., 2025; Rosero-Ordóñez, 2025; Yang et al., 2025). A mechanism-based explanation is therefore required. Building on a capability/adaptation lens and a resources/coping lens, we conceptualise a digital adaptation chain in which DLR strengthens academic resilience (adaptive resource), resilience enables competency development (capability enactment), and enacted competence becomes the most proximal driver of retention intention (An et al., 2025; Citraresmi et al., 2025; Hairunisya & Narmaditya, 2025). This chain logic is stronger than a direct-effect model because it explains *how* readiness becomes sustainability-relevant, and it also accommodates the possibility that direct effects of DLR or resilience on retention may be weak or non-significant when capability enactment is the critical pathway.

H4: *Digital Learning Readiness has a positive indirect effect on retention intention through resilience and competency development (DLR → Resilience → Competency Development → Retention).*

Conceptual framework of the study

Building on the preceding arguments, this study proposes a parsimonious digital adaptation chain model to explain lecturer retention intention in digitised higher education. The framework positions Digital Learning Readiness (DLR) as a preparedness capability that enables lecturers to cope with technology-mediated demands by strengthening Academic Resilience. Resilience functions as an adaptive resource that supports persistence and recovery under ongoing digital frictions, thereby facilitating Competency Development as capability enactment in digitised teaching, assessment, and academic administration. Competency development is expected to be the most proximal driver of Lecturer Retention Intention, as strengthened capability enhances professional self-efficacy, role fit, and perceived sustainability within a digitised work system. **Figure 1** presents the conceptual framework and the hypothesised relationships.

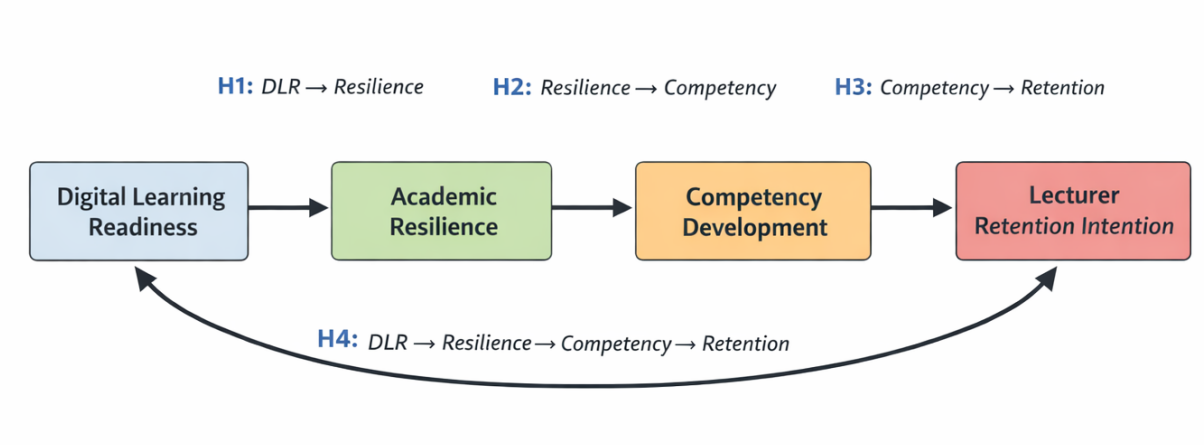

Figure 1. Conceptual framework of the study

Serial mediation model linking Digital Learning Readiness (DLR) to Lecturer Retention Intention through Academic Resilience and Competency Development (H1: DLR → Resilience; H2: Resilience → Competency Development; H3: Competency Development → Retention; H4: DLR → Resilience → Competency Development → Retention).

METHOD

Context and sample

This study was conducted in private higher education institutions (HEIs) offering nursing programmes within LLDIKTI Region X (West Sumatra and Jambi, Indonesia), where teaching, assessment, and academic reporting are increasingly mediated through digital platforms. This setting is particularly relevant because professionally regulated programmes combine intensive documentation requirements with strong expectations for assessment integrity, making lecturers' digital adaptation capacity central to educational continuity (Crawford, 2020; Ilieva et al., 2025; Shamsudin et al., 2024). The target population comprised active lecturers who routinely engaged in technology-mediated academic work, including learning management system use, digital assessment administration, and online academic reporting. Data were collected using a structured questionnaire distributed through institutional networks. After data screening and removal of incomplete responses, a total of 248 valid questionnaires were retained for analysis (n = 248). This sample size is adequate for PLS-SEM estimation of serial mediation models with multiple latent constructs and bootstrapped indirect effects (Gudergan et al., 2025; Guenther et al., 2023).

Measures

All constructs were measured using multi-item scales adapted from established instruments in the technology-in-education and organisational behaviour literature (Davis, 1989; Hinkin, 1998; Jebb et al., 2021). Digital Learning Readiness (DLR), Academic Resilience, Competency Development, and Lecturer Retention Intention were each operationalised with five reflective indicators measured on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). Where necessary, items were translated and refined using a back-translation procedure to ensure semantic equivalence (Brislin, 1970; Jarvis et al., 2003). To reduce common method bias, responses were collected anonymously, item order was randomised across constructs, and respondents were assured there were no right or wrong answers (Chang et al., 2010; Podsakoff et al., 2003, 2012). A marker-based diagnostic was additionally employed as a statistical check. The measurement items and their sources are presented in **Table 1**.

Table 1. Measurement items and sources (5 indicators per construct)

Construct (Code)	Item code	Measurement items (reflective; 5-point Likert)	Source
Digital Learning Readiness (DLR)	DLR1	I have the basic digital skills needed to carry out my teaching tasks using institutional platforms.	(Ayala-Perez & Joo-Nagata, 2019; Hung et al., 2010; Ng, 2012; Teo, 2011)
	DLR2	I feel prepared to use digital systems for course delivery and student interaction.	
	DLR3	I can use digital tools to manage course materials, communications, and learning activities effectively.	
	DLR4	I have adequate access to the digital resources (devices/internet/systems) required for my academic work.	
	DLR5	I am confident in adapting to new digital requirements introduced by the institution.	
Academic Resilience (RES)	RES1	I can recover quickly when digital teaching or administrative systems disrupt my work.	(Britt et al., 2016; Luthans et al., 2006; Smith et al., 2008)
	RES2	When technology problems occur, I stay focused and continue working effectively.	
	RES3	I can cope with increased workload when digital demands intensify.	
	RES4	I persist in completing my academic tasks even when digital systems are frustrating or unstable.	
	RES5	I can adapt effectively to unexpected changes in digital teaching and reporting requirements.	
Competency Development (CD)	CD1	Over time, I have improved my ability to design and deliver digitally supported learning activities.	(Cabero-Almenara et al., 2020; Schmid et al., 2020)
	CD2	I have developed stronger skills in conducting assessments and providing feedback using digital tools.	
	CD3	I can apply new digital skills to improve my teaching effectiveness.	
	CD4	I have strengthened my ability to manage digital administrative/reporting tasks efficiently.	
	CD5	I continuously build and apply new competencies relevant to digitised academic work.	
Lecturer Retention Intention (LRI)	LRI1	I intend to continue working at my current institution for the foreseeable future.	(Kelloway et al., 1999; Meyer et al., 1993; TETT & MEYER, 1993)
	LRI2	I plan to remain employed at this institution rather than seek a job elsewhere.	
	LRI3	I am unlikely to leave this institution in the near future.	
	LRI4	If I had a choice, I would prefer to stay at this institution.	
	LRI5	I see myself working at this institution for the next few years.	

Analysis

The hypothesised model was tested using Partial Least Squares Structural Equation Modelling (PLS-SEM) because the study is prediction-oriented and focuses on estimating a serial mediation mechanism with multiple latent constructs under potentially non-normal data conditions (J. F. , H. G. T. M. , R. C. M. , & S. M. Hair, 2022; J. F. Hair et al., 2019; Sarstedt et al., 2022). The analysis followed a two-stage procedure. First, the measurement model was assessed to establish construct validity and reliability, including indicator loadings, internal consistency (Cronbach's alpha and composite reliability), convergent validity (AVE), and discriminant validity using the HTMT criterion (Fornell & Larcker, 1981; J. F. , H. G. T. M. , R. C. M. , & S. M. Hair, 2022; Henseler et al., 2016). Second, the structural model was

evaluated by examining path coefficients, explained variance (R^2), effect sizes (f^2), and collinearity diagnostics (VIF). Model fit was reported using SRMR as a global approximation index. Indirect effects were tested via bootstrapping with resampling to obtain bias-corrected confidence intervals for the serial mediation pathway (Henseler et al., 2015; Preacher & Hayes, 2008; Sarstedt et al., 2022). To mitigate and diagnose common method bias, procedural remedies were implemented at the design stage (anonymity, mixed item order) and complemented with a marker-based statistical check (Lindell & Whitney, 2001; Podsakoff et al., 2003, 2012).

RESULTS AND DISCUSSION

Measurement model assessment

The measurement model was first evaluated to confirm indicator reliability and convergent validity for all reflective constructs. As shown in **Figure 1**, all indicators exhibit acceptable loadings on their respective constructs, supporting the adequacy of the outer model structure for subsequent structural testing.

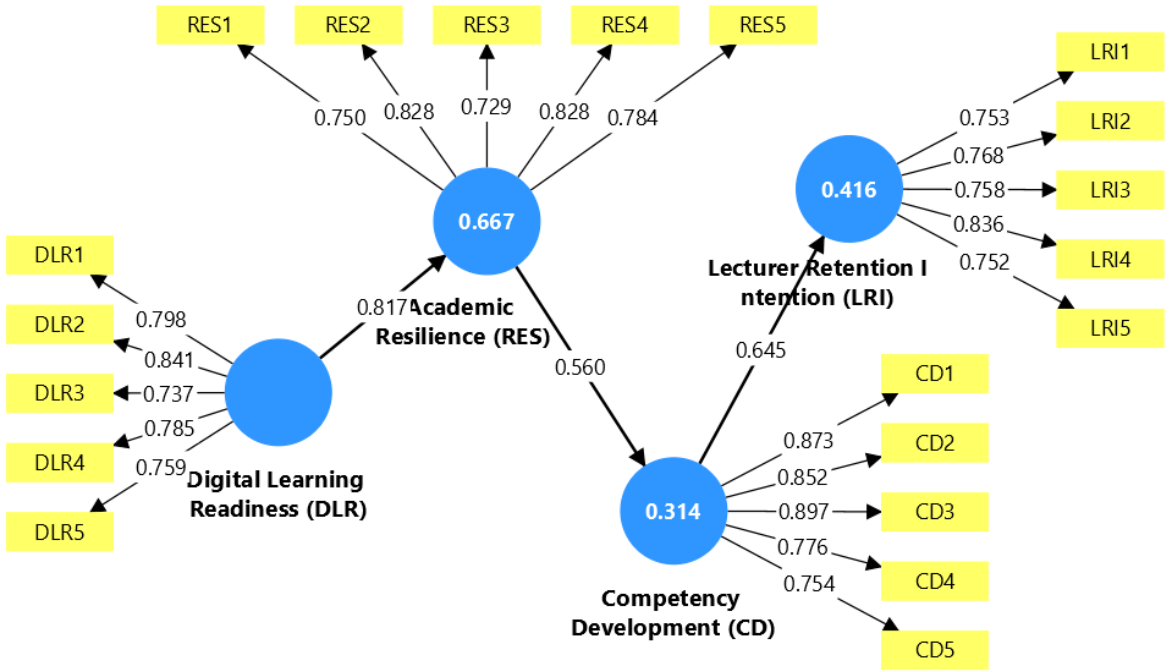

Figure 1. Outer model (measurement model) with indicator loadings and explained variance (R^2).

Caption: Reflective measurement model for Digital Learning Readiness (DLR), Academic Resilience (RES), Competency Development (CD), and Lecturer Retention Intention (LRI), including standardised indicator loadings and endogenous construct R^2 values.

Next, indicator reliability, internal consistency, convergent validity, and discriminant validity were assessed using outer loadings, Cronbach's alpha, composite reliability (rho_a; rho_c), AVE, and the HTMT criterion. The full set of measurement model results is reported in **Table 2**. Overall, indicator loadings were largely above the recommended threshold of 0.70, and AVE values exceeded 0.50 for all constructs, indicating satisfactory convergent validity. Internal consistency was also supported, with Cronbach's alpha and composite reliability values meeting conventional thresholds. Discriminant validity was confirmed as HTMT values remained below conservative cut-offs (e.g., 0.85), suggesting that the constructs are empirically distinct.

Table 2. Measurement model results: indicator loadings, construct reliability/validity, and HTMT

Panel A. Outer loadings (reflective indicators)

Indicator	RES	CD	DLR	LRI
RES1	0.750			
RES2	0.828			
RES3	0.729			
RES4	0.828			
RES5	0.784			
CD1		0.873		
CD2		0.852		
CD3		0.897		
CD4		0.776		
CD5		0.754		
DLR1			0.798	
DLR2			0.841	
DLR3			0.737	
DLR4			0.785	
DLR5			0.759	
LRI1				0.753
LRI2				0.768
LRI3				0.758
LRI4				0.836
LRI5				0.752

Panel B. Construct reliability and convergent validity

Construct	Cronbach's alpha	CR (rho_a)	CR (rho_c)	AVE
Academic Resilience (RES)	0.844	0.851	0.889	0.616
Competency Development (CD)	0.888	0.893	0.918	0.693
Digital Learning Readiness (DLR)	0.844	0.846	0.889	0.616
Lecturer Retention Intention (LRI)	0.834	0.841	0.882	0.599

Panel C. Discriminant validity (HTMT)

HTMT	RES	CD	DLR	LRI
RES	—			
CD	0.636	—		
DLR	0.753	0.626	—	
LRI	0.693	0.727	0.733	—

Finally, overall model fit indices were examined to provide a global diagnostic of the model's approximation to the observed data. As reported in **Table 3**, SRMR for the saturated model was within a commonly used acceptable range, while the estimated model SRMR was higher, suggesting that global fit should be interpreted cautiously and complemented with measurement validity and predictive-oriented structural assessment.

Table 3. Model fit indices

Model fit	Saturated model	Estimated model
SRMR	0.096	0.128
d_ULS	1.921	3.422
d_G	0.948	1.013
Chi-square	475.303	495.508
NFI	0.672	0.658

Structural model assessment

After establishing adequate measurement properties, the structural model was assessed to test the hypothesised relationships and the explanatory power of the digital adaptation chain. As illustrated in **Figure 3**, the inner model results support the sequential mechanism linking Digital Learning Readiness (DLR) to Lecturer Retention Intention (LRI) through Academic Resilience (RES) and Competency Development (CD). The model also provides a clear view of the explained variance for the endogenous constructs, indicating meaningful predictive relevance for the proposed mechanism.

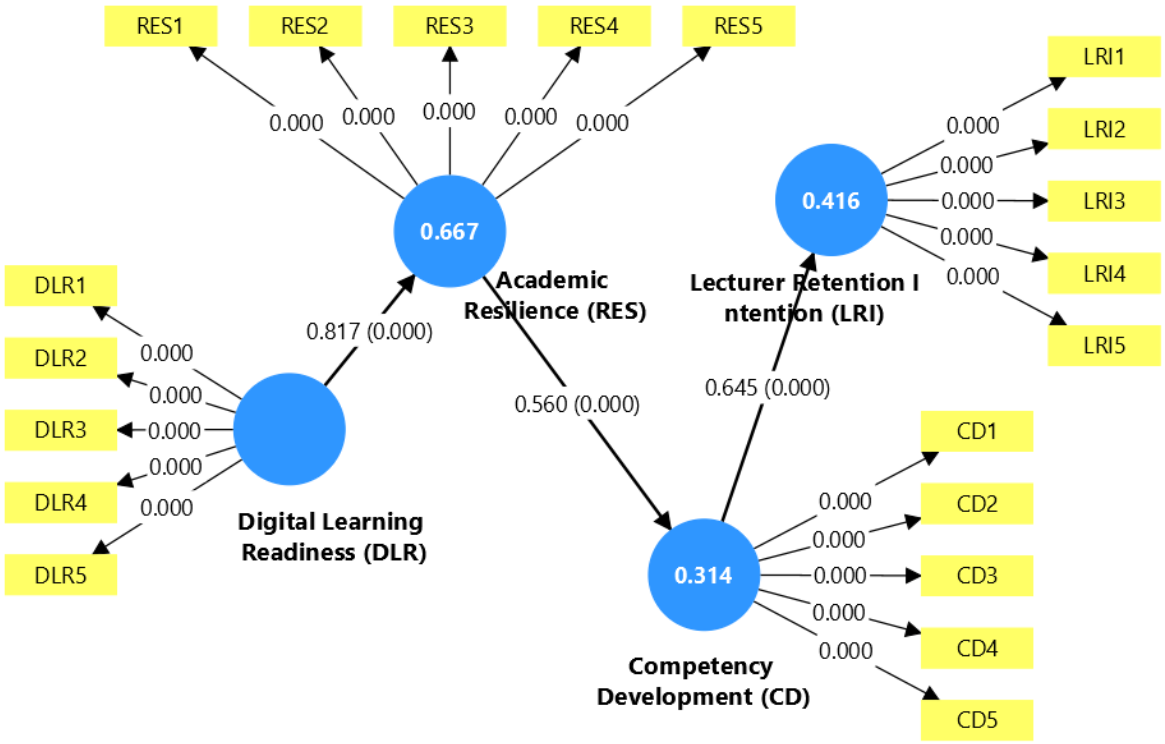

Figure 3. Inner model (structural model) with standardised path coefficients and R^2 values. Caption: Structural paths among DLR, RES, CD, and LRI with bootstrapped significance (p-values) and explained variance (R^2) for the endogenous constructs.

Direct path relationships were evaluated using bootstrapped path coefficients, t-statistics, and p-values. The results, presented in **Table 4**, show that DLR has a strong positive effect on academic resilience ($\beta = 0.817$, $p < 0.001$), supporting H1. Academic resilience also positively predicts competency development ($\beta = 0.560$, $p < 0.001$), supporting H2. Finally, competency development shows a strong positive relationship with lecturer retention intention ($\beta = 0.645$, $p < 0.001$), supporting H3. Importantly, the results indicate that the proposed mechanism operates through the serial pathway, with the strongest downstream relationship observed

between competency development and retention intention, highlighting capability enactment as the most proximal driver of retention under digitised work conditions.

Table 4. Structural path coefficients (direct effects) and hypothesis decisions

Hypo-thesis	Structural path	Original sample (O)	Sample mean (M)	STDEV	T statistics	P values	Decision
H1	DLR → RES	0.817	0.819	0.040	20.405	0.000	Supported
H2	RES → CD	0.560	0.573	0.074	7.615	0.000	Supported
H3	CD → LRI	0.645	0.660	0.055	11.684	0.000	Supported

The model's explanatory power was examined using R^2 and adjusted R^2 values, while the substantive impact of predictors was assessed using effect sizes (f^2). As summarised in **Table 5**, DLR explains a substantial portion of variance in resilience ($R^2 = 0.667$), indicating that readiness strongly accounts for adaptive capacity in this context. Resilience explains a meaningful share of variance in competency development ($R^2 = 0.314$), and competency development explains a moderate-to-substantial share of variance in retention intention ($R^2 = 0.416$). Effect size estimates further indicate a very large contribution of DLR to resilience ($f^2 = 2.005$), a moderate-to-large contribution of resilience to competency development ($f^2 = 0.458$), and a large contribution of competency development to retention intention ($f^2 = 0.713$), reinforcing the centrality of the proposed adaptation mechanism.

Table 5. Explanatory power (R^2) and effect sizes (f^2)

Construct / Relationship	Statistic	Value
Academic Resilience (RES)	R^2	0.667
	R^2 adjusted	0.664
Competency Development (CD)	R^2	0.314
	R^2 adjusted	0.307
Lecturer Retention Intention (LRI)	R^2	0.416
	R^2 adjusted	0.410
DLR → RES	f^2	2.005
RES → CD	f^2	0.458
CD → LRI	f^2	0.713

Mediation (indirect effect) tests

To evaluate whether the proposed digital adaptation chain operates as a mechanism rather than a set of isolated direct effects, indirect effects were assessed using bootstrapping. As reported in Table **6**, the serial indirect effect from Digital Learning Readiness (DLR) to Lecturer Retention Intention (LRI) via Academic Resilience (RES) and Competency Development (CD) is positive and statistically significant ($\beta = 0.295$, $p < 0.001$). In practical terms, this indicates that readiness becomes retention-relevant primarily when it strengthens resilience and is subsequently translated into enacted competence. The significant intermediate indirect effects (RES → CD → LRI and DLR → RES → CD) further support the sequential logic embedded in the model. Overall, these findings provide mechanism-level evidence that the digital adaptation chain is supported, explaining how preparedness is converted into sustainable retention intentions through adaptive capacity and capability development.

Table 6. Bootstrapped indirect effects (mediation tests) and decisions

Hypothesis	Indirect effect	Original sample (O)	Sample mean (M)	STDEV	T statistics	P values	Decision
H4a	RES → CD → LRI	0.362	0.380	0.068	5.346	0.000	Supported
H4b	DLR → RES → CD	0.458	0.470	0.066	6.900	0.000	Supported
H4	DLR → RES → CD → LRI (serial)	0.295	0.312	0.060	4.960	0.000	Supported

Discussion

Summary of key findings

This study clarifies how digital learning readiness becomes workforce-sustainable in digitised higher education by testing a mechanism-based digital adaptation chain. The results show a strong positive relationship between Digital Learning Readiness and Academic Resilience, indicating that preparedness helps lecturers cope with technology-mediated demands rather than merely enabling platform use. Academic resilience, in turn, positively predicts Competency Development, suggesting that adaptive capacity supports persistence, experimentation, and learning-by-doing under ongoing digital frictions. Competency development then emerges as the most proximal driver of Lecturer Retention Intention, highlighting enacted capability—not readiness alone—as the key determinant of whether lecturers perceive their academic career as sustainable in a digitised work system. Importantly, the significant serial indirect effect confirms that readiness translates into retention intention primarily through resilience and competency development. Overall, the findings support the central claim that digital readiness is necessary but insufficient: retention is strengthened when readiness is converted into adaptive resources and then enacted as competence.

Theoretical implications

This study contributes to technology-in-education theory by introducing the digital adaptation chain as a mechanism-based explanation linking readiness to workforce sustainability. Rather than treating digital learning readiness as a direct predictor of positive outcomes, the findings position readiness as an input capability whose value depends on subsequent conversion processes. Specifically, readiness strengthens retention intention primarily by building academic resilience (adaptive resource) and enabling competency development (capability enactment). This mechanism view clarifies why institutions may achieve functional adoption yet still face sustainability risks when lecturers cannot continuously adapt to persistent digital frictions and workload intensification. In this sense, the model extends readiness research beyond static adoption logic and provides a process account of how preparedness becomes sustainability-relevant in digitised academic work systems.

Importantly, the results also help correct a common assumption in the readiness literature: that raising readiness should automatically translate into improved downstream outcomes. By demonstrating that the retention-relevant pathway operates through resilience and enacted competence, the study explains why direct readiness effects can be weak, context-dependent, or misleading as indicators of transformation success. “This study shifts the readiness discourse from adoption preparedness to sustainability mechanisms.” Conceptually, this reframing aligns digital transformation evaluation with a systems sustainability lens, where success depends on whether technology-mediated work remains viable for those delivering and governing digital learning.

Practical implications

The findings translate into a sequenced intervention model for institutions pursuing digitised higher education. First, readiness engineering should focus not only on broad digital literacy but on targeted micro-training aligned with actual platform tasks, supported by usability improvements that reduce unnecessary cognitive load. Rather than one-off workshops, institutions should implement short, task-specific modules and continuously refine platform interfaces to minimise friction in routine teaching and reporting processes.

Second, institutions should invest in resilience scaffolding. This includes structured peer support communities, rapid-response helpdesk service-level agreements (SLAs), and micro-recovery practices such as workload buffering during major system transitions. Reducing avoidable technical friction and providing visible support channels strengthens lecturers' capacity to persist during adaptation phases.

Third, competency institutionalisation is critical. Institutions should define clear digital competency pathways, provide coaching or mentoring, and allocate protected time for capability development to ensure skill transfer and enactment. Finally, retention governance mechanisms—such as transparent career progression linked to digital competence and formal recognition of digital pedagogical contributions—can reinforce long-term commitment. Together, this sequenced approach aligns preparedness, adaptive capacity, and capability enactment with sustainable workforce outcomes without expanding the conceptual model.

Policy implications

The findings also carry implications for higher education governance at both institutional and regional levels. For supervisory bodies such as LLDIKTI, digital transformation funding and accreditation guidance should move beyond infrastructure provision and platform adoption targets. Policies should explicitly incorporate resilience and capability indicators, including metrics related to adaptive capacity, competency progression, and sustained engagement with digital pedagogical practices. Without such indicators, transformation initiatives risk overemphasising technological deployment while overlooking the human conditions required for long-term viability.

In addition, institutions should implement retention risk monitoring systems that track early warning signals, such as escalating workload strain or stalled competency development, particularly during major system upgrades or regulatory shifts. Embedding workforce sustainability metrics into digital education dashboards would align technological governance with people-centred oversight.

These recommendations resonate with global priorities articulated by UNESCO and IFIP, which emphasise that digital education initiatives must be inclusive, responsible, and sustainable. Ensuring that digital transformation remains people-sustainable is essential if technology-enabled education is to deliver durable public value rather than short-term efficiency gains.

Boundary conditions and contextual insights

The model's implications should be interpreted in light of contextual boundary conditions. The study is situated within a single regional setting and a single academic sector (nursing) in private higher education institutions, where professional regulation, assessment integrity requirements, and documentation demands can intensify the operational consequences of digitisation. In such contexts, the digital adaptation chain may be particularly salient because technology-mediated work is both high-stakes and compliance-heavy, increasing the value of resilience and enacted competence for sustaining retention intentions. Moreover, digitisation intensity and resource constraints (e.g., limited technical support, uneven infrastructure, and high teaching loads) may strengthen the observed relationships by amplifying digital friction

and adaptation costs. Replication across disciplines, institution types, and digital maturity levels is therefore necessary to establish generalisability.

Limitations and future research

This study has limitations that provide directions for future research. First, the cross-sectional design constrains temporal inference about how readiness, resilience, competency development, and retention intention evolve across phases of stability and digital disruption. Longitudinal designs are needed to test whether the adaptation chain strengthens or weakens over time, particularly during system transitions or policy changes. Second, the data rely on self-reported perceptions collected from a single source, which may inflate observed relationships due to common method variance and cannot capture behavioural outcomes. Future studies should incorporate multi-source designs, such as supervisor assessments of enacted competence, institutional indicators of digital performance, and where feasible, actual retention or turnover records. Third, the context is sector-specific and institution-specific (private nursing higher education in one region), which may limit generalisability. Replication across disciplines, countries, and regulatory environments would clarify whether the chain operates similarly in less compliance-intensive programmes.

Future research can also examine boundary variation without expanding the conceptual model. For example, the adaptation chain could be tested under different levels of institutional digital maturity and support infrastructure, and optionally compared across institution types (public vs private) to assess whether resource availability or governance structures shape the strength of the pathway.

CONCLUSION

This study shows that digital learning readiness becomes retention-relevant in digitised higher education primarily through a mechanism of adaptation: readiness strengthens academic resilience, resilience enables competency development, and enacted competence is the most proximal driver of lecturers' intention to remain. This matters for digital education because transformation efforts cannot be judged only by platform adoption or technical deployment; sustainability depends on whether the academic workforce can continuously adapt without exiting the system. The most practical priority is therefore to treat digital transformation as a people-sustainable programme: engineer readiness through task-specific support, scaffold resilience by reducing avoidable digital friction, and institutionalise competency development through protected development time and coaching. By aligning technology implementation with adaptive capacity and capability enactment, institutions can improve the durability of digitised teaching and assessment while strengthening workforce stability.

REFERENCES

An, R., Qian, G., Mumtaz, A., Alotaibi, K. A., & Wang, X. (2025). Digital fatigue and academic resilience among university students with grit and flexibility as mediators. *Scientific Reports*, *15*(1), 45407. https://doi.org/10.1038/s41598-025-29313-7

Argote, L., & Miron-Spektor, E. (2011). Organizational Learning: From Experience to Knowledge. *Organization Science*, *22*(5), 1123–1137. https://doi.org/10.1287/orsc.1100.0621

Ayala-Perez, T., & Joo-Nagata, J. (2019). The digital culture of students of pedagogy specialising in the humanities in Santiago de Chile. *Computers & Education*, *133*, 1–12. https://doi.org/10.1016/j.compedu.2019.01.002

Bakker, A. B., & de Vries, J. D. (2021). Job Demands–Resources theory and self-regulation: new explanations and remedies for job burnout. *Anxiety, Stress, & Coping*, *34*(1), 1–21. https://doi.org/10.1080/10615806.2020.1797695

Bondanini, G., Giorgi, G., Ariza-Montes, A., Vega-Muñoz, A., & Andreucci-Annunziata, P. (2020). Technostress Dark Side of Technology in the Workplace: A Scientometric Analysis. *International Journal of Environmental Research and Public Health*, *17*(21), 8013. https://doi.org/10.3390/ijerph17218013

Brislin, R. W. (1970). Back-Translation for Cross-Cultural Research. *Journal of Cross-Cultural Psychology*, *1*(3), 185–216. https://doi.org/10.1177/135910457000100301

Britt, T. W., Shen, W., Sinclair, R. R., Grossman, M. R., & Klieger, D. M. (2016). How Much Do We Really Know About Employee Resilience? *Industrial and Organizational Psychology*, *9*(2), 378–404. https://doi.org/10.1017/iop.2015.107

Cabero-Almenara, J., Gutiérrez-Castillo, J. J., Palacios-Rodríguez, A., & Barroso-Osuna, J. (2020). Development of the teacher digital competence validation of DigCompEdu check-in questionnaire in the University context of Andalusia (Spain). *Sustainability (Switzerland)*, *12*(15). https://doi.org/10.3390/su12156094

Chang, S.-J., van Witteloostuijn, A., & Eden, L. (2010). From the Editors: Common method variance in international business research. *Journal of International Business Studies*, *41*(2), 178–184. https://doi.org/10.1057/jibs.2009.88

Choubey, A. P., & Agrawal, A. K. (2025). Beyond burnout and engagement: conceptualising the JD-R–GROW framework for workforce sustainability. *International Journal of Organizational Analysis*. https://doi.org/10.1108/IJOA-04-2025-5410

Citraresmi, A. D. P., Partiwi, S. G., & Dewi, R. S. (2025). Impact of resilience and sustainability on workforce creative performance: looking through the lens of digital readiness. *Cogent Business & Management*, *12*(1). https://doi.org/10.1080/23311975.2025.2519968

Crawford, J. , B.-H. K. , R. J. , M. B. , G. M. , B. R. , M. P. A. , & L. S. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning & Teaching*, *3*(1). https://doi.org/10.37074/jalt.2020.3.1.7

Danxin, L., Mohammed, R., & Ab Rahman, R. B. (2024). A Bibliometric Analysis of Teachers' Turnover Intention in Higher Education. *International Journal of Academic Research in Business and Social Sciences*, *14*(7). https://doi.org/10.6007/IJARBSS/v14-i7/22114

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319. https://doi.org/10.2307/249008

Eraut *, M. (2004). Informal learning in the workplace. *Studies in Continuing Education*, *26*(2), 247–273. https://doi.org/10.1080/158037042000225245

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*(1), 39–50. https://doi.org/10.1177/002224378101800104

Gudergan, S. P., Moisescu, O. I., Radomir, L., Ringle, C. M., & Sarstedt, M. (2025). Special issue editorial: Advanced partial least squares structural equation modeling (PLS-SEM) applications in business research. *Journal of Business Research*, *188*, 115087. https://doi.org/10.1016/j.jbusres.2024.115087

Guenther, P., Guenther, M., Ringle, C. M., Zaefarian, G., & Cartwright, S. (2023). Improving PLS-SEM use for business marketing research. *Industrial Marketing Management*, *111*, 127–142. https://doi.org/10.1016/j.indmarman.2023.03.010

Hair, J. F. , H. G. T. M. , R. C. M. , & S. M. (2022). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R AAWorkbook*. http://www.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hairunisya, N., & Narmaditya, B. S. (2025). Digital literacy training and entrepreneurial performance: The role of human resource development and intention to leave. *Social Sciences & Humanities Open*, *12*, 102132. https://doi.org/10.1016/j.ssaho.2025.102132

Hamadi, M., & El-Den, J. (2023). A conceptual research framework for sustainable digital learning in higher education. *Research and Practice in Technology Enhanced Learning*, *19*, 001. https://doi.org/10.58459/rptel.2024.19001

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: updated guidelines. *Industrial Management & Data Systems*, *116*(1), 2–20. https://doi.org/10.1108/IMDS-09-2015-0382

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hinkin, T. R. (1998). A Brief Tutorial on the Development of Measures for Use in Survey Questionnaires. *Organizational Research Methods*, *1*(1), 104–121. https://doi.org/10.1177/109442819800100106

Hu, X., Xu, W., Wan, Z., Liu, M., & Xu, W. (2025a). Bridging Self-Efficacy and Digital Competence: A Comprehensive Scoping Review of Teachers' Readiness for the Digital Age. *SAGE Open*, *15*(3). https://doi.org/10.1177/21582440251363716

Hu, X., Xu, W., Wan, Z., Liu, M., & Xu, W. (2025b). Bridging Self-Efficacy and Digital Competence: A Comprehensive Scoping Review of Teachers' Readiness for the Digital Age. *SAGE Open*, *15*(3). https://doi.org/10.1177/21582440251363716

Hung, M.-L., Chou, C., Chen, C.-H., & Own, Z.-Y. (2010). Learner readiness for online learning: Scale development and student perceptions. *Computers & Education*, *55*(3), 1080–1090. https://doi.org/10.1016/j.compedu.2010.05.004

Ilieva, G., Yankova, T., Ruseva, M., & Kabaivanov, S. (2025). A Framework for Generative AI-Driven Assessment in Higher Education. *Information*, *16*(6), 472. https://doi.org/10.3390/info16060472

Isnainy, U. C. A. S., & Zainaro, M. A. (2024). Lecturer Resilience as a Key Factor in Enhancing Academic Performance: The Influence of Personal Factors, Work Environment, and Institutional Support on Lecturer Productivity in Higher Education Institutions. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *9*(1). https://doi.org/10.30604/jika.v9i1.2229

Janssens, O., Andreou, V., Embo, M., Valcke, M., De Ruyck, O., Robbrecht, M., & Haerens, L. (2024). The identification of requirements for competency development during work-integrated learning in healthcare education. *BMC Medical Education*, *24*(1), 427. https://doi.org/10.1186/s12909-024-05428-9

Jarvis, C. B., MacKenzie, S. B., & Podsakoff, P. M. (2003). A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research. *Journal of Consumer Research*, *30*(2), 199–218. https://doi.org/10.1086/376806

Jebb, A. T., Ng, V., & Tay, L. (2021). A Review of Key Likert Scale Development Advances: 1995–2019. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.637547

Kelloway, E. K., Gottlieb, B. H., & Barham, L. (1999). The source, nature, and direction of work and family conflict: A longitudinal investigation. *Journal of Occupational Health Psychology*, *4*(4), 337–346. https://doi.org/10.1037/1076-8998.4.4.337

Komariyah, I., & Tadjie, G. S. (2025). Analysis of the Impact of Talent Retention and Competency Development Programs on Turnover Intention and Organizational Effectiveness in Banking Companies in Central Java. *West Science Interdisciplinary Studies*, *3*(02), 317–329. https://doi.org/10.58812/wsis.v3i02.1693

Kumar, P., Srivastava, N., & Dangi, H. K. (2025). Comparing Online and Offline Training Modes using Analytic Hierarchy Process. *Journal of Business Thought*, 103–116. https://doi.org/10.18311/jbt/2025/50769

Kuuyelleh, E. N., Akanpaadgi, E., & Ansoglenang, G. (2025). Perceived organisational injustices and academic staff turnover intentions in Ghanaian technical universities. *Social Sciences & Humanities Open*, *11*, 101278. https://doi.org/10.1016/j.ssaho.2025.101278

Li, B., & Cheng, Y. (2026). Mapping the research landscape of algorithmic control on workers: A bibliometric analysis. *Heliyon*, *12*(1), e44403. https://doi.org/10.1016/j.heliyon.2025.e44403

Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, *86*(1), 114–121. https://doi.org/10.1037/0021-9010.86.1.114

Luthans, F., Youssef, C. M., & Avolio, B. J. (2006). *Psychological Capital*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195187526.001.0001

Mabotha, P. A. P., & Ngcamu, B. S. (2025). Digital Transformation in the Higher Education Sector: A Systematic Literature Review. *Administrative Sciences*, *16*(1), 1. https://doi.org/10.3390/admsci16010001

Malik, M. J. N., Ali, M., Malik, A., & Malik, S. (2025). Twin Threats in Digital Workplace: Technostress and Work Intensification in a Dual-Path Moderated Mediation Model of Employee Health. *International Journal of Environmental Research and Public Health*, *22*(12), 1856. https://doi.org/10.3390/ijerph22121856

Marsh, E., Vallejos, E. P., & Spence, A. (2022). The digital workplace and its dark side: An integrative review. *Computers in Human Behavior*, *128*, 107118. https://doi.org/10.1016/j.chb.2021.107118

Masiello, I., Mohseni, Z. (Artemis), Palma, F., Nordmark, S., Augustsson, H., & Rundquist, R. (2024). A Current Overview of the Use of Learning Analytics Dashboards. *Education Sciences*, *14*(1), 82. https://doi.org/10.3390/educsci14010082

Mather, M. F., & Bam, N. E. (2025). Factors Influencing Academic Staff Satisfaction and Retention in Higher Education: A Literature Review. *European Journal of Education*, *60*(1). https://doi.org/10.1111/ejed.70025

McPherson, A., Lampert, J., & Baptista, A. C. (2025). Teachers who stay in hard-to-staff schools: School responses to the teacher shortage crisis. *The Australian Educational Researcher*, *52*(3), 2163–2182. https://doi.org/10.1007/s13384-025-00806-8

Mdhluli, N. I. (2025). Perils of perpetual connectivity: Navigating the 'always-on' culture in the modern workplace. *SA Journal of Human Resource Management*, *23*. https://doi.org/10.4102/sajhrm.v23i0.3019

Menzies, L. (2023). Continuity and churn: understanding and responding to the impact of teacher turnover. *London Review of Education*, *21*(1). https://doi.org/10.14324/LRE.21.1.20

Meyer, J. P., Allen, N. J., & Smith, C. A. (1993). Commitment to organizations and occupations: Extension and test of a three-component conceptualization. *Journal of Applied Psychology*, *78*(4), 538–551. https://doi.org/10.1037/0021-9010.78.4.538

Nazyrova, A., Miłosz, M., Bekmanova, G., Omarbekova, A., Aimicheva, G., & Kadyr, Y. (2025). The Digital Transformation of Higher Education in the Context of an AI-Driven Future. *Sustainability*, *17*(22), 9927. https://doi.org/10.3390/su17229927

Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, *59*(3), 1065–1078. https://doi.org/10.1016/j.compedu.2012.04.016

Nīmante, D., Kokare, M., Baranova, S., & Surikova, S. (2025). Transferring Results of Professional Development into Practice: A Scoping Review. *Education Sciences*, *15*(1), 95. https://doi.org/10.3390/educsci15010095

Okoye, K., Campos, E., Das, A., Chakraborty, V., Ghosh, M., Chakrabarti, A., & Hosseini, S. (2025). Impact of digitalized-education upon sustainable education and practice: A systematic review and meta-analysis of literature based on pre-intra-and-post pandemic and rural education development. *Sustainable Futures*, *10*, 100851. https://doi.org/10.1016/j.sftr.2025.100851

Olivares Olivares, S. L., Lopez, M., Martinez, R., Nigenda Alvarez, J. P., & Valdez-García, J. E. (2021). Faculty readiness for a digital education model: A self-assessment from health sciences educators. *Australasian Journal of Educational Technology*, *37*(5), 116–127. https://doi.org/10.14742/ajet.7105

Pawirosumarto, S. (2026). Green HRM and Social Responsibility: A Decade of Evidence (2015–2024) on Triple-Bottom-Line Outcomes and Stakeholder Implications. *Corporate Social Responsibility and Environmental Management*. https://doi.org/10.1002/csr.70426

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of Method Bias in Social Science Research and Recommendations on How to Control It. *Annual Review of Psychology*, *63*(1), 539–569. https://doi.org/10.1146/annurev-psych-120710-100452

Polat, M. (2024). Readiness, resilience, and engagement: Analyzing the core building blocks of online education. *Education and Information Technologies*, *29*(13), 1–28. https://doi.org/10.1007/s10639-024-12534-0

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879–891. https://doi.org/10.3758/BRM.40.3.879

Ramírez-Correa, P. E., Mariano, A. M., & Santos, M. R. (2025). Digital and Sustainable Education and Social Inclusion: A Bibliometric Review with the Consolidated Meta-Analytical Approach. *Sustainability*, *17*(13), 5677. https://doi.org/10.3390/su17135677

Redecker, C., & Punie, Y. (2017). *Digital Competence of Educators DigCompEdu*.

Reyes-Millán, M., Villareal-Rodríguez, M., Murrieta-Flores, M. E., Bedolla-Cornejo, L., Vázquez-Villegas, P., & Membrillo-Hernández, J. (2023). Evaluation of online learning readiness in the new distance learning normality. *Heliyon*, *9*(11), e22070. https://doi.org/10.1016/j.heliyon.2023.e22070

Rosero-Ordóñez, S. L. (2025). Fatiga digital en docentes universitarios: impacto del uso intensivo de plataformas virtuales en la enseñanza y el bienestar laboral. *RECIE. Revista Caribeña de Investigación Educativa*, *9*, e9824. https://doi.org/10.32541/recie.v9.824

Salanova, M., Llorens, S., & Schaufeli, W. B. (2011). "Yes, I Can, I Feel Good, and I Just Do It!" On Gain Cycles and Spirals of Efficacy Beliefs, Affect, and Engagement. *Applied Psychology*, *60*(2), 255–285. https://doi.org/10.1111/j.1464-0597.2010.00435.x

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2022). Partial Least Squares Structural Equation Modeling. In *Handbook of Market Research* (pp. 587–632). Springer International Publishing. https://doi.org/10.1007/978-3-319-57413-4_15

Sava, S., Grosseck, G., & Malița, L. (2024). *Training Needs Analysis for Digital Assessment in Higher Education* (pp. 3–26). https://doi.org/10.1007/978-981-97-6136-4_1

Scherer, R., Howard, S. K., Tondeur, J., & Siddiq, F. (2021). Profiling teachers' readiness for online teaching and learning in higher education: Who's ready? *Computers in Human Behavior*, *118*, 106675. https://doi.org/10.1016/j.chb.2020.106675

Schmid, M., Brianza, E., & Petko, D. (2020). Developing a short assessment instrument for Technological Pedagogical Content Knowledge (TPACK.xs) and comparing the factor structure of an integrative and a transformative model. *Computers & Education*, *157*, 103967. https://doi.org/10.1016/j.compedu.2020.103967

Shamsudin, M. F., Ahmad, A. H., & Hassim, A. A. (2024). *Exploring the Impact of Online Assessment Tools and Digital Proctoring on Academic Integrity in Higher Education: Case of Universiti Kuala Lumpur* (pp. 4–22). https://doi.org/10.2991/978-94-6463-554-6_2

Shi, Y. R., Sin, K. F. K., & Wang, Y. (2025). Teacher professional development of digital pedagogy for inclusive education in post-pandemic era: Effects on teacher competence, self-efficacy, and work well-being. *Teaching and Teacher Education*, *168*. https://doi.org/10.1016/j.tate.2025.105230

Si, A. Jr. P. (2024). *Unveiling the Barriers to Digital Transformation in Higher Education Institutions: A Systematic Literature Review*. https://doi.org/10.21203/rs.3.rs-4970233/v1

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, *15*(3), 194–200. https://doi.org/10.1080/10705500802222972

Sun, T., & Yoon, M. (2025). The impact of digital transformation on faculty performance in higher education: the mediating role of digital self-efficacy and the moderating role of task-technology fit. *Frontiers in Psychology*, *16*. https://doi.org/10.3389/fpsyg.2025.1693375

Tahir, M. H. M., Saputra, S., Othman, S., Shah, D. S. M., Sulaiman, S. H., Azhari, M. A., & Mohandas, E. S. (2025). Online assessment in higher education: A systematic literature review. *Multidisciplinary Reviews*, *9*(1), 2026024. https://doi.org/10.31893/multirev.2026024

Tarafdar, M., Pullins, E. Bolman., & Ragu-Nathan, T. S. (2015). Technostress: negative effect on performance and possible mitigations. *Information Systems Journal*, *25*(2), 103–132. https://doi.org/10.1111/isj.12042

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13), 1319–1350. https://doi.org/10.1002/smj.640

Teo, T. (2011). Factors influencing teachers' intention to use technology: Model development and test. *Computers & Education*, *57*(4), 2432–2440. https://doi.org/10.1016/j.compedu.2011.06.008

TETT, R. P., & MEYER, J. P. (1993). JOB SATISFACTION, ORGANIZATIONAL COMMITMENT, TURNOVER INTENTION, AND TURNOVER: PATH ANALYSES BASED ON META-ANALYTIC FINDINGS. *Personnel Psychology*, *46*(2), 259–293. https://doi.org/10.1111/j.1744-6570.1993.tb00874.x

Trujillo-Juárez, S.-I., Chaparro-Sánchez, R., Morita-Alexander, A., Escudero-Nahón, A., & Delgado-González, A. (2025). Strengthening teacher digital competence in higher education through micro-courses: a systematic literature review. *Discover Education*, *4*(1), 247. https://doi.org/10.1007/s44217-025-00687-0

van Zoonen, W., & Sivunen, A. E. (2024). Understanding the viability conundrum in online crowdwork: The costs of unprecedented autonomy. *Journal of Business Research*, *185*, 114912. https://doi.org/10.1016/j.jbusres.2024.114912

van Zoonen, W., von Bonsdorff, M. E., & van der Heijden, B. I. J. M. (2025). Algorithmic surveillance and workers' compliance: The role of trust, privacy concerns, and fairness in online crowdwork. *Human Relations*. https://doi.org/10.1177/00187267251379698

Veles, N., & Takagi, K. (2026). Developing sustainable careers in higher education: third space professionals in Australia and Japan. *Journal of Higher Education Policy and Management*, *48*(2–3), 346–364. https://doi.org/10.1080/1360080X.2025.2548477

Weng, C., & Wirda, M. A. (2025). The effect of student's online learning readiness to student's engagement, satisfaction and achievement in higher education, Indonesia. *Education and Information Technologies*, *30*(7), 9711–9736. https://doi.org/10.1007/s10639-024-13204-x

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2007). The role of personal resources in the job demands-resources model. *International Journal of Stress Management*, *14*(2), 121–141. https://doi.org/10.1037/1072-5245.14.2.121

Yang, D., Liu, J., Wang, H., Chen, P., Wang, C., & Metwally, A. H. S. (2025). Technostress among teachers: A systematic literature review and future research agenda. *Computers in Human Behavior*, *168*, 108619. https://doi.org/10.1016/j.chb.2025.108619

Zaimoğlu, S., & Dağtaş, A. (2025). Enhancing well-being in higher education: the role of job satisfaction and resilience among ELT instructors. *Frontiers in Psychology*, *16*. https://doi.org/10.3389/fpsyg.2025.1629498

Zhao, Y., & Watterston, J. (2021). The changes we need: Education post COVID-19. *Journal of Educational Change*, *22*(1), 3–12. https://doi.org/10.1007/s10833-021-09417-3

Zhou, L., Lei, X., Cooke, F. L., Huang, X., & Zhang, J. (2025). The Dual Effects of Algorithmic Management on Platform Workers: An Attribution Perspective. *Human Resource Management*, *64*(6), 1687–1707. https://doi.org/10.1002/hrm.70009