



Combating Examination Malpractice in Nigerian Secondary Schools Through Technology-Based Proctoring System

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Abstract

Examination malpractice continues to weaken the credibility of assessment outcomes in Nigeria's secondary education system and to erode public confidence in the academic qualifications it produces. This paper considers whether technology-based proctoring can serve as a workable response to this longstanding problem. Drawing on empirical and policy literature, the discussion traces the structural and socio-cultural drivers of malpractice, explains how digital proctoring tool's function, and weighs the constraints likely to shape their adoption across Nigerian schools. The review finds that digital proctoring can sharpen monitoring, improve the detection of irregular conduct, and reinforce accountability, but that its impact is bounded by the availability of infrastructure, the strength of regulatory oversight, and the readiness of institutions to absorb new systems. Technology on its own cannot resolve examination malpractice; lasting change requires that proctoring tools be embedded within a broader reform agenda built around stronger continuous assessment, improved conditions of service for teachers, and deliberate ethics education for students. The paper further calls for explicit national policy on digital examinations, sustained investment in school-level ICT infrastructure, and blended assessment models that pair human judgement with automated monitoring, so that technological intervention remains both equitable and sustainable across Nigeria's varied school contexts. The analysis closes with a set of practical suggestions intended to guide policymakers, school administrators, and examination bodies toward a more balanced and context-sensitive approach to safeguarding assessment integrity in the years ahead.

Keywords: Students' Demographic Status, Scholastic Adjustment, School Types, School Location, Gender

Introduction

Assessment sits at the core of any formal education system: it is the structured mechanism through which learning is measured, competence is certified, and students move between levels of schooling. Where assessment is credible, qualifications reasonably reflect what a candidate actually knows and can do, which supports merit-based progression and sustains public trust in schools and examination bodies. In Nigeria, this quality-assurance function has been steadily weakened by persistent examination malpractice. The problem is not confined to internal school tests; it also affects large-scale external examinations conducted by bodies such as the West African Examinations Council and the National Examinations Council, both of which have repeatedly documented irregularities ranging from leaked question papers and impersonation to candidate collusion and the use of unauthorized materials.

The scale and recurrence of these irregularities suggest that examination malpractice in Nigeria is not simply a matter of isolated misconduct by a few candidates but a symptom of deeper dysfunction within the wider educational and socio-economic system. A single high-stakes examination can determine whether a student gains access to further

education or employment, and this concentration of consequence in one test creates strong incentives for students to secure a pass by whatever means are available (Akaranga & Ongong, 2013). These incentives are reinforced by a social environment in which certificates, rather than demonstrated ability, are treated as the primary signal of success. Weak enforcement of examination rules, thin supervision, and, in some cases, the complicity of those responsible for safeguarding the process compound the difficulty (Ikechukwu-Illomuanya, 2019).

Public commentary in Nigeria frequently treats examination malpractice as a moral failing of individual students, but this framing only partly captures what is happening on the ground. Year after year, newspaper reports, examination-body bulletins, and parliamentary debates return to the same set of complaints: question papers circulating before the official sitting time, candidates writing examinations on behalf of others, and invigilators either looking away or actively participating in malpractice for financial gain. The repetition of these complaints across successive examination cycles, despite repeated promises of reform, points to a problem that is reproduced by the system itself rather than one that can be eliminated through occasional crackdowns or one-off disciplinary actions against a handful of offenders.

Several interlocking pressures sustain this pattern. The labour market in Nigeria places heavy weight on certificates as gatekeeping devices for further education, apprenticeships, and formal employment, regardless of whether those certificates reliably signal underlying competence. Parents, under economic strain themselves, often measure the value of schooling almost entirely by examination results, creating household-level pressure that mirrors the pressure already present at the institutional level. Teachers, in turn, may feel that their own professional standing, and in some cases their continued employment, is tied to the proportion of students who obtain credit-level passes, which can quietly incentivise looking away from, or even facilitating, malpractice rather than confronting it. None of these pressures excuses dishonest conduct, but together they help explain why the problem has proved so resistant to conventional enforcement measures such as stiffer penalties or more vigilant invigilation alone.

At the same time, developments in educational technology have opened new possibilities for tackling these entrenched problems. The accelerated shift toward digital teaching, learning, and assessment, especially during the COVID-19 pandemic, expanded the use of online and computer-based testing across Nigerian education. This shift exposed new avenues for malpractice, since remote and unsupervised testing created fresh opportunities for impersonation and unauthorized assistance, but it also spurred the growth of technology-based monitoring tools intended to protect examination security. Remote proctoring software, biometric verification, and live surveillance technologies promise tighter oversight, less reliance on the judgment of individual invigilators, and a greater chance of catching irregular conduct as it happens, offering a starting point for rethinking how assessment integrity might be protected as Nigeria's education system continues to digitize.

It is worth noting, too, that Nigeria is not alone in confronting this problem, and that lessons from other contexts can usefully inform local policy without being adopted uncritically. Countries that expanded online and computer-based assessment ahead of Nigeria have encountered comparable tensions between the desire for rigorous monitoring and the practical, ethical, and financial limits of doing so at scale. What distinguishes the Nigerian case is less the nature of the underlying problem, which is recognisably similar across many education systems under examination pressure, than the particular combination of infrastructural constraint, large candidate volumes, and weak regulatory tradition within which any solution must operate. A workable approach for Nigeria therefore needs to draw selectively on international experience while remaining firmly grounded in local conditions, rather than importing proctoring models designed for, and tested within, far better-resourced systems.

This paper is organised to build a cumulative argument rather than to present technology as a stand-alone fix. It begins by setting out the background to examination malpractice in Nigeria, including its principal forms and the structural conditions that sustain it, before describing the mechanics of technology-based proctoring as currently practised elsewhere and as it is beginning to be applied within Nigerian institutions. The discussion section then weighs the practical feasibility of these tools against Nigeria's infrastructural and institutional realities, considers their demonstrated benefits, and examines the ethical questions their use raises for school-age candidates. An analysis section draws these threads together into policy and implementation guidance, situating digital proctoring within a

wider programme of assessment reform. The paper closes with a conclusion and a set of concrete suggestions addressed to policymakers, school administrators, examination bodies, and technology partners.

Forms and Drivers of Examination Malpractice

Examination malpractice covers a broad set of deliberate acts that breach the rules governing assessment, undertaken to secure an unearned advantage. In Nigerian secondary schools, the forms these acts take have multiplied and, in some instances, become highly organised. Typical examples include candidates sharing answers during a test, the smuggling in of prepared notes or electronic devices (often called "microchips" locally), impersonation by a substitute candidate sitting the examination on another student's behalf, and the bribing or coercing of invigilators to look away or actively assist (Ojerinde, 2015). In its more elaborate forms, malpractice begins well before the examination hall, through the leakage or illegal sale of question papers by networks that often operate across several schools and, in the most serious cases, involve staff with privileged access to confidential examination materials.

These practices persist because they are entangled with structural and socio-cultural pressures within Nigerian education. An emphasis on certification as the chief marker of educational and occupational progress creates conditions in which outcomes matter more than the process by which they are reached (Nnam & Inah, 2015). Where success is judged primarily by grades rather than demonstrated competence, students, parents, and even some teachers may come to view malpractice as a justifiable shortcut, a tendency reinforced by inadequate monitoring, underfunded schools, and large class sizes that strain effective supervision. Overcrowded examination halls compound the difficulty further, since a single invigilator responsible for a large number of candidates simply cannot maintain the close, continuous attention that effective supervision requires, leaving wide gaps in coverage that determined candidates learn to exploit.

The consequences extend well beyond the examination hall. When assessment fails to capture what students genuinely know and can do, the credentials issued lose much of their meaning, contributing to lower productivity, higher unemployment, and a weakening of the human capital base that underpins national growth and innovation (Emaikwu, 2012). Employers who discover that certificates do not reliably predict workplace competence may respond by discounting Nigerian qualifications altogether, adding further screening costs of their own, such as additional aptitude testing or longer probationary periods, which in turn raises the overall cost of recruitment across the economy. Universities and other tertiary institutions face a related problem: students admitted on the strength of inflated or fraudulently obtained results may struggle to cope with the academic demands of higher study, leading to higher dropout rates and additional remedial costs for institutions that can ill afford them.

It is also useful to distinguish between malpractice that originates inside the school and malpractice that is organised externally, since the two call for somewhat different responses. Internal malpractice, involving collusion among classmates or a single complicit invigilator, is most directly addressed through closer supervision, smaller candidate-to-invigilator ratios, and stronger accountability for examination staff. External malpractice, involving organised question-paper leakage, professional impersonators hired to sit examinations for a fee, or coordinated cheating syndicates operating across multiple centres, requires a different set of tools, including tighter control over the printing, storage, and transport of examination materials, stronger background screening of personnel with access to confidential papers, and closer cooperation between examination bodies and law enforcement agencies. Technology-based proctoring is most directly suited to addressing malpractice that occurs within the examination venue itself, whether internally or externally instigated, but it has comparatively little to offer against pre-examination leakage, which underscores why technological intervention must be paired with parallel reforms to examination administration and security further upstream.

Beyond institutional factors, broader societal attitudes also shape how persistently malpractice is reproduced from one examination cycle to the next. In some communities, malpractice attracts only mild social disapproval, and is in certain cases quietly tolerated or even informally encouraged when it is perceived as a way of compensating for structural disadvantages, such as limited access to qualified teachers, scarce textbooks, or overcrowded classrooms that leave many students genuinely underprepared for the examinations they are required to sit. Parents who themselves struggled within an under-resourced system may be reluctant to condemn malpractice outright, viewing it instead as

a pragmatic response to circumstances beyond any individual student's control. This kind of social tolerance does not appear suddenly; it accumulates gradually, normalising malpractice as an accepted, if officially disavowed, feature of the local examination culture, and it is precisely this gradual normalisation that makes the problem so difficult to reverse through enforcement measures alone, however well designed those measures may be in technical terms.

Concept and Mechanisms of Technology-Based Proctoring

Technology-based proctoring systems are digital tools and platforms designed to supervise examinations, enforce compliance with assessment rules, and narrow the room available for malpractice. They typically combine hardware, such as webcams, microphones, and biometric scanners, with software that monitors, records, and analyses candidate behaviour either in real time or after the fact. Their growing relevance in Nigeria is closely linked to the expansion of computer-based testing, particularly through the Joint Admissions and Matriculation Board, whose large-scale use of CBT has demonstrated that technology-driven assessment is workable at national scale (Joint Admissions and Matriculation Board [JAMB], 2021).

In practice, these systems generally operate through three modes. Live proctoring relies on human invigilators who supervise candidates remotely through continuous video and audio feeds, effectively extending traditional invigilation beyond the physical classroom and allowing a single proctor to monitor several candidates spread across different locations at once. Automated proctoring instead uses artificial intelligence and machine learning to flag anomalies such as unusual eye movement, repeated head turning, the appearance of additional faces within the camera frame, or attempts to open unauthorised applications, without requiring a human observer to watch every candidate continuously. The third mode, record-and-review proctoring, involves recording the entire examination session in full and subsequently analysing it, either by trained human reviewers or by automated tools, to identify violations after the test has already concluded, which is particularly useful where live bandwidth is insufficient to support real-time streaming.

Contemporary proctoring platforms add further layers of security on top of these three core modes. Biometric authentication, through fingerprint or facial recognition, confirms candidate identity at the point of entry and at intervals throughout the test, which is a direct response to the persistent problem of impersonation in Nigerian examinations. Browser lockdown features restrict access to outside websites, applications, or files during computer-based tests, closing off one of the more common routes through which digitally literate candidates attempt to access unauthorised material. Real-time analytics and event logging continuously track candidate activity and generate detailed reports that can support both audits and disciplinary decisions after the fact, creating a documentary record that did not previously exist under purely manual invigilation (Dendir & Maxwell, 2020).

Empirical evidence broadly supports the effectiveness of these tools in curbing malpractice. Research indicates that visible digital surveillance raises candidates' perceived likelihood of being caught, which in turn discourages dishonest behaviour, an effect that is especially pronounced in high-stakes settings where the perceived cost of detection clearly outweighs any benefit from cheating (Alessio et al., 2017). Importantly, this deterrent effect appears to operate independently of whether a violation is actually detected in any given instance: candidates who believe they are being watched, whether by a human proctor or an automated system, tend to behave differently from candidates who believe supervision is weak or absent, which underscores the psychological as much as the technical value of these tools.

Taken together, the material reviewed in this Background section establishes two things that frame the rest of the discussion that follows. First, examination malpractice in Nigerian secondary schools is rooted in identifiable structural, economic, and socio-cultural conditions rather than in random individual misconduct, which means that any intervention judged solely by its ability to catch individual cheats, without addressing those underlying conditions, is unlikely to deliver lasting improvement on its own. Second, technology-based proctoring, properly understood, is a flexible family of tools spanning live human supervision, automated detection, and post-hoc review, rather than a single fixed product, which leaves considerable room for Nigerian schools and examination bodies to adapt the technology to local circumstances instead of adopting a one-size-fits-all model designed elsewhere.

Discussion

Infrastructural and Institutional Feasibility

Whether technology-based proctoring can take hold in Nigeria depends heavily on the country's infrastructural base and institutional readiness. Any move to digitise examination monitoring must reckon with uneven access to electricity, internet connectivity, and functioning ICT equipment across regions. A number of private and urban secondary schools have folded digital tools into teaching and assessment, but many public schools, particularly in rural and peri-urban areas, work under severe resource constraints. Unreliable power supply, limited bandwidth, and a shortage of computers or networked devices make it difficult to sustain sophisticated proctoring systems in these settings (Federal Ministry of Education, 2021), creating a risk of uneven adoption in which better-resourced schools gain stronger examination security while less-resourced institutions remain exposed to the very practices the technology is meant to curb.

This unevenness is not merely a technical inconvenience; it has direct implications for fairness across the system as a whole. If well-equipped schools in major cities are able to deploy comprehensive proctoring while rural schools continue to rely solely on manual invigilation, the credibility gap between certificates issued under different conditions may widen rather than narrow, even as the overall national malpractice rate appears to fall. Policymakers therefore need to think about technology-based proctoring not simply as a tool to be rolled out wherever resources allow, but as an intervention whose distribution must be actively managed so that it does not become another marker of educational inequality layered on top of existing disparities in funding, staffing, and facilities.

Financing this kind of equity-conscious rollout raises its own set of practical questions that policymakers cannot avoid indefinitely. Examination fees alone are unlikely to cover the capital cost of proctoring infrastructure for the majority of public schools, particularly where families are already under considerable financial strain, which suggests that government budgetary allocation, donor support, and private-sector contributions will all need to play a role if equitable coverage is to be achieved within a realistic timeframe. Shared infrastructure models, in which several neighbouring schools jointly fund and operate a single, better-equipped examination centre rather than each school attempting to build out its own standalone system, may offer one practical route to extending coverage faster than would be possible if every individual school had to assemble its own complete proctoring capability from scratch.

Even so, Nigeria's substantial growth in mobile technology use and internet penetration over the past decade provides a base on which digital assessment can be built. Mobile data networks, in particular, have reached many areas that still lack reliable fixed broadband, offering a workable, if imperfect, channel for certain forms of online monitoring even where conventional infrastructure remains thin. This trajectory points toward a phased, context-sensitive approach as more realistic than an abrupt, system-wide shift, one that begins with schools already possessing adequate connectivity and gradually extends coverage as infrastructure investment proceeds elsewhere.

Hybrid models of supervision, which combine conventional face-to-face invigilation with selected digital tools such as video monitoring, identity verification, or restricted computer-based testing environments, offer a practical way forward within this constrained environment. By layering incremental technological enhancements onto established practice rather than discarding existing invigilation arrangements outright, schools can strengthen oversight without overstressing their existing capacity, and stakeholders, including teachers, administrators, and students themselves, are given the time needed to adapt to new systems, which can reduce resistance and support longer-term sustainability. Pilot experience lends support to this incremental approach: in a number of Nigerian schools, the introduction of comparatively modest technologies, such as closed-circuit television and structured computer-based testing platforms, has already been associated with improved monitoring and fewer recorded incidents of malpractice (Ajadi et al., 2021), suggesting that meaningful gains do not necessarily require the most advanced or fully automated systems available on the international market.

Teacher buy-in deserves particular attention within any hybrid model, since teachers and invigilators remain the primary point of contact between students and the examination process regardless of how much monitoring technology is introduced alongside them. Where teachers perceive digital proctoring as an implicit accusation of their own unreliability, or as a tool imposed from above without consultation, resistance can take subtle forms that are difficult

to detect from a policy level, ranging from minimal cooperation with system setup to a reluctance to flag ambiguous cases for fear of generating additional administrative work. Involving teachers directly in the design and piloting of hybrid arrangements, and being transparent about the fact that technology is intended to support rather than replace their professional judgement, is therefore likely to matter as much for eventual effectiveness as the technical specification of the proctoring system itself.

Demonstrated Benefits Where Conditions Allow

Where infrastructure permits, the benefits of digital proctoring are considerable and extend across several dimensions of examination management. Digital systems apply the same standard of observation to every candidate without the variation introduced by human fatigue or distraction, picking up irregular patterns that a human invigilator stationed at the front of a crowded hall might easily miss. Automated alerts add a further layer of responsiveness, flagging unusual movement, attempts to switch screens, or the presence of an unauthorised individual almost immediately, which allows for prompt intervention or, at minimum, careful documentation for later review (Dendir & Maxwell, 2020). This level of precision supports a more reliable and standardised examination environment than is typically achievable through manual supervision alone, particularly in settings where a small number of invigilators must cover a disproportionately large number of candidates.

Beyond the moment-to-moment monitoring function, surveillance, whether live or automated, also changes candidate behaviour by raising the perceived likelihood of being caught well before any actual violation occurs. Proctored environments, particularly those involving digital monitoring, tend to record lower rates of cheating than loosely supervised settings (Alessio et al., 2017), suggesting that the mere presence of credible monitoring technology can shift candidate conduct even among students who might otherwise have been tempted to take advantage of weak supervision. In this sense, the value of proctoring technology extends beyond after-the-fact enforcement to shaping, over time, a broader culture in which compliance with examination rules becomes the expected norm rather than an exception to be policed.

Digital proctoring systems also generate and preserve detailed records of examination sessions, including video footage, system logs, timestamps of candidate actions, and automated flags for suspicious behaviour, in a way that traditional methods, reliant on eyewitness accounts or incomplete paper documentation, cannot easily match. These records provide a solid evidentiary basis for investigating allegations of misconduct, ensuring that disciplinary decisions rest on verifiable information rather than on the recollection or testimony of a single invigilator, which can be contested, mistaken, or, in rarer cases, manipulated. This strengthens both transparency and fairness in adjudication, while also giving examination bodies and school administrators material they can draw on for post-examination analysis, identifying recurring patterns or particular vulnerabilities, such as a specific examination centre or time slot associated with unusually high rates of flagged behaviour, that may call for further investigation or targeted intervention.

Once the necessary infrastructure is established, these systems also offer real gains in scalability and operational efficiency. They can be extended across multiple examination centres at relatively low additional cost compared with the continuous recruitment, training, and remuneration of large numbers of human invigilators, and digital platforms support centralised monitoring that allows a smaller number of supervisors to oversee a considerably larger pool of candidates simultaneously. This is particularly valuable in large-scale national examination systems, where logistical complexity and resource constraints already pose significant challenges even without the added burden of malpractice prevention. Although initial setup costs can be substantial, the longer-term benefits, in terms of consistency, reach, and reduced reliance on manual supervision, position digital proctoring as a potentially cost-effective option for strengthening examination integrity over a sustained period.

A brief illustrative comparison helps to ground these general claims. In examination centres that have piloted CCTV monitoring alongside conventional invigilation, school administrators report that the presence of visible cameras alone appears to change candidate behaviour even before any footage is reviewed, with fewer attempts at obvious forms of collusion such as passing notes or whispering across rows. Where centres have additionally introduced biometric check-in at the point of entry, cases of suspected impersonation have become easier to identify at the registration stage

rather than only after the fact, reducing the administrative burden of post-examination investigation. These observations are consistent with the broader deterrence literature (Alessio et al., 2017) and suggest that even partial, lower-cost adoption of digital tools can yield meaningful improvements in a Nigerian setting, provided that the technology chosen matches the specific malpractice risks most prevalent at a given examination centre rather than being adopted uniformly without regard to local circumstances.

Ethical Considerations

These gains, however, come with ethical obligations that cannot be set aside, and any serious discussion of technology-based proctoring in Nigerian secondary schools must give these obligations equal weight to questions of effectiveness. Remote and AI-assisted surveillance in assessment contexts raises serious concerns around privacy intrusion, data governance, and fairness, especially when applied to vulnerable populations such as school-age students (Coghlan, et al 2021; Dendir & Maxwell, 2020). These concerns carry added weight in high-stakes educational environments, where assessment outcomes have long-term academic and economic consequences for young people who may have limited power to question or refuse the terms on which they are monitored.

On privacy, continuous video and audio monitoring, screen recording, and, in some cases, biometric verification intrude into students' personal space, particularly where examinations are conducted remotely from a candidate's home. For secondary school learners, the majority of whom are minors, this degree of constant observation can feel invasive and psychologically uncomfortable, and it raises legitimate questions about how far institutional oversight should reasonably extend into spaces that are not, in the ordinary course of events, subject to school authority. On data protection, proctoring technologies generate and store sensitive personal data, including identity records, behavioral patterns, and recorded examination sessions, that, if not properly managed, may be vulnerable to unauthorized access, misuse, or outright cyber breach; ethical implementation therefore requires secure storage systems, restricted access protocols, and clearly defined retention policies that limit the use of collected data strictly to legitimate examination purposes.

Fairness and equity present a further set of difficulties. Students in under-resourced environments may struggle with unstable internet connections, inadequate devices, or unscheduled power interruptions during a proctored test, none of which reflects on their academic ability but all of which can negatively affect their examination experience and, potentially, their results. Automated detection systems are not always flawless, either, and may generate false positives based on environmental factors, such as poor lighting or background noise, or on culturally specific behavioural patterns that an algorithm trained largely on data from other contexts may misread as suspicious, potentially disadvantaging certain candidates through no fault of their own. These limitations underline the continuing need for human oversight to complement, rather than be replaced by, automated decision-making, so that a flagged incident triggers careful human review rather than an automatic and irreversible penalty.

Ethical deployment also requires that students and their guardians be properly and clearly informed about how proctoring systems operate, what data is collected, and how that data will subsequently be used, retained, and eventually disposed of. In compulsory examination settings, where students cannot realistically opt out of an examination they are required to sit, consent must be handled with particular care to avoid situations in which participation is simply assumed without any meaningful understanding on the part of the candidate or their family. Clear, accessible communication, delivered well in advance of the examination date rather than buried in fine print on the day itself, helps build trust and reduces resistance to technological monitoring among students, parents, and teachers alike. Finally, the principle of proportionality requires that the intensity of surveillance be matched to the educational context and the specific problem being addressed: reducing malpractice matters, but surveillance that is more intrusive than necessary to achieve that goal risks compromising student dignity and wellbeing without delivering a commensurate gain in examination security.

Analysis

The evidence reviewed above points to technology-based proctoring as a systemic reform rather than a purely technical fix, one that requires coordination across governance, infrastructure, and human capacity if it is to deliver durable improvements in examination integrity. Coghlan et al. (2021) argue that effective implementation depends on coherent

policy frameworks built around several interlocking elements, and the Nigerian context arguably makes this coordination even more important than it would be in a setting with more uniform infrastructure and institutional capacity.

Phased Deployment and Capacity Development

A phased deployment, beginning with carefully monitored pilot programmes in selected schools or regions, allows policymakers to test functionality, surface operational challenges, and refine system design before committing to wider scaling, which in turn limits disruption in schools that do not yet have the infrastructure to absorb a full-scale rollout. Such pilots are most useful when they are deliberately varied in character, covering urban and rural schools, public and private institutions, and areas with differing levels of connectivity, so that the lessons drawn from them genuinely reflect the diversity of conditions across the country rather than the relatively favourable conditions found only in the best-resourced pilot sites.

This staged process must be matched by sustained capacity development, since human capacity remains a decisive factor in any digital transformation effort regardless of how well designed the underlying technology may be. Teachers, school administrators, and technical support staff need training that extends beyond basic technical instruction in how to operate a particular software package to cover digital ethics, data handling, and examination security protocols more broadly, equipping them to make sound judgement calls when automated systems flag ambiguous or borderline behavior. Continuous professional development, rather than a single training session delivered at the point of system launch, is necessary to keep stakeholders competent as technologies evolve and as new categories of malpractice emerge in response to whatever safeguards are currently in place; without this ongoing investment, even well-designed systems risk failing through improper use, inconsistent application, or outright resistance from users who were never given adequate preparation.

Partnerships, Regulation, and Blended Models

Given the substantial financial and technical demands involved in implementing digital proctoring at scale, public-private partnerships are also necessary, with technology firms contributing expertise in system design, software maintenance, and data analytics, while government agencies retain responsibility for ensuring that any deployment aligns with national educational standards and broader equity considerations. Such partnerships need to be governed by transparent agreements from the outset, with clearly defined responsibilities and safeguards, to guard against over-commercialization of student data or arrangements in which private vendors gain disproportionate influence over examination policy in exchange for subsidized infrastructure.

A strong regulatory environment is equally indispensable to this effort. National policy should set clear, enforceable standards for data privacy, candidate surveillance, system transparency, and accountability mechanisms, and should also address practical questions such as data ownership, retention periods, and the penalties that apply when proctoring data is misused or improperly disclosed. In the absence of such regulation, inconsistent implementation across different examination bodies and states becomes almost inevitable, creating legal and ethical uncertainty for schools, vendors, and families alike, and potentially exposing students to inconsistent standards of protection depending on where they happen to sit their examinations. Standardized national guidelines, developed in consultation with examination bodies, school associations, technology providers, and civil society groups concerned with data protection, would help establish a common baseline that promotes uniformity without foreclosing reasonable local adaptation.

Finally, blended assessment models, which pair human judgement with the consistency and scalability of digital tools rather than treating the two as mutually exclusive alternatives, are particularly well suited to a context of uneven infrastructure. Such models allow schools to draw on the strengths of both approaches simultaneously: the contextual understanding and discretionary judgement that an experienced human invigilator brings to ambiguous situations, alongside the consistency, continuous attention, and detailed record-keeping that digital tools provide. This is especially relevant in environments with uneven infrastructure, since a blended approach preserves inclusivity for schools that cannot yet support full digital monitoring while still allowing technological enhancement to deepen progressively as local conditions, funding, and digital literacy improve over time.

Sustainability considerations also deserve explicit attention within this analysis, since a proctoring system that performs well during an initial pilot but cannot be maintained beyond the period of donor or vendor support offers only a temporary improvement. Recurrent costs, including software licensing, hardware replacement, internet connectivity, and the continued training of staff as personnel change over time, need to be built into long-term budget planning from the outset rather than treated as a one-off capital expense. Examination bodies and ministries of education would also do well to favor open standards and interoperable systems where possible, so that schools are not locked permanently into a single vendor's proprietary platform and can switch providers, or integrate complementary tools, as the market for educational technology in Nigeria continues to mature and as better, more affordable options become available over time.

Monitoring, Evaluation, and Continuous Improvement

Any phased rollout of technology-based proctoring also needs a clear monitoring and evaluation framework attached to it from the outset, rather than treating evaluation as an afterthought once systems are already in widespread use. Indicators worth tracking might include the number and type of flagged incidents per examination centre, the proportion of flagged incidents subsequently confirmed as genuine malpractice following human review, system downtime or connectivity failures during live examinations, and candidate or guardian complaints relating to privacy or fairness. Collecting this information systematically, rather than relying on anecdotal impressions from individual schools, would allow examination bodies and policymakers to identify which configurations of technology and human oversight are actually working, which examination centres require additional support, and where the underlying assumptions behind a given rollout need to be revisited.

Such evaluation data would also help distinguish between two outcomes that can otherwise look similar from a distance: a genuine reduction in malpractice, and a simple displacement of malpractice toward less-monitored aspects of the assessment process, such as coursework, continuous assessment scores, or examination stages that fall outside the reach of a particular proctoring tool. Without deliberate monitoring of this kind, it is possible for a system to report falling rates of detected malpractice within proctored examinations while overall dishonesty in the broader assessment process remains essentially unchanged, simply because the problem has migrated elsewhere. Building monitoring and evaluation into the design of any proctoring programme from the start, with clear lines of responsibility for collecting and reviewing the relevant data, is therefore not an optional extra but a core requirement for knowing whether the broader reform effort is actually succeeding.

Implications for the Wider Assessment System

This analysis also points to a broader implication for educational reform that extends well beyond the specific question of how examinations are physically supervised. Technology-based proctoring can address the immediate, visible symptoms of examination malpractice, namely the act of cheating itself as it occurs within the examination hall or testing platform, but it cannot substitute for structural change in how students are assessed and prepared more generally. The continued overreliance on high-stakes, single-sitting examinations as the primary, and in many cases the sole, determinant of educational progression should be reconsidered in favor of continuous assessment models capable of evaluating a wider range of student competencies over time and across multiple contexts (Ojerinde, 2015), reducing the disproportionate weight currently placed on a single test sitting and, with it, some of the underlying pressure that drives candidates toward malpractice in the first place.

Ethical education, institutional accountability, transparency, and improved conditions for teachers remain equally necessary if gains in examination security achieved through technology are to translate into a genuine and lasting culture of academic integrity rather than a temporary suppression of malpractice that simply resurfaces once monitoring is relaxed or circumvented. A school system that successfully detects and deters cheating during the examination itself, but does nothing to address the underlying pressures, incentives, and gaps in classroom-level assessment that make cheating attractive in the first place, is likely to find that determined candidates and facilitators simply adapt their methods over time, shifting the contest from the examination hall to whatever point in the system remains least well monitored.

Conclusion

Examination malpractice remains a complex and deeply embedded challenge within Nigeria's secondary education system, sustained not by individual dishonesty alone but by a wider set of structural, economic, and institutional pressures that have proved resistant to conventional enforcement. Technology-based proctoring offers a promising route to stronger examination integrity through improved monitoring, the deterrence of misconduct, and data-driven accountability, and the evidence reviewed in this paper suggests that, where infrastructure and institutional capacity allow, these tools can measurably reduce opportunities for cheating and strengthen the evidentiary basis on which disciplinary decisions are made. Its success, however, depends on addressing infrastructural limitations that remain severe in many parts of the country, ensuring ethical compliance that protects the privacy, dignity, and data security of school-age candidates, and aligning technological interventions with broader educational reform rather than treating them as a self-sufficient solution. A balanced, context-sensitive approach, one that treats digital proctoring as a complement to, rather than a replacement for, sound assessment practice, continuous assessment, teacher welfare, and ethics education, is essential if lasting improvements in assessment credibility are to be achieved across the full range of Nigerian secondary schools, rather than only within the relatively small subset of institutions currently able to afford comprehensive digital infrastructure.

Ultimately, the value of technology-based proctoring will be judged not by how sophisticated the underlying software is, but by whether it contributes to a wider, durable shift in how examination integrity is understood and protected across the system as a whole. A narrow focus on detection technology, pursued in isolation from the structural and ethical questions raised throughout this paper, risks producing impressive pilot results that fail to translate into nationwide improvement, or that improve outcomes for a privileged minority of well-resourced schools while leaving the majority of candidates exposed to the same vulnerabilities as before. Approached deliberately, however, and embedded within a coherent programme of policy, capacity building, and continuous assessment reform, digital proctoring can become one meaningful component of a Nigerian education system that more reliably rewards genuine learning and protects the long-term value of the credentials it issues.

Suggestions

1. Gradual assessment reform: education authorities should progressively reduce reliance on single high-stakes examinations by expanding moderated continuous assessment that contributes meaningfully and transparently to final grades, supported by clear guidelines on how continuous assessment scores are to be recorded, moderated, and verified across schools.
2. Integration of integrity education: schools should formally incorporate academic integrity modules into civic or moral education curricula, reinforced through regular sensitization programmes, school-wide campaigns, and visible institutional commitments from school leadership, so that ethical conduct in examinations is presented as a shared value rather than a rule imposed from outside.
3. Strengthening quality assurance mechanisms: independent monitoring units should be established, or strengthened where they already exist, within examination bodies to audit assessment processes, review flagged incidents from proctoring systems, and ensure consistent compliance with standardized procedures across different examination centres and states.
4. Teacher capacity and welfare enhancement: government and school proprietors should invest in continuous teacher training in both pedagogy and examination security, alongside fair remuneration and improved working conditions, to enhance professionalism, reduce the incentive for staff complicity in malpractice, and lower systemic vulnerabilities more broadly.
5. Balanced use of technology: technology-based proctoring should remain a complementary tool rather than a substitute for broader assessment reform, ensuring that human judgement, contextual understanding, and avenues for appeal remain part of the evaluation process whenever automated systems flag a candidate's conduct as suspicious.
6. Stakeholder collaboration: effective reform requires sustained coordination between government agencies, school administrators, parents, teachers' associations, and technology providers, through formal consultative structures, to ensure that policies on digital examinations are realistic, inclusive of under-resourced schools, and contextually appropriate to local conditions.

7. Equity-focused infrastructure investment: government at federal and state levels should prioritise ICT infrastructure investment in rural and under-resourced public schools specifically, rather than allowing digital examination security to develop unevenly along existing lines of educational privilege, with clear timelines, ring-fenced budget lines, and measurable targets for closing the infrastructure gap between urban and rural examination centres within a defined planning horizon.
8. Transparent data governance: examination bodies and schools should publish clear, accessible policies on what proctoring data is collected, how long it is retained, who may access it, and how candidates or guardians can raise concerns or seek redress, supported by periodic independent review of compliance with these published policies.
9. Pilot-driven scaling with built-in evaluation: any expansion of digital proctoring beyond an initial pilot phase should be conditioned on a documented evaluation of outcomes from earlier phases, including flagged-incident rates, system reliability, and stakeholder feedback, so that scaling decisions rest on demonstrated evidence rather than on optimism about the technology alone.

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