

The Governance Gap: Navigating the Ethical and Regulatory Realities of AI-Powered Proctoring in South African Higher Education

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Abstract

The COVID-19 pandemic catalysed a fundamental shift in South African higher education, forcing administrators to rapidly integrate AI-powered proctoring to maintain academic integrity during remote assessments. However, this "operational necessity" has created a profound regulatory vacuum and a "paradox of trust" among stakeholders. Drawing on a mixed-method study of South African Higher Education Institutions (HEIs), this session evaluates the role of the Information Regulator (IR) and the adequacy of the Protection of Personal Information Act (POPIA) in governing these data-intensive technologies.



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Introduction

The arrival of the COVID-19 crisis triggered a major transformation in higher learning across South Africa, compelling institutions to hastily implement AI-driven monitoring tools for examinations to maintain academic honesty during the shift to online assessments. Although this abrupt transition was operationally critical, it simultaneously unveiled profound ethical and regulatory dilemmas that have yet to be sufficiently resolved. While these technologies helped institutions maintain academic continuity under lockdown, they also introduced significant concerns related to privacy, data protection, and ethical governance. The expanding application of artificial intelligence in test supervision prompts questions on the adequacy of South African laws, particularly the Data Authority's involvement in upholding the Protection of Personal Information Act (POPIA).



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LITERATURE REVIEW



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1. The Rise of AI-Powered Proctoring

AI-powered proctoring refers to the application of artificial intelligence to supervise online examinations autonomously, employing facial recognition, object detection, behavioural analysis, environment scanning, and data analytics to flag potential academic misconduct (Yaqub, Mohanty & Suleiman, 2021). The technology evolved from early human-centric remote proctoring to sophisticated automated systems capable of processing vast quantities of biometric and behavioural data (Coghlan et al., 2020).

The primary drivers of adoption include the need to reinforce examination fairness amid growing online education formats, scalability for large student cohorts particularly critical for Open Distance Learning (ODL) institutions and potential cost reduction through minimising human invigilation staff (Hicks et al., 2021; Coghlan et al., 2021). The COVID-19 pandemic served as a catalyst, accelerating implementation as institutions rapidly adopted online assessments to comply with safety regulations (Alashwal, 2024).



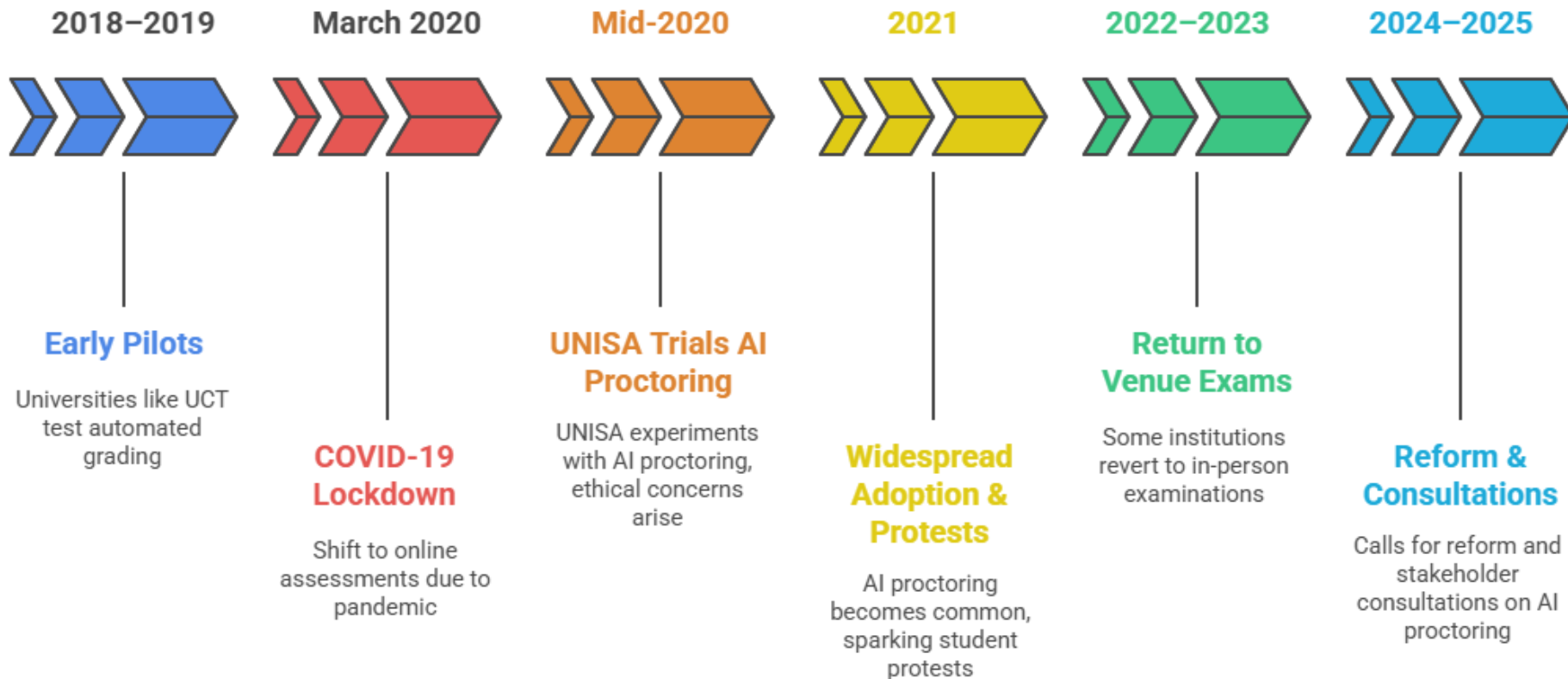
2. The South African Context

South African HEIs have adopted different approaches to AI proctoring. UNISA pioneered large-scale implementation from 2020, reportedly saving millions in examination venue costs. Other ODL institutions including MANCOSA, Regent, and Richfield followed suit, while traditional institutions such as Wits, UJ, TUT, and UCT introduced AI proctoring for specific online programmes (Coghlan et al., 2020). The different adoption underscores sector-wide experimentation with digital assessment integrity, yet it has unfolded against a backdrop of regulatory uncertainty.

Despite rapid integration, a visible gap exists in comprehensive regulatory frameworks governing these technologies. The pandemic-induced urgency prioritised operational continuity over due diligence; the rapid pace of AI innovation outstripped specific regulatory guidance; and an evident skills gap within both HEIs and regulatory bodies concerning AI's technical and ethical complexities persists (Sema et al., 2025).



Timeline of AI-Powered Proctoring Adoption in South African Higher Education



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3. The Regulatory Landscape: POPIA and the Information Regulator

The Protection of Personal Information Act (POPIA), effective from July 2021, represents South Africa's principal data protection legislation, giving effect to the constitutional right to privacy through eight conditions for lawful processing of personal information (Republic of South Africa, 2013). The Information Regulator (IR), established under POPIA, serves as the independent national authority mandated to champion personal information protection through public education, complaint handling, prior authorisation assessments, and enforcement notices.

However, POPIA's principles-based, technology-neutral approach creates fundamental tensions with AI based proctoring functionality. The next table illustrates these conflicts:



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3.1 POPIA Principles vs. AI-Powered Proctoring Functionality

POPIA Principle	Requirement	Conflict with AI-powered proctoring
1. Accountability	The responsible party must ensure compliance.	Institutions remain accountable but often lack the technical expertise to audit the complex, proprietary algorithms of third-party vendors.
2. Processing Limitation	Processing must be lawful and minimal.	AI-powered proctoring is inherently data-hungry, collecting vast amounts of video, audio, and biometric data, which directly conflicts with the principle of data minimisation.
3. Purpose Specification	Data collection must have a clearly defined and stated reason.	While the primary purpose is exam integrity, the data collected could be used for secondary purposes like training AI models, often without explicit consent.
4. Further Processing Limitation	The organisation in charge is responsible for ensuring data is correct and complete.	The risk of function creep, where data collected for proctoring is later used for student performance analytics or other purposes, is high.
5. Information Quality	Individuals must be informed when their data is being gathered.	Algorithmic bias can lead to inaccurate flagging, meaning the "information" (i.e., the suspicion of cheating) is not accurate.
6. Openness	The data subject must be notified that data is being collected.	While institutions provide notifications, the complexity of the algorithms means that genuine transparency about how the data is analysed is often lacking.
7. Security Safeguards	The responsible organisation must protect personal data from loss, misuse, or unauthorised access.	The use of international vendors involves trans-border data flows to jurisdictions with potentially weaker data protection laws, increasing security risks.
8. Data Subject Participation	Individuals have the right to access their personal data and request corrections.	It is often impossible for a student to "correct" a false flag generated by an opaque algorithm, as they cannot access the logic behind the decision.

3.2 Comparative Analysis of Global AI Regulatory Frameworks

Jurisdiction	Regulatory Approach	Specific Provisions for Education	Enforcement & Penalties
European Union (EU)	Prescriptive, risk-based (EU AI Act).	AI systems in education (e.g., for admission or assessment) are classified as "high-risk," requiring stringent conformity assessments, transparency, and human oversight.	Fines of up to €35 million or 7% of global annual turnover.
United Kingdom (UK)	Pro-innovation, context-specific. Relies on existing regulators to develop AI rules for their sectors.	No specific AI-in-education law. The Information Commissioner's Office (ICO) provides guidance on data protection.	Enforcement through existing regulatory bodies.
United States (USA)	Sector-specific, market-driven. No single federal AI law. Focus on voluntary standards (e.g., NIST AI Risk Management Framework).	The Family Educational Rights and Privacy Act (FERPA) governs student data privacy, but it is not AI-specific.	Varies by state and sector.
BRICS Countries	Varies. Brazil has a GDPR-like law (LGPD). China has a state-driven, security-focused approach. India is developing a Digital Personal Data Protection Act.	Generally, no specific AI-in-education regulations, but data protection laws apply.	Varies significantly.
South Africa	Principles-based (POPIA). No specific AI law yet, but a national AI policy is in development.	No specific AI-in-education regulation. POPIA applies generally.	Fines of up to R10 million.



3.4 Overview and Comparison of Major Software Vendors and Platforms

Vendor	Key Features	Data Storage & POPIA Compliance	Documented Bias Issues
Proctorio	Fully automated; browser-based; facial recognition; behavioural tracking.	Data stored in EU/US servers. Claims GDPR compliance, but data transfer outside SA requires specific consent under POPIA.	Criticised for facial recognition inaccuracies with darker skin tones.
ExamSoft	Secure assessment platform with offline testing capabilities; detailed performance analytics.	Primarily US-based servers. Requires robust data processing agreements to comply with POPIA.	Less focus on biometric monitoring, reducing bias risk, but still tracks computer activity.
Respondus	Integrates with LMS (e.g., Moodle, Blackboard); Lockdown Browser and Respondus Monitor (webcam recording).	Flexible data storage options, including potential for local hosting, which is preferable for POPIA.	Monitor's flagging algorithm has been criticised for being overly sensitive to movement and background noise.
Honorlock	Hybrid model: AI monitoring with live human proctors who can intervene.	US-based servers. The involvement of human proctors raises additional privacy concerns under POPIA.	The human element can potentially mitigate AI bias, but it also introduces the risk of human bias.
The Invigilator App	South African-developed; uses mobile phone camera for monitoring; tiered system (non-AI to AI-proctored).	Local data storage in South Africa, providing stronger POPIA compliance.	Developed with the South African context in mind, but independent bias audits are not publicly available.

THEORETICAL FRAMEWORK & METHODOLOGY



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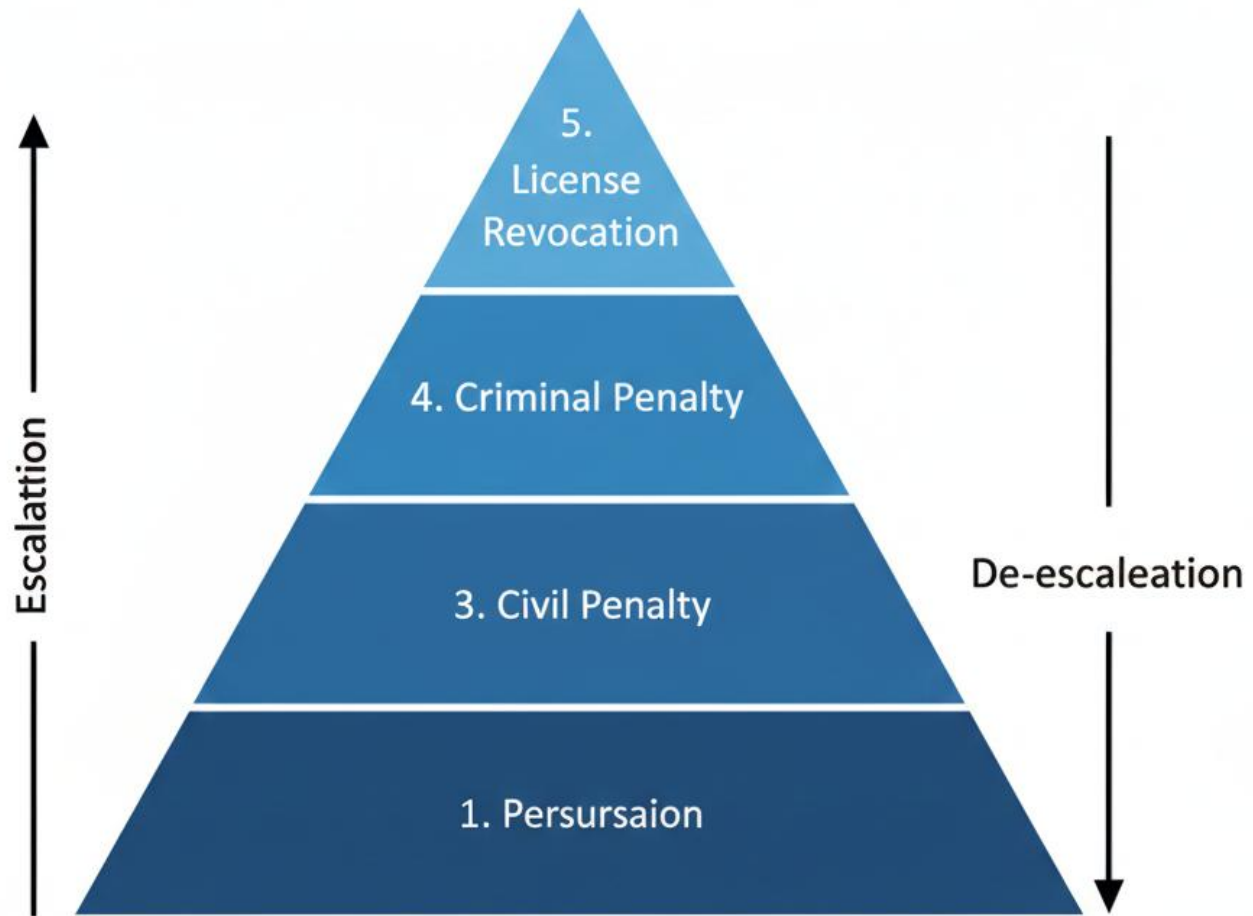
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THEORETICAL FRAMEWORK

This study employed two primary theoretical lenses. **Responsive Regulation Theory**, developed by Ayres and Braithwaite (1992), suggests that regulatory mechanisms should escalate progressively through a pyramid structure from persuasive and cooperative measures at the base to punitive actions at the apex. This framework is highly relevant for examining the IR's mandate under POPIA, as its functions inherently reflect this pyramidal structure.

The Unified Theory of Acceptance and Use of Technology (UTAUT) provides a lens for understanding factors driving acceptance of and resistance to AI proctoring among stakeholders. While originally designed for voluntary technology adoption, this study adapts UTAUT to understand resistance, anxiety, and perceptions of legitimacy in contexts where proctoring is mandatory (Venkatesh et al., 2003).





The Responsive Regulation Pyramid

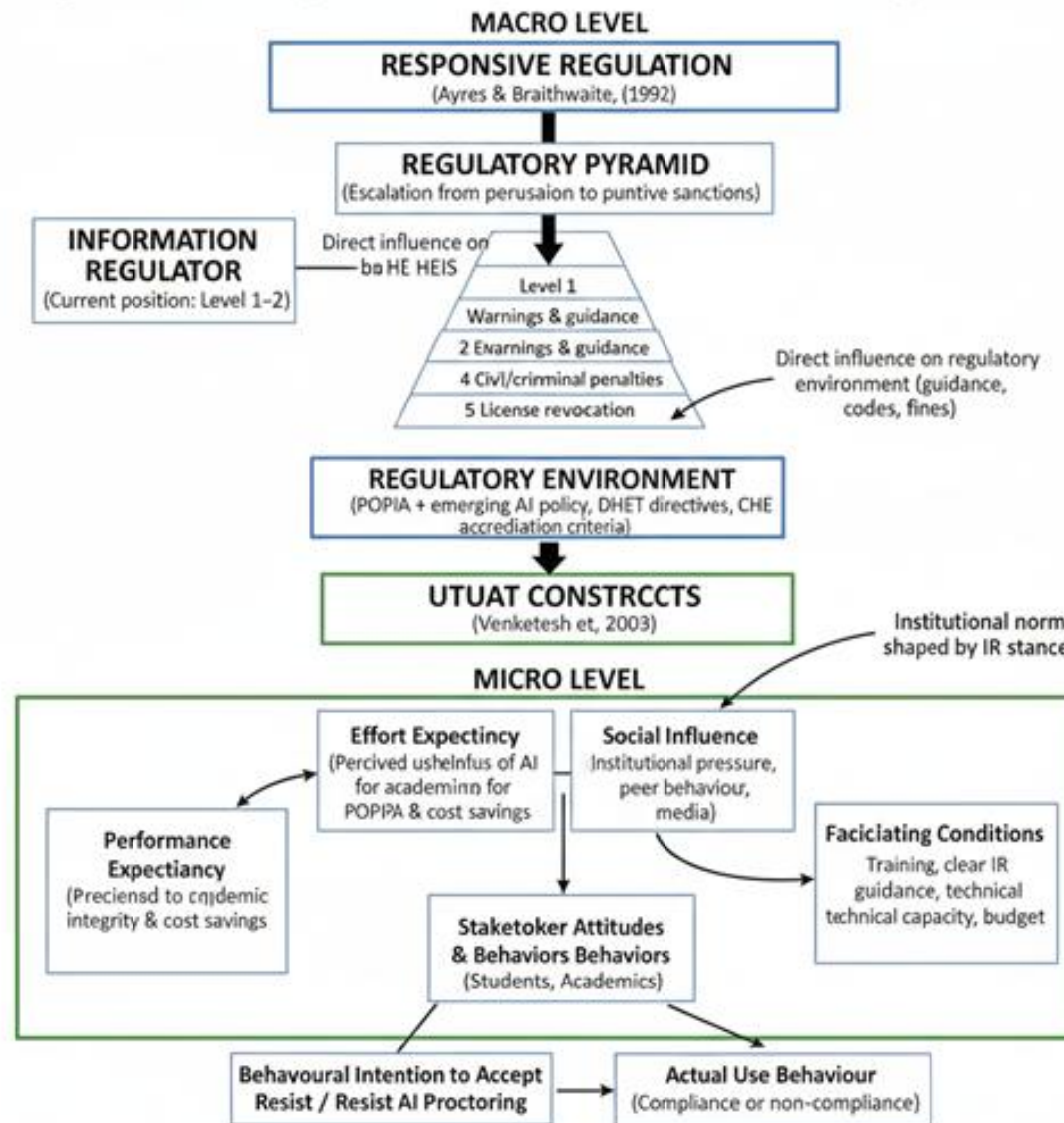
Source: Ayres and Braithwaite 1992



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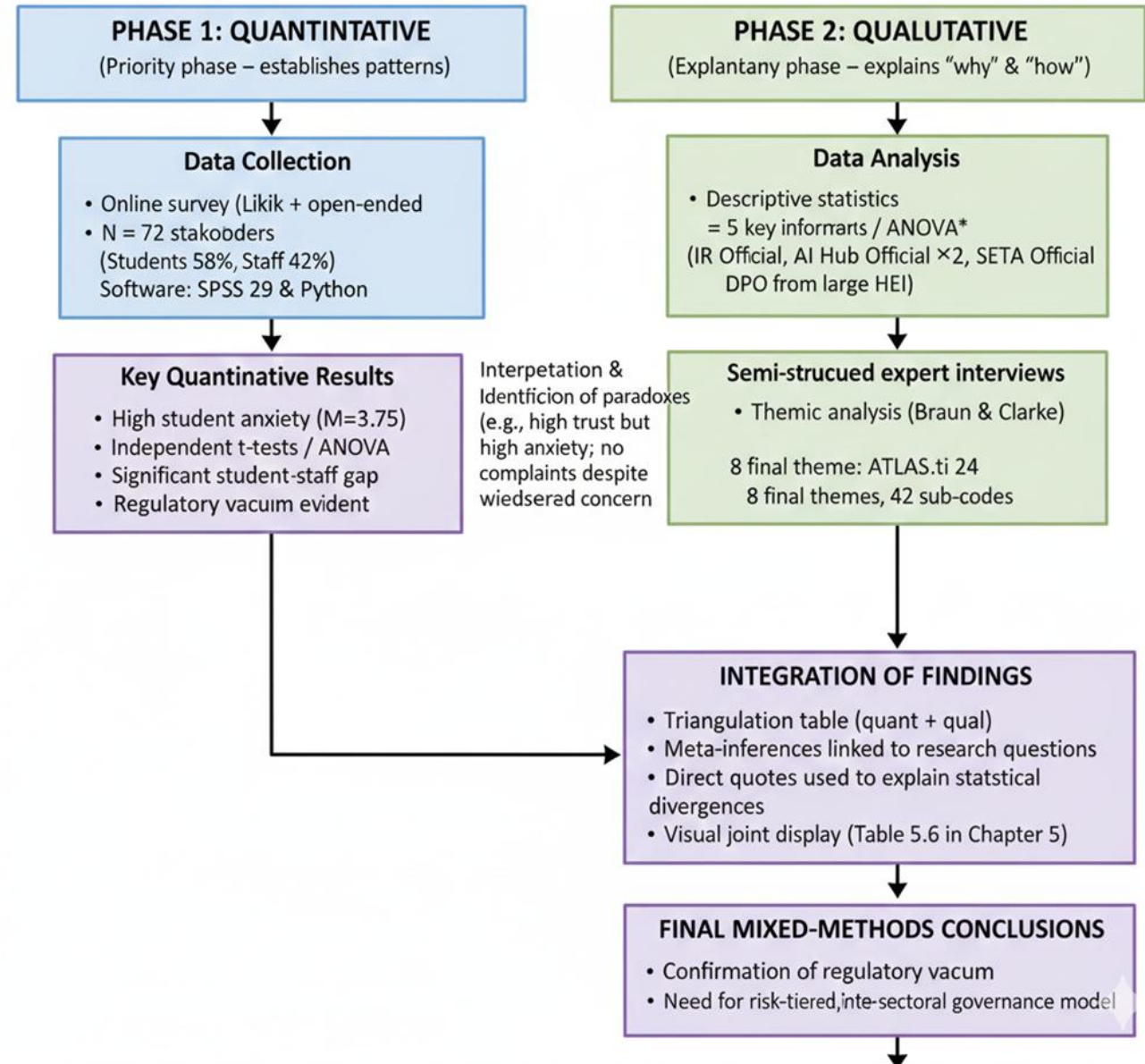
An Integrated Conceptual Model for AI-powered proctoring Governance



METHODOLOGY

This study employed a pragmatic research paradigm using a sequential explanatory mixed-methods design (Creswell & Plano Clark, 2018)

SEQUENTIAL EXPLANATORY DESIGN (Creswell & Plano Clark, 2018; pragatism)



Summary of Key Findings affecting administrators



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1. Regulatory gap and limited proactive oversight

The study found that the Information Regulator's oversight of AI proctoring is not proactive. Instead, it is a complaint-driven model that has yet to produce specific guidance or conduct targeted assessments for the higher education sector, leaving a significant regulatory gap (Information Regulator of South Africa, 2024).



- The IR official interviewed confirmed this passivity: *"Our approach is primarily complaint-driven. We have not conducted any specific assessments of AI-powered proctoring in HEIs to date."*
- The AI Hub official echoed this from the institutional side: *"We have had no direct engagement with the Information Regulator on the issue of AI proctoring. We rely on our internal interpretation of POPIA."*

This regulatory gap places a disproportionate interpretive burden on academic administrators, who must translate abstract principles into operational policy without sector-specific guidance. In effect, administrators have become de facto regulators, a role for which they are neither mandated nor resourced.



2. Compliance challenges driven by AI's technical nature

HEIs are caught in a difficult position, struggling to align the data-intensive architecture of AI proctoring systems with POPIA's core principles, particularly data minimisation and informed consent. This challenge is exacerbated by the skills gap in AI ethics and data governance.



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- As the **AI Hub official** observed: *"These AI systems are data-hungry by design. They capture vast amounts of personal information, from biometric data to environmental scans of a student's room. Reconciling this with POPIA's requirement to only collect what is necessary is a constant battle."*
- Compounding this is a national skills gap. The **SETA official** noted: *"There is a significant skills gap in AI ethics and data governance across the board. Institutions often lack the in-house expertise to conduct proper privacy impact assessments or to vet the complex algorithms used by third-party vendors."*
- The **survey data** reinforced this: When asked what guidance from the IR would be most valuable, 70.8% of staff respondents prioritised *"clear guidelines on AI and POPIA,"* followed by *"workshops and training"* (54.2%) and *"best practice examples"* (45.8%).



Furthermore, administrators must grapple with vendor-related risks. Comparative analysis of major proctoring vendors reveals significant variation in data storage practices, with international platforms often routing data through US or EU servers, raising trans-border data flow concerns under POPIA Section 72. Few vendors publish independent algorithmic bias audits, leaving administrators unable to verify compliance claims.

These findings demonstrate that compliance challenges are not merely technical but systemic, reflecting a misalignment between technology design and legal framework, compounded by human capital deficits.



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DISCUSSIONS



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1. Academic Administrators as Ethical Gatekeepers

Traditionally, administrators have been responsible for the logistical integrity of assessments: venue allocation, invigilator training, and security protocols. The rapid integration of AI-powered proctoring has expanded this mandate into unfamiliar ethical and legal territory. Administrators are now expected to interpret principles-based data protection law, conduct vendor due diligence on opaque proprietary algorithms, and mediate between competing stakeholder interests, all without commensurate regulatory guidance or institutional capacity.

This evolving role demands that administrators act as **ethical gatekeepers**, balancing the operational imperatives of scalability and integrity with the constitutional mandate to protect student rights. The role therefore shifts from technology procurement toward ethical stewardship, requiring new competencies in AI governance, risk management, and stakeholder engagement.



2. Toward a Risk-Tiered, Co-Regulatory Model

The current principles-based framework under POPIA, while constitutionally grounded, is inadequate for governing the technical complexity and rights-implicating potential of AI-based proctoring. The study findings and comparative international analysis support a transition to a risk-tiered, co-regulatory model modelled on elements of the EU AI Act but adapted for the South African context.

Key components of this proposed model include:

- Classification of AI proctoring as high-risk processing, triggering mandatory prior authorisation under POPIA Section 57.
- Mandatory Algorithmic Impact Assessments (AIAs) prior to procurement or renewal, evaluating privacy, equity, and accuracy implications.
- A sector-specific Code of Conduct for AI in Higher Education, developed collaboratively under POPIA Section 60 by the IR, the Department of Higher Education and Training (DHET), the Council on Higher Education (CHE), and Universities South Africa (USAf).
- Human-in-the-loop requirements, ensuring that no student is penalised or disqualified based solely on an automated flag.
- Mandatory transparency reporting, with annual publication of flag rates, false-positive rates disaggregated by demographic, and redress outcomes.

This model reflects the base-to-apex logic of Responsive Regulation, combining educational and cooperative mechanisms with clearly defined escalation pathways to enforcement action.



CONCLUSION



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AI-powered proctoring in South African higher education has emerged from an urgent need during COVID-19. However, as evidenced in the study, the speed of adoption outpaced technology-specific regulatory oversight, producing a governance gap.

For academic administrators, the governance gap is not theoretical. It manifests as:

- limited proactive IR oversight,
- compliance uncertainty for HEIs confronting data-intensive AI,
- student anxiety and trust erosion,
- and fairness risks linked to bias and inaccurate automated monitoring.

The message is clear: the era of unchecked AI adoption has ended. The challenge now is to become ethical gatekeepers, proactively assessing technologies, centring student voice, and building institutional capacity for responsible innovation. The governance gap can be closed, but only through collective, coordinated action that places human rights at the centre of educational technology policy.



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South African Sign Language (SASL)



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