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Measuring and Developing Digital Assessment Maturity

A model for self-evaluation

Ishan Kolhatkar, Tom Pieroni and Tom Ashmore

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Purpose and use of this whitepaper

Institutions now face a profound pressure to shift to “digital transformation to ensure organisational survival in the market with innovative digital market entrants” (Uzule and Verina, 2023).

Digital maturity is a continuum. Successful institutions are not just those who reach their peak, but those who are able to enact improvement, change and innovation appropriate to where they are at the time. This white paper provides a blueprint to evaluating where you are as an institution when it comes to digital assessment.

This whitepaper explores the themes of digital maturity, specifically through the lens of assessment. Its primary objective is to provide a framework for institutions to drive discourse that seeks to measure and improve the maturity of their digital assessment. We present the Digital Assessment Maturity Model. This model serves as a diagnostic tool for practitioners to identify where their institution sits on the spectrum of maturity and, more importantly, how to navigate the transition toward a continuous state of “Optimised” delivery. There are practical steps to help you use the framework.

Whether it’s an exercise you conduct wholly internally, with external facilitation or input, or indeed with technology providers to help you understand what is possible, the result will provide you with an understanding of your institution in this space: where you can enact change, where you have good practice to share within your institution or the wider academic community, and how to prioritise your efforts.

The possibilities of how students can be assessed digitally is a product of digital capabilities and educators expertise. They feed each other to widen the pool of assessment types and modes that are available to institutions and invent new possibilities. In tandem, institutions must assess their own digital maturity.

Why change?

Digital transformation is no longer merely a response to the "accelerated mandate" of a global crisis, but a strategic move towards institutional survival in an increasingly competitive and digitally-native market (Uzule and Verina, 2023).

Digital maturity is the ongoing practice of realising the full potential of transformation activities, and the true value of digital assessment transformation lies not in the mere adoption of software, but in the achievement of a holistic state of digital maturity that harmonises technology, pedagogy, and people. If an institution can change their pedagogy to improve the student experience, develop their people and processes, develop an agile approach to leadership and strategy, and fortify their technology and infrastructure, digital adoption is no longer an obstacle, but an opportunity for designing a sector leading approach to assessment.

Why is digital maturity important?

Digital maturity within the higher education sector exists as a diverse spectrum, with institutional progress varying significantly based on historical infrastructure and strategic priority. While capital investment in digital transformation remains substantial, the rapid evolution of the educational landscape has created a documented tension between localised innovation and centralised strategy.

Many higher education institutions have established long-standing digital learning environments, with centralised management of Virtual Learning Environments (VLEs), Student Information Systems (SIS), as well as various other systems to manage library resources, curriculum information and assessments, giving them an excellent fundamental understanding of how technology interacts and supports education. However, there are examples of institutions struggling to bring these tools together, instead operating in a state of functional silos, where disparate digital tools are in need of better maintenance, integration, or use, resulting in a digital environment containing holes in data security, academic integrity, and most critically, the student experience (Harry, 2023). True digital maturity requires that technology is not merely a bolt-on tool, but a catalyst that fundamentally reshapes the institutional business model and pedagogical philosophy (Aslanova and Kulichkina, 2020). Achieving this approach is no small feat, but this transformational change is achievable through the lens of improving digital maturity.

Digital assessment is a fundamental component of modern digital learning environments, and therefore an integral part of any institutional digital transformation strategy focused on developing deeper, more mature practices. However, the competencies required to navigate the digital assessment landscape have shifted significantly. “The assessment literacy required of a teacher today is of a completely different kind — one that is adapted to the digital environment and tailored for the pedagogical approaches of the 21st century” (Eyal, 2012). Given that the intersection between digital technologies and evaluative practices is growing increasingly complex (Bearman and Nieminen, 2023), the development of institutional digital agility has become a strategic necessity (Uzule and Verina, 2023).

The transition to digital assessment in higher education has historically been a subject of reluctance due to the perceived difficulty of large-scale transformation (Bjerke-Busch & Aspelund, 2021). While many institutions underwent a rapid, uncoordinated shift during the COVID-19 pandemic, the ideal model requires rigorous evidence based methodologies in strategic planning (Jaam et al., 2021). The rapid transition from face-to-face invigilated exams to online exams in education around the world, without the necessary time to plan a clear strategic approach, has meant that “research and practice on assessment, technology enhanced assessment and ethical and political concerns are not linked up.” (Timmis et al, 2016).

While this crisis “hastened the movement towards online assessment, including the use of online proctoring” (Reedy et al., 2021) the availability of “ubiquitous and low-cost digital tools that efficiently solve administrative and commercial functions” (Bjerke-Busch and Aspelund, 2021) has transformed the digital landscape from one of elective innovation to one of existential necessity. **Institutions now face a profound pressure to shift to “digital transformation to ensure organisational survival in the market with innovative digital market entrants” (Uzule and Verina, 2023).**

Digital Maturity Model for Assessment

The Digital Assessment Maturity Model presented in this whitepaper is a framework designed to guide, systematically evaluate and decide on actions that advance the use of digital technologies in assessment practices.

The model defines five distinct stages of maturity, from Initial (ad-hoc, paper-centric) to Optimising (integrated, adaptive, and innovative), across four key dimensions:

- Pedagogy and Impact
- People and Process
- Leadership and Strategy
- Technology and Infrastructure

It provides a structured roadmap for development, moving beyond simple digitisation of assessment towards true digital transformation in assessment.

Digital Assessment Maturity Level Definitions

Digital assessment maturity is based on five levels that represent the stages through which an organisation will pass as they develop and mature.

At a high level, these maturity levels can be defined as:

- 1. Initial:** Assessment processes are paper-based or use digital tools ad hoc across the organisation (e.g. individual educators using different apps without organisational oversight).
- 2. Repeatable:** Specific teams, departments, or projects are using consistent digital assessment tools and practices.
- 3. Defined (and/or Standardised):** The organisation has formally standardised its core digital assessment processes and platforms, often based on sector best practices (e.g. workflows, security, accessibility standards).
- 4. Managed:** The standardised digital assessment processes are widely adopted, monitored, and their effectiveness is measured using specific metrics and data analytics. The organisation participates in conversations with stakeholders across the sector to share good practice.
- 5. Optimising:** The organisation is continuously refining and improving its digital assessment strategy to enhance pedagogical effectiveness, administrative efficiency and learner experience. The organisation actively publishes thought leadership and advises stakeholders across the sector.

Digital Maturity Model for Assessment

Pedagogy and impact	Initial	Repeatable	Defined	Managed	Optimising
Assesses the application of digital tools to enhance the learning and assessment experience, focusing on outcomes, engagement and authenticity of assessment design.	Assessment is predominantly paper-based or uses digital tools for substitution of traditional methods (e.g. electronic submission only). Assessment design is educator-centric, focusing on ease of marking and administration, rather than improvement of learning outcomes or learner experience. Focus is on high-stakes summative assessment (coursework and/or exam), with minimal integration of digital processes for on-going formative feedback.	Assessment design includes the use of digital tools to support traditional approaches (e.g. multiple-choice quizzes, online file submission via LMS). Departments begin experimenting with digital assessment types that better align with graduate outcomes (e.g., e-portfolios, multimedia projects, basic simulations). Initial pedagogical guidance encourages staff to trial new tools but adoption is not yet systematic. Academic integrity and accessibility are considered, but validation mechanisms are risk-averse regarding new digital approaches for tasks with awards assigned.	There is imaginative use of digital tools to design more engaging, inclusive, and innovative assessments, such as multimedia projects, simulations, and gamification to cater to diverse learner needs. A strategic focus emerges on improving digital accessibility and inclusivity for all learners. There is a coordinated focus on embedding digital literacy and assessment skills into the curriculum, moving beyond purely technical skills to critical engagement.	Advanced assessment tools like automated grading and learning analytics are actively introduced to improve assessment efficacy and effectiveness. Assessment is regularly evaluated and refined based on learner performance, feedback, and analytics data. Digital is now clearly viewed as an enhancer of learning, not just an administrative tool. There is support available for specific digital assessment use cases across different subject areas and contexts.	Digital assessment is fully integrated into course and curriculum design, with a focus on formative and/or continuous assessment. Staff use learning analytics to monitor and support learning that is inflight, and use the data to inform curriculum improvements as part of embedded Assurance of Learning processes. Advanced technologies (AI, machine learning, adaptive learning systems) create personalised assessment that adapts to individual learner needs and progress. Assessment design is continuously adapted based on research, focus is on innovation with high-impact, and transformative pedagogical practice for the organisation, with experience shared across the sector.

People and process	Initial	Repeatable	Defined	Managed	Optimising
Assesses the standardisation, documentation and continuous improvement of administrative and technical flows related to digital assessment, and the skills and capabilities of staff involved.	Support is minimal, ad-hoc, and reactive, relying on individuals with very little formal professional development opportunities. There are limited documented processes for digital assessment, and high variation in processes where applied.	There is some support available for digital assessment design, management, and grading. Ad hoc support is given to educators wanting to use digital assessment practices. Staff and learners are familiar with core education technologies (e.g. LMS, Assignment Submission, Originality), but there is limited familiarity with specialised assessment tools. Technology focus is entirely on security and reliability as key criteria.	There is a unified digital assessment ecosystem (single tool, or several integrated), and support is offered to migrate existing assessment to digital format. Professional development opportunities are formally offered to help staff stay up-to-date with emerging digital assessment trends and best practices for creating valid, reliable, inclusive, and authentic assessments. Collaboration and knowledge sharing exists amongst curriculum teams, and there is active participation in special interest groups.	Staff across the organisation are familiar with, and actively engaged with the digital assessment ecosystem. Assessment approaches actively engage learners in developing their academic practice through contextual appropriate authentic assessment. Data-driven decision-making processes are established, actively supporting continuous evaluation and refinement of digital assessment strategies. Cross-faculty conversations are standardised to support sharing of best practices, tools, and resources. These conversations actively engage relevant professional services.	Staff are encouraged to experiment with innovative methods for assessment and feedback. Learners are actively involved in ethical discussions (e.g. around LLM usage). There are committed working groups focused on developing good practice guidance and innovative practice for authentic assessment, monitoring changes in knowledge and skills required in industries and academic practice. The organisation is seen as a leader in digital assessment innovation, contributing to research and knowledge dissemination in the field.

Leadership and strategy	Initial	Repeatable	Defined	Managed	Optimising
Assesses the strategic commitment, governance and resources allocated to the delivery of digital assessment across the organisation.	There is no formal strategic leadership for digital assessment. Organisational decisions related to assessment are tactical, focusing on solving immediate problems rather than long-term strategic planning. Investment is minimal and reactive in its intent. There is no cross-organisational governance structure to align digital assessment practices with broader teaching and learning goals.	There is growing awareness of the benefits of digital assessment. Some discussion is embedded in teaching and learning policy, or broader strategy planning. There are digital assessment champions who emphasise and advocate good practice Initial exploratory groups are formed to investigate digital assessment, but without significant, long-term resource commitment or formal strategic alignment.	Digital assessment is embedded as a key segment of a broader teaching and learning strategy. Formal governance exists, with cross-functional stakeholder groups. Investment planning is primarily focused on the short to medium term, but primarily focuses on technology and infrastructure.	Senior leadership actively promotes and models effective digital assessment practices. Strategy has segmented goals for short, medium and long-term. Digital assessment is viewed as a strategic asset, with performance metrics tied to key organisational objectives (e.g. learner retention, degree outcomes, NSS). Investment is sustained, risk-managed, and strategically aligned to maintain a competitive digital edge. This includes investment beyond technology and infrastructure, to include support for technical capabilities and pedagogical design.	The organisation is recognised as a leader within the sector. The organisation promotes and invests in research into digital assessment. Leadership embeds research and analytics into strategic planning to actively shape the future of assessment, driving sector innovation and influencing policy. Investment is robust, long-term, and flexible, fostering a culture of risk-taking and experimentation for continuous improvement. There is dedicated support for the design and delivery of digital assessment in both administrative and consultative roles.

Technology & infrastructure

Assesses the robustness, integration, scalability and security of the systems dedicated to supporting digital assessment.

Initial

Digital tools are adopted ad hoc, often within silos, leading to fragmented assessment practices.

Primary focus is on maintaining existing legacy systems, with minimal investment directed toward digital assessment.

Basic technical issues frequently disrupt assessment management and delivery.

Repeatable

The primary form of digital assessment is file submission. Some additional assessment features embedded within approved digital platforms (e.g. LMS) are used consistently within specific departments or courses, creating pockets of reliable usage.

However, systems lack integration, requiring manual data transfer and assessment administration.

Investment is short-term, focusing on mitigating identified weaknesses, typically in the form of time-bound administrative support, rather than technology improvements.

Defined

The organisation has a clear set of mandatory digital assessment platforms and tools defined organisation-wide.

There are some departments who implement new pilots of different technology from the standard organisation.

There is some success in systems integration with core administrative platforms (e.g. SIS) to provide basic functions such as SSO.

The organisation has policies for data storage and security that are formally documented and applied to the core assessment systems.

Managed

There is dedicated digital assessment infrastructure, which is scalable to support all assessment activities, and fully integrated with all relevant organisational systems.

Large scale, high-volume assessments are delivered successfully with appropriate technical support.

Investment and maintenance are proactive and informed by system metrics and data. Security measures are implemented across all assessment platforms.

Optimising

The infrastructure is an enabler of innovation and leverages emerging technologies (e.g. cloud services, AI and LLMs) to pilot new assessment methods (e.g. adaptive learning and assessment).

Infrastructure planning is under constant review and optimised based on performance and user feedback. Good practice is shared across the sector for wider benefit.

The strengths of digital assessment

As the possibilities within the realm of digital assessment continues to expand, institutions must begin to assess and develop their own digital maturity to ensure they can adapt to meet the rising needs and expectations of modern assessment practice by identifying and overcoming the barriers in place within their institutions.

When considering digital maturity in the realms of assessment, oftentimes digital assessment tools can be relegated to the likes of many other digital tools designed to solve administrative functions. However, unlike many other administrative functions, the process of assessment fundamentally shapes the student journey (Bjerke-Busch & Aspelund, 2021). Digital assessment is therefore the subject of significant debate because it sits at the intersection of pedagogical innovation and institutional risk. While it offers the potential of unparalleled efficiency and accessibility, it also challenges traditional notions of academic integrity, equity, and the human element in education.

Despite this, the momentum toward digital assessment continues to accelerate as the benefits of digitising assessment practices become empirically evident. A survey conducted in 2023 demonstrated a clear appreciation for the flexibility, convenience and economical benefits of digital assessment, as well as the additional benefit of improvements to the student experience where those being assessed reported reduced psychological issues in digital assessments when compared to traditional, physical examinations. Additionally, students reported a greater degree of ICT skills, as well as research skills (Waheeda et al, 2023).

The advantages of this transition include the strategic utilisation of Item Banks to catalogue and manage assessment resources for each use. Digital platforms offer grading workflows which can be customised for different institutional needs, and allow the attachment and re-use of customisable rubrics. Features like these allow for the modular reuse of high-quality assessment materials. These efficiencies enable educators to bypass the logistical delays inherent in analog systems, redirecting focus towards the delivery of granular, targeted feedback that is essential for student progression (Rose, 2000). However, implementation of these tools into workflows requires overarching organisational thinking to achieve maximum effectiveness.

Furthermore, the transition to a digital ecosystem significantly enhances institutional capacity for accessibility and inclusive design. It is clear that there is “no single medium that would provide an unbiased vehicle for assessment.” (Rose, 2000) and that all students have different needs, abilities and preferences (Ralabate, 2011).

A strength of modern digital platforms is their ability to empower students to customise their assessment environment to meet specific neurodiverse or physical requirements with features such as adjustable typography and integrated screen-reading technologies.

Identifying barriers to transformation

While it is documented that “innovative educators have been using technology in assessment for several years” (Jurāne-Brēmane, 2021), this localised experience often stands in opposition to successful institutional implementation. A historical legacy of fragmented pilots and reactionary, crisis-driven decision-making has, in many contexts, resulted in significant reputational damage to the concept of digital innovation. These past failures create a culture of skepticism, where the perceived risk of transformation outweighs the recognised benefits of modernisation.

The primary obstacle to meaningful evolution is frequently found in the systemic and human dimensions of the organisation rather than the technology itself “as organisations and employees react differently to change” (Gupta, 2018). Many digital transformation initiatives incur substantial capital expenditure only to experience stagnant progression or total failure due to entrenched organisational barriers. Without a strategy that accounts for these diverse psychological and structural reactions, institutions risk falling into a cycle of “pilot paralysis,” where the inability to move beyond small-scale testing prevents the achievement of true digital maturity and long-term strategic resilience.

Barriers to Transformation

Barrier	Why it is a barrier	Overcoming this barrier
Pilot paralysis	Innovation exists within small, disconnected projects. Without central scaling, innovative pedagogical practice never develops further to have broader institutional impact.	Identify and support pilots, review and refine successes whilst rolling out across departments. Scaling pilots into BAU activity is supported by experts and champions both centrally and locally.
Digital literacy	Assuming all students/staff are tech-savvy leads to a lack of training or incorrect technology use. This creates a potential competency gap where technical anxiety impacts the delivery of digital assessment.	It is possible for life-long learners to become digital natives with the proper support (Helsper and Eynon, 2010). Implement digital literacy onboarding for both staff and students. Use Digital Champions to provide peer-to-peer mentorship rather than top-down IT training.
Siloed procurement	Departments buying individual plugins to solve niche problems. This creates data silos and prevents a Single Source of Truth for student outcomes.	Establish a central Assessment Board to provide advice and oversight. Ensure every tool integrates via API into a single assessment environment or leverages the appropriate systems for accurate and reliable data flow and interaction.
Tech debt and legacy systems	Aging or cumbersome Student Information Systems that don't "talk" to modern assessment platforms. This forces staff into manual data entry, increasing the risk of human error.	Prioritise integrations and transition away from legacy on-premise hardware toward cloud-based, purpose-built assessment platforms that offer offline resilience.

Evaluating Digital Assessment Maturity

Using the model

To facilitate a practical application of the model, this paper breaks down institutional maturity into four key dimensions:

1. **Pedagogy and Impact**
2. **People and Process**
3. **Technology and Infrastructure**
4. **Leadership and Strategy**

For each dimension, we present a discussion of some of the key challenges facing institutions, and provide a series of example activities against a two-tiered methodology for transformation:

- **Evaluative Practice:** activities designed to audit current systems, identify operational "debt" and determine a baseline maturity level.
- **Explorative Actions:** Forward-looking actions designed to develop innovative practices that drive the institution toward a sector-leading position.

The activities and actions we present are not intended to be exhaustive, nor are they relevant to all contexts. Instead, they serve as examples of the types of activities conducted to understand current states of maturity and the relevant actions that further develop maturity in digital assessment.

Practical steps

Choosing the right group to analyse your maturity is crucial. As a starting point, we encourage a wide range of voices to represent all of the stakeholders in assessment:

- **Academics:** those who write assessments, grade and provide feedback
- **Administrators:** those at the heart of assessment operations
- **Learning and Teaching specialists and learning technologists:** to provide a look beyond current practice into what is possible
- **IT professionals:** insights into your onsite capabilities and what students can do with their devices
- **Students:** direct evidence of impact

The exact blend may differ for different dimensions.

Beyond the individuals involved, it is important to consider the level of evaluation you are undertaking. The model is designed for flexible application. It can be used to evaluate a single department or an entire institution. However, it is important to recognise that maturity across these different levels is relative.

When conducting your evaluation, clearly define your scope: are you seeking to identify examples of good practice that can be scaled, or are you auditing the institutional baseline to inform a broader strategy?

By evaluating existing practice and considering the explorative actions, you will build up a picture of: where you can enact change, where you have good practice to share within your institution or the wider academic community, and how to prioritise your efforts.

Evolving pedagogy for trust and fairness

Designing pedagogy specifically through the lens of the student experience is the bridge between accessing information and internalising knowledge. In a digitally maturing landscape, the focus shifts from what the institution delivers to how the student receives and interacts with that delivery.

Technology-Enhanced Learning (TEL) is increasingly established as a foundational element of the higher education landscape, serving as a critical driver for pedagogical modernisation. By shifting the focus from passive content delivery to interactive, learner-led engagement, TEL allows institutions to transcend traditional constraints, fostering a more dynamic and responsive educational experience (Jaam et al., 2021), but for all cases of transformation, pedagogical stance must be carefully considered, due to the risk of the impact on student experience and the difficulty in tracking and understanding the impact of these changes (Diekelmann and Lampe, 2004).

An example of this challenge can be seen with the widespread accessibility of Large Language Models (LLMs) increasing reliance on originality and detection tools. From an integrity perspective, originality and “detection tools can help educators flag suspicious content for investigation and verification” (Astistova and Sedlyar, 2024), the practical application often diverges from the theoretical goal of maintaining fairness. Without the grounding of transparent regulatory frameworks and supportive pedagogy, these tools can be weaponised as disciplinary measures rather than educational benchmarks.

This tension highlights a profound pedagogical dissonance, wherein the strategic intent of the institution fails to align with the lived reality of the classroom. When institutional rhetoric regarding innovation is not matched by

empathetic and clear implementation, the student experience is marginalised (Hotam and Hadar, 2013).

Ultimately, the objective of these technologies should be to provide “an integral layer of accountability in an academic environment to ensure that work is being done honestly” (Astistova and Sedlyar, 2024). However, achieving this standard of integrity requires a strategic vision that transcends surveillance. True academic accountability can only be realised when digital tools are integrated into a holistic pedagogical strategy supported by both people and process.

Student success is predicated on the establishment of systemic trust, a process that must commence at enrollment and intensify through deliberate onboarding into assessment ecosystems. By integrating formative assessments and iterative feedback loops into the mid-term curriculum, institutions empower learner agency while clarifying institutional expectations. This proactive simulation of "high-stakes" conditions is essential; it ensures that candidates approach summative evaluations with the confidence born of familiarity, thereby mitigating the risk of unintentional conduct breaches and technical anxiety.

Contrary to the "digital native" trope, the chasm in student digital literacy is widening, primarily driven by disparate levels of hardware access. While mobile and tablet proficiency is near-universal, familiarity with traditional personal computing is increasingly inconsistent. This divide represents a critical determinant of student engagement and retention. To deliver a truly equitable assessment experience, institutions must transcend the assumption of universal technical fluency.

A dedicated digital assessment platform must be engineered to bridge this "gulf in experience," providing an intuitive interface that supports students regardless of their educational background or prior access to technology. By embedding accessibility and simplicity into the assessment architecture, and by providing dedicated digital literacy support, the institution ensures that academic performance is a reflection of a student's continued experience rather than their socioeconomic access to hardware.

Digital assessment frameworks significantly enhance institutional inclusivity by mitigating physical and psychological barriers to participation. Research by Aishath et al. (2023) indicates that online modalities offer superior flexibility and cost-effectiveness while reducing the psychological stressors frequently associated with traditional invigilated examinations. For students managing

Evolving pedagogy for trust and fairness: Evaluating practice

Activity	Description	Example of Outcome	What this could mean
Audit assessment	A review of current assessments types and approaches to categorise them as traditional or identify innovative approaches with a focus on real-world application.	Finding that a large number of exams lack authentic digital tasks and direct links to skills applied in the workplace.	Indicates that while the institution is "digital" it hasn't yet developed a consistent pedagogical approach to meet modern professional expectations and needs.
Review the ease of interaction	Surveying students on the "technical friction" experienced when undertaking assessment (e.g. navigating multiple systems, user accounts, etc).	Identification of gaps where students spend more energy on the tool than the subject matter.	Highlights a need for a streamlined assessment environment to ensure technical barriers don't compromise performance of students.
Examine feedback	Measuring the time between student submission and the delivery of actionable feedback.	Discovery that manual marking of digital PDFs is taking as long as paper-based marking.	Identifies gaps in digital literacy and the appropriate use of support tools such as automatically marked questions or grading workflows that integrate digital rubrics and criteria-based marking and feedback.

Evolving pedagogy for trust and fairness: Explorative actions

Actions	Description	Example of Outcome	What this could mean
Assessment design workshops	Opportunity for educators to redesign traditional assessment methods (e.g. a highly weighted exam) to include digital tools typical to the workplace (e.g. BI Tools for Data Analysis)	A Finance exam where students must balance a live ledger rather than writing an essay about it.	Demonstrate how digital tools can increase predictive validity, ensuring students are workplace-ready.
Formative feedback loop	Implementing automated, metadata-driven feedback for continuous assessment.	Students receive a personalised roadmap showing exactly which competencies or topic areas they need to revisit.	Shifts the focus of assessment to an integrated learning tool within the curriculum and fosters iterative improvement.
Accessibility and optionality	Offering diverse response modalities, such as allowing oral responses or drawing tools, where appropriate.	An increase in engagement and performance for students with specific learning or physical requirements.	Examines the opportunities to embed the practices of Universal Design for Learning into the core architecture of the curriculum.

Developing people and process

A demonstrable deficit in technical expertise frequently serves as a primary deterrent to the successful integration of emergent technologies (Gupta, 2018).

“Understanding that education needs to change is different from knowing how best to help effect that change.” - Leer and Ivanov, 2013.

To circumvent these structural barriers, institutions must prioritise the systematic professional development of their academic staff. Research highlights that the forced adoption of digital tools during the pandemic served as a critical learning period; empirical data reveals that lecturers who implemented digital assessment during this era successfully “learnt the very basics of technology and pedagogy, a variety of assessment methods and efficient ways of marking test papers and providing feedback to students” (Aishath et al., 2023). This transition is particularly vital given the vocational nature of many modern educators, who often enter academia with extensive industry experience but limited exposure to the complexities of transformational educational technology.

Equally, the burden of change cannot rest solely on the individual practitioner. It is the fundamental responsibility of the institution to facilitate enhanced digital literacy, ensuring that educators possess the pedagogical and technical fluency required to navigate a digitally maturing landscape. By investing in staff proficiency, institutions transform a potential point of failure into a driver of long-term strategic resilience.

The induction of academic staff into a new digital ecosystem should be conceptualised as a rigorous, two-phase framework: Collective Consultation and Technical Integration. The preliminary phase of community consultation is indispensable; it provides a formal forum for academics to articulate their disciplinary preferences, pedagogical concerns, and core instructional objectives. These contributions serve as the empirical foundation for a shared institutional implementation strategy, ensuring that the technology is anchored in academic values rather than purely operational requirements.

Only once a clear consensus has been established, the technical onboarding phase can commence. Educators need to be supported in their approach to technology, both internally and through the external provider. Internally, institutions must foster a culture of mentorship by nominating digital champions who can translate institutional goals into department-specific workflows. By situating support within the academic community, institutions can address the nuanced, discipline-specific questions that a general technical

Complementing this internal effort is the role of the external provider, which must transcend the traditional vendor relationship to become a strategic partner. A high-maturity provider does not simply offer a software license; they offer a repository of global best practices, technical resilience, and a responsive feedback loop, and failure to utilise this expertise can only lead to further stalling in implementation (Leer and Ivanov, 2013).

By sequencing the transition in this manner, institutions avoid the friction of "technology-first" adoption. Instead, they ensure that technical proficiency is built upon a framework of pedagogical buy-in, transforming the onboarding process from a mere training exercise into a meaningful exercise in institutional digital maturity.

Developing people and process: Evaluating practice

Activity	Description	Example of Outcome	What this could mean
Data literacy review	Assessing staff's ability and needs to review and interpret psychometric reports, and incorporate the results into their practice.	Identifying a training gap where faculty members do not use data to moderate exam results, or incorporate it into their support of students and/or curriculum design.	Increased ability to identify opportunities to utilise data to support the use and reuse of assessment content, as well as improve curriculum design by identifying potential improvements.
Mapping workflow and friction	A time-and-motion study of the journey from authoring assessments to results publication.	Identifying that manual data transfer between systems adds significant administrative costs to the results turnaround time.	Exposes administrative debt that prevents staff from focusing on high-value pedagogical tasks like feedback.
Integrity perception	Evaluating if staff and students view integrity tools as surveillance or learning tools that support development of academic practice.	A finding that staff only use originality reports for punishment rather than as an opportunity for learning support.	Highlights a cultural barrier where integrity can be embedded as a transparent part of the assessment process.

Developing people and process: Explorative actions

Action	Description	Example of Outcome	What this could mean
Psychometric review	Incorporating post-assessment review into assessment workflows, where data is used to improve question design and identify opportunities to review curriculum.	Identifying opportunities to improve item quality, and measure performance over a period of time to understand long-term student outcomes.	Identify opportunities to incorporate Assurance of Learning (AoL) practices, and provide empirical data to support assessment reviews or reports to professional bodies.
Digital assessment champion network	Nominating faculty leads to act as champions between central education technology units and specific academic departments.	Dissemination of discipline-specific templates, such as using "Hotspots" for Medical anatomy.	Routes to overcome pilot paralysis by ensuring that innovation is owned by academics, not just the centralised departments.
Student assessment reports	Updating automated reports to show performance against subject areas and topics and Learning Outcomes, by using metadata to create a curriculum taxonomy.	Students receive a Competency Map showing how they perform against knowledge and skills within the subject area, with areas of focus to develop further.	Empower students to take ownership of their learning path, improving metacognitive skills and identifying areas for deeper discourse with peers and educators.

Technology and infrastructure

One of the core barriers to any digital change initiative is the technology infrastructure itself (Bellantuono et al, 2021; Jurāne-Brēmane, 2021). Most established universities are built upon massive, on-premises systems such as aging Student Information Systems that were designed before the era of cloud computing and interoperability. These systems often do not communicate, creating data silos. When an assessment platform cannot seamlessly exchange data with the student record system, it creates manual workarounds that drain administrative resources and prevent a holistic view of the student journey. The cost of maintaining these outdated systems consumes the majority of the IT budget, leaving little time for innovation.

A dedicated, purpose-built assessment system relieves this technical debt through API integrations, breaking down the barriers of data silos while offering the opportunity to provide new routes of access to assessment.

Additionally, many campuses do not have the physical space to transition completely to digital delivery. The transition to Bring-Your-Own-Device (BYOD) models represents a critical evolution in institutional digital maturity, aligning assessment environments with students' established academic and professional workflows. By leveraging personal hardware, BYOD minimises extraneous need for digital onboarding, and decentralising hardware requirements mitigates the systemic risks associated with legacy lab infrastructure, creating a more resilient and scalable assessment ecosystem.

However, a balance has to be struck between on-campus assessment and BYOD for the purpose of digital equity. To mitigate the risk of students being "digitally marginalised," institutions must implement robust technology provision initiatives, such as long-term laptop loan schemes or subsidised hardware programs. By ensuring that all learners possess reliable, high-specification tools, institutions dismantle the systemic barriers that hinder academic engagement among disadvantaged cohorts.

Technology and infrastructure: Evaluating practice

Activity	Description	Example of Outcome	What this could mean
Gap analysis	Mapping existing technologies used in the delivery of learning and assessment to identify where data silos exist and where systems fail to integrate.	A technical roadmap to replace three disparate plugins with a single, integrated assessment environment.	Opportunities to minimise security risks and reduce the fragmented data systems.
Resilience testing	Simulating a Wi-Fi outage during a mock exam to test Offline Resilience capabilities.	Confirmation that student progress is saved locally, preventing the loss of work during a network outage.	Validates that the infrastructure is reliable and robust.
BYOD compatibility	Auditing the range of student-owned hardware to ensure parity of experience across devices.	Identifying where students may be using outdated OS versions that struggle with certain technologies or access.	Identifies a specific risk to equity and informs the minimum hardware and software requirements for the institution.

Technology and infrastructure: Explorative actions

Activity	Description	Example of Outcome	What this could mean
API integration project	Linking the Assessment platform directly to the Student Information System (SIS).	Elimination of all manual CSV uploads, reducing administrative errors to near-zero, and reducing administrative costs in terms of time and resource.	Establishes a "Single Source of Truth" to manage all data flows in and out of relevant systems for access, management and reporting.
Digital equity review	Survey students to identify their access to technology including mobiles, tables and personal computers.	Design assessment delivery based on the current technical equity among students. Establish methods of equalising access to technology, such as a laptop loan scheme and on-campus computer lab	Mitigates the digital divide, ensuring that technology does not become a barrier to education.
Laptop loan scheme	Establishing hardware provision for students identified as digitally marginalised.	Improved access and participation to BYOD assessments, ensuring equity of access.	Mitigates the digital divide, ensuring that technology does not become a barrier to digitisation.

Leadership and importance of strategy

The final major barrier to successful digital implementation is clear leadership at an organisational level (Gupta, 2018). To achieve a position of sector-leading digital maturity, an institution must transition from a reactive posture to one of proactive innovation. This requires a strategic synthesis of scholarly research, robust financial commitment, and specialised human infrastructure. It is the leadership who need to make the key decisions mentioned above, in order to ultimately enact digital transformation.

Leadership and the importance of strategy: Evaluating practice

Activity	Description	Example of Outcome	What this could mean
Strategic action	Digital assessment is a named and funded strategic priority.	Initial pilot projects are moved out of temporary status and provided with resources to develop institutional capability.	Develop long-term and sustainable practices to prevent innovation in digital assessment to stall when individuals leave, or when programmes and modules develop or are retired.
ROI planning and review	Comparison of total costs (in terms of administration and/or financial) to deliver assessment in different formats (analogue and digital).	A business case that demonstrates digital assessment has the opportunity to reduce the overall costs of assessment delivery and improve efficiencies that directly relate to student experience (e.g. feedback turn around time).	Financial justification for scaling the digital assessment ecosystem beyond centralised exam delivery, or via a single individual/department(s).
Alignment with professional bodies	Understanding how digital assessment supports the delivery and reporting against requirements set out by professional bodies and accreditors through their standards.	Successful reporting and accreditation to a professional body with proof of integration of Assurance of Learning practices (e.g. data to link assessment performance to curriculum development).	Provides explicit connections to curriculum and the institution's primary value proposition.

Leadership and the importance of strategy: Explorative actions

Action	Description	Example of Outcome	What this could mean
Human investment	Assigning resources to provide training opportunities to educators or professionals involved in assessment design, or employing additional resources to support the change being implemented.	Implementation (or continued development) of Centres of Excellence with a defined remit to support digital assessment design and delivery.	Sustained support for continuous assessment development that ensures educators are appropriately supported in the medium to long term, and beyond the initial roll out of a digitised assessment.
Policy development	Review and refinement of institutional policies as they relate to assessment practices, such as those that relate to academic integrity.	A revised institutional policy that supports a broader range of assessment and reduces reliance on single high-stakes assessments in traditional formats.	Develops assessment practices that focus on long-term academic resilience and practice, without knee-jerk reactions to landscape changes (such as AI tool availability).
Assessment innovation funds	Creation of internal funding and support for innovation in assessment for the piloting and evaluation.	Delivery of adaptive testing tools for use in continuous assessments that are highly personalised to the learner.	Create a culture of experimentation where results develop use-cases and studies to further engage innovative assessment practices.

The outcome

With a clear picture from your analysis, you have a roadmap for change. With this you can speak to external stakeholders who can help you understand how you can enact these changes.

At Inspera we have many years of experience consulting with Higher Education Institutions across the globe to help them understand how they can improve, enhance and innovate their assessments. Whether you want to bring us in as part of your evaluation or speak to us once you have your roadmap and priority list, our team, including a number of former educators, learning technologists and learning designers would be happy to find out what you want to do next.

Contact us at <https://inspera.com/contact/>

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