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محور المشاركة: "المحور الرابع : تكنولوجيا المعلومات والرقمنة ودورها في ضمان الجودة في مؤسسات التعليم العالي"

عنوان المداخلة بالعربية والإنجليزية:

التعلم الإلكتروني أم الغش الإلكتروني؟ نزاهة التقييم الرقمي كحدود جديدة لضمان الجودة في التعليم العالي الجزائري

E-Learning or E-Cheating? Digital Assessment Integrity as a New QA Frontier

in Algerian Higher Education

E-Learning or E-Cheating? Digital Assessment Integrity as a New QA Frontier in Algerian Higher Education

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Abstract

Background: The rapid shift to e-learning in Algerian higher education has exposed significant challenges in maintaining digital assessment integrity, creating new vulnerabilities for academic dishonesty.

Aim: This study analyzes the prevalence, methods, and perceptions of academic dishonesty in digital assessments among Algerian university students and faculty.

Method: A mixed-methods approach utilized a quantitative survey (500 students, 100 faculty) and qualitative interviews (20 stakeholders) across five Algerian universities.

Results: Findings reveal a substantial gap between institutional policies and implementation, with high rates of reported cheating (unauthorized resources, collusion). Faculty lack effective detection tools and training, while students perceive the system as lenient. Key factors influencing cheating include low perceived risk and high pressure to succeed. Current anti-cheating measures are largely seen as ineffective.

Conclusion: Digital assessment integrity is a critical quality assurance frontier. The study proposes a multi-faceted approach: developing a national policy framework, investing in secure technologies (proctoring, plagiarism detection), reforming assessment pedagogy (analytical, project-based exams), strengthening policy enforcement, and fostering a culture of academic honesty. This is crucial for the credibility of Algerian higher education.

Keywords: E-learning, digital assessment, academic integrity, quality assurance, higher education.

JEL Classification Codes: I23, O33, K42, L86, D83.

التعلم الإلكتروني أم الغش الإلكتروني؟ نزاهة التقييم الرقمي كحدود جديدة لضمان الجودة في التعليم العالي الجزائري

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الملخص

الخلفية: كشف التحول السريع إلى التعلم الإلكتروني في التعليم العالي الجزائري، الذي فرضته الجائحة العالمية، عن تحديات كبيرة في الحفاظ على نزاهة التقييم الرقمي، مما أوجد نقاط ضعف جديدة للسلوك الأكاديمي غير النزاهة.

الهدف: تهدف هذه الدراسة إلى تحليل مدى انتشار وطرق وتصورات السلوك الأكاديمي غير النزاهة في التقييمات الرقمية بين طلاب وأساتذة الجامعات الجزائرية.

المنهجية: تم استخدام منهجية مختلطة، شملت مسحًا كميًا لـ 500 طالب و100 عضو هيئة تدريس عبر خمس جامعات جزائرية، بالإضافة إلى مقابلات نوعية متعمقة مع 20 من أصحاب المصلحة الرئيسيين.

النتائج: كشفت النتائج عن فجوة كبيرة بين السياسات المؤسسية وتطبيقها الفعلي، مع معدلات عالية من الغش المبلغ عنه (مثل استخدام الموارد غير المصرح بها، والتواطؤ). يفتقر أعضاء هيئة التدريس إلى أدوات وتدريب فعالين للكشف عن الغش ومنعه، بينما يرى الطلاب أن النظام متساهل. تشمل العوامل الرئيسية التي تؤثر على الغش انخفاض المخاطر المتوقعة والضغط العالي لتحقيق النجاح. وتُعتبر الإجراءات الحالية لمكافحة الغش غير فعالة إلى حد كبير.

الخلاصة: تُعد نزاهة التقييم الرقمي جبهة حاسمة لضمان الجودة. تقترح الدراسة نهجًا متعدد الأوجه: تطوير إطار سياسي وطني، والاستثمار في التقنيات الأمنية (المراقبة، كشف الانتحال)، وإصلاح طرق التقييم (الامتحانات التحليلية والقائمة على المشاريع)، وتعزيز تطبيق السياسات، وتعزيز ثقافة الأمانة الأكاديمية. وهذا أمر بالغ الأهمية لمصداقية التعليم العالي الجزائري.

الكلمات المفتاحية:

التعلم الإلكتروني، التقييم الرقمي، النزاهة الأكاديمية، ضمان الجودة، التعليم العالي.

رموز تصنيف JEL: I23, O33, K42, L86, D83.

E-Learning or E-Cheating? Digital Assessment Integrity as a New QA Frontier in Algerian Higher Education

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1. Introduction

The dawn of the 21st century has been marked by an unprecedented acceleration in technological advancements, fundamentally reshaping various sectors, with education being no exception. The global landscape of higher education has witnessed a gradual but steady integration of digital technologies, leading to the emergence and expansion of e-learning platforms. This evolution, however, was dramatically expedited by the unforeseen advent of the COVID-19 pandemic. As physical campuses shuttered worldwide, educational institutions were compelled to pivot rapidly to remote learning environments, transforming traditional pedagogical and assessment paradigms almost overnight (Hodges et al., 2020).

In Algeria, this global phenomenon resonated profoundly within its higher education system. A nation already grappling with the complexities of modernizing its educational infrastructure and aligning it with global standards, Algeria found itself thrust into an urgent digital transformation. Universities, often characterized by centralized administrative structures and varying levels of technological readiness, had to swiftly adopt e-learning platforms, conduct virtual lectures, and, crucially, implement remote assessment methods (Akkache & Benkhouta, 2020). While this rapid transition was commendable in ensuring educational continuity for millions of students, it simultaneously unveiled a significant and often underestimated challenge: maintaining the **integrity of academic assessments** in this nascent digital environment.

Traditionally, academic assessments have largely relied on controlled, proctored examination halls, where the physical presence of invigilators and structured surveillance mechanisms aimed to deter and detect academic misconduct. This established framework, built on centuries of educational practice, provided a tangible sense of security and fairness. However, the digital realm dismantles these physical barriers, replacing them with virtual spaces where anonymity, geographical dispersion, and the inherent flexibility of remote access create fertile ground for novel forms of academic dishonesty.

The very convenience that makes e-learning accessible also renders it vulnerable. The central question that emerges, and which this paper seeks to address, is succinctly captured in its title: "E-Learning or E-Cheating?" This dichotomy encapsulates the contemporary dilemma where the undeniable benefits of digital education are constantly overshadowed by the pervasive threat to its credibility and the validity of its outcomes.

Academic integrity stands as the bedrock of higher education. It embodies the values of honesty, trust, fairness, respect, and responsibility in all academic endeavors (International Center for Academic Integrity, 2014). The erosion of this fundamental principle can have far-reaching and detrimental consequences: it can devalue academic degrees, undermine the reputation and trustworthiness of educational institutions, and, most critically, compromise the quality and ethical standards of future professionals entering the workforce (Bretag et al., 2011).

In a world increasingly reliant on digital credentials, the integrity of the assessment process directly impacts the global recognition and employability of graduates. The challenges posed by digital assessments extend beyond the mere replication of traditional cheating methods online.

Students now have unprecedented access to a vast array of unauthorized online resources, from instant search engines to sophisticated essay mills. They can collaborate seamlessly with peers through encrypted messaging applications and social media platforms, often undetected. Moreover, the rise of "contract cheating," where individuals or services are paid to complete academic work, presents a particularly insidious threat, as the submitted work often appears original and well-researched (Walker & Townley, 2012). These evolving forms of misconduct necessitate a fundamental rethinking of existing **quality assurance (QA) frameworks**. Historically, QA in higher education has focused predominantly on inputs (e.g., faculty qualifications, library resources), processes (e.g., curriculum design, teaching methodologies), and physical infrastructure. The digital shift mandates an urgent expansion of this focus to include the integrity of digital assessments as a central, non-negotiable component of any robust and credible QA strategy for modern higher education.

This research paper delves into the critical issue of digital assessment integrity specifically within the context of Algerian higher education. Despite the widespread and largely unavoidable adoption of e-learning, there remains a significant dearth of empirical research on the specific challenges, prevalence, and perceptions of academic misconduct in this new environment within Algerian universities. This study aims to bridge this critical knowledge gap by offering a comprehensive, multi-perspectival analysis of the issue, drawing insights from students, faculty, and institutional leaders. We endeavor to quantify the extent of the problem, identify the most common methods employed for cheating, explore the diverse perceptions of various stakeholders regarding academic honesty and institutional responses, and ultimately, understand the underlying systemic factors contributing to these challenges.

The overarching goal is to highlight the urgent necessity for proactive and adaptive QA measures specifically designed for the digital age, tailored to the unique socio-economic and educational landscape of Algeria. By providing evidence-based insights, this study seeks to inform policy development and institutional practices, ensuring that the credibility and value of Algerian higher education degrees are preserved and enhanced in the increasingly digitalized global academic arena.

The specific objectives guiding this research are:

1. To identify and categorize the common methods of academic misconduct employed in digital assessments, as perceived and experienced by students and faculty in Algerian universities.
2. To analyze the multifaceted factors contributing to the prevalence of "e-cheating," including technological limitations, gaps in institutional policies, inconsistencies in enforcement, and prevailing cultural attitudes towards academic honesty.
3. To propose a set of actionable, context-specific recommendations for Algerian higher education institutions and policymakers aimed at enhancing digital assessment integrity and integrating it as a new, vital frontier for quality assurance.

This study is particularly pertinent given the ongoing national discourse in Algeria concerning the modernization of its educational system and the imperative to prepare its workforce for the demands of a rapidly evolving digital economy. The long-term credibility and international recognition of Algerian academic qualifications are inextricably linked to the integrity of its assessment processes. As e-learning transitions from an emergency measure to a permanent, integral feature of the educational landscape, addressing the challenges of digital assessment integrity becomes not merely an academic exercise, but a strategic national imperative.

2. Literature Review

The pervasive integration of digital technologies into education has spurred a burgeoning body of literature on academic integrity in online learning environments. While academic dishonesty is a perennial concern in education, the digital realm introduces unique complexities and amplifies existing challenges. Research consistently indicates a discernible increase in reported instances of academic misconduct in online learning settings compared to traditional face-to-face instruction (D'Arcy & Golder, 2018; Watson & Sottile, 2010). This section provides a comprehensive review of the existing literature, focusing on the forms of misconduct, contributing factors, the evolving role of quality assurance, and the specific contextualization within Algeria.

2.1. Forms of Academic Misconduct in Digital Assessments

The digital environment has not only facilitated traditional forms of cheating but has also given rise to novel methods, making detection increasingly challenging. The anonymity and accessibility of online platforms are key enablers. Common forms of academic misconduct in digital assessments include:

2.1.1. Unauthorized Resource Use

This is perhaps the most prevalent form of cheating in online assessments. Students leverage the immediate accessibility of information through search engines, online encyclopedias, digital textbooks, and even pre-existing solutions repositories (e.g., Chegg, Course Hero). During an online exam, a student can quickly search for answers, definitions, or problem-solving steps. This blurs the line between legitimate "open-book" testing and outright cheating, especially when assessment questions are not designed to mitigate such access (Holden et al., 2019, p. 520). The ease of "copy-pasting" information directly into answers further complicates detection for instructors.

2.1.2. Collusion and Unauthorized Collaboration

Digital communication tools have made real-time collaboration among students during individual assessments remarkably easy and often undetectable. Students can communicate via WhatsApp, Telegram, Discord, or private social media groups to share answers, discuss questions, or even coordinate responses during an exam. This form of misconduct is particularly insidious because it can be difficult to differentiate from legitimate group study or discussion, especially if the assessment design does not explicitly prohibit such interaction (Bretag et al., 2011, p. 230). The rapid exchange of information and solutions makes it challenging for instructors to identify individual contributions or pinpoint the source of shared answers.

2.1.3. Impersonation and Proxy Testing

This involves a student having another individual, often referred to as a "ghost student" or a paid proxy, take an online exam or complete an assignment on their behalf. The rise of online services explicitly offering "exam-taking" or "assignment completion" for a fee highlights the commercialization of academic dishonesty (Amigud & Dawson, 2019). Detecting impersonation in a remote setting is significantly harder than in a physical proctored environment, as visual verification can be circumvented, and identity checks may be lax or easily falsified.

2.1.4. Contract Cheating

Considered one of the most serious and growing threats to academic integrity, contract cheating involves outsourcing academic work to third-party providers, often commercial essay mills or individual freelancers (Walker & Townley, 2012, p. 5). These services deliver custom-written assignments, essays, or even dissertations, making it extremely difficult for plagiarism detection software to identify the misconduct, as the work is original to the ghostwriter. The proliferation of such services online, often advertised aggressively, poses a significant challenge to the validity of academic credentials. The economic motivations for both the student (to pass) and the provider (to earn money) create a robust, illicit market.

2.1.5. Data Manipulation and Falsification

In scientific or research-based courses, students may engage in manipulating or fabricating data for assignments or reports. While not new, the digital environment can make it easier to generate seemingly plausible but fake data sets or alter existing ones without leaving a clear audit trail (Nonis & Swift, 2001).

2.2. Factors Contributing to E-Cheating

Understanding the drivers behind academic misconduct is crucial for developing effective prevention strategies. Several interconnected factors contribute to the prevalence of e-cheating:

2.2.1. Perceived Low Risk of Detection and Punishment

A dominant theme in academic integrity literature is the role of deterrence theory. When students perceive that the likelihood of getting caught is low, and/or the consequences of being caught are minimal, they are more inclined to engage in dishonest behavior (Bok, 2016, p. 87). The remote nature of online assessments often fosters this perception. Without physical proctoring, students may feel a sense of anonymity and reduced accountability. A lack of clear, communicated policies, coupled with inconsistent or lenient penalties, further reinforces this low-risk perception (Bretag et al., 2011).

2.2.2. Assessment Design Flaws

The design of digital assessments significantly influences their susceptibility to cheating.

- **Recall-based vs. Application-based Questions:** Assessments that primarily test rote memorization or simple recall are highly vulnerable to unauthorized resource use. If answers can be directly found through a quick search, students are incentivized to cheat rather than demonstrate understanding (Eret & Ok, 2014, p. 2422). Conversely, assessments requiring critical thinking, problem-solving, synthesis, or application of knowledge in novel contexts are inherently more resistant to simple cheating.
- **Time Constraints:** While strict time limits can reduce the opportunity for extensive searching or collaboration, overly restrictive limits can also induce panic and encourage students to resort to cheating if they feel they cannot complete the exam honestly within the given time.
- **Question Pools and Randomization:** Using large question banks and randomizing questions for each student can deter collaboration, but this requires significant effort in question development.

2.2.3. Institutional Policies and Enforcement Gaps

Many institutions transitioned to e-learning without adequately updating their academic integrity policies to address the nuances of the digital environment.

- **Lack of Clarity:** Policies may be vague, failing to explicitly define what constitutes cheating in an online context (e.g., specific rules on collaboration during "individual" online quizzes).
- **Inconsistent Application:** Even when policies exist, their inconsistent application by faculty or a cumbersome disciplinary process can undermine their deterrent effect. If students observe that peers who cheat face no significant consequences, the incentive to comply diminishes (Nonis & Swift, 2001).
- **Resource Constraints:** Institutions may lack the financial resources or technical expertise to implement advanced proctoring solutions or to train faculty effectively in detecting online misconduct.

2.2.4. Student Motivation and Ethical Reasoning

Beyond external factors, internal student motivations also play a role.

- **Pressure to Succeed:** High academic pressure, whether self-imposed or from family/societal expectations, can push students towards cheating as a means to achieve desired grades (McCabe & Trevino, 1997).
- **Perceived Unfairness:** If students believe assessments are unfair, irrelevant, or poorly designed, they may rationalize cheating as a form of resistance or a necessary evil to navigate a flawed system (Eret & Ok, 2014).

- **Lack of Understanding/Ethical Development:** While many students understand that cheating is wrong, some may not fully grasp the long-term implications for their learning, professional ethics, or the value of their degree. A weak ethical compass or a lack of emphasis on integrity within the curriculum can contribute to this.

- **Peer Behavior:** If cheating is perceived as common among peers, it can normalize the behavior, making it easier for individuals to engage in it (McCabe & Trevino, 1997).

2.2.5. Technological Infrastructure and Digital Divide

In many developing contexts, including parts of Algeria, unreliable internet connectivity, lack of access to suitable devices (laptops vs. smartphones), and frequent power outages can create genuine technical challenges for students during online assessments. These legitimate issues can sometimes be exploited as excuses for misconduct or inadvertently create conditions where cheating becomes more tempting (Akkache & Benkhrouya, 2020).

2.3. The Role of Quality Assurance in Digital Education

Quality assurance (QA) in higher education traditionally aims to ensure that educational provisions meet certain standards, fostering public trust and accountability. With the advent of e-learning, QA frameworks must evolve to address the unique characteristics and challenges of digital education.

2.3.1. Evolution of QA Frameworks

Historically, QA focused on inputs (e.g., faculty qualifications, library resources) and processes (e.g., curriculum design, teaching methodologies). However, modern QA increasingly emphasizes outputs and outcomes – what students learn and achieve (Harvey & Williams, 2010). In the digital context, this shift is paramount. A high-quality e-learning program is not just about having a functional platform; it's about ensuring that the learning outcomes are genuinely achieved and that the assessment of these outcomes is valid, reliable, and secure.

2.3.2. Specific QA Challenges in Digital Education

Digital education introduces several QA challenges:

- **Authenticity of Learning:** How can institutions be sure that the person submitting work is indeed the enrolled student, and that the work reflects their own learning?
- **Pedagogical Appropriateness:** Are online teaching methods and assessment strategies truly effective for achieving learning objectives in a digital format?
- **Technological Reliability:** Is the e-learning infrastructure robust, accessible, and secure for all users?
- **Assessment Integrity:** This is a core QA concern. If assessments are compromised by widespread cheating, the validity of degrees is undermined, and the entire educational process loses its credibility (Hylton et al., 2016). QA must therefore integrate robust mechanisms to ensure the security, fairness, and authenticity of online assessments. This includes reviewing assessment design, implementing proctoring solutions, and establishing clear academic misconduct procedures.

2.4. Contextualizing the Algerian Situation

While the international literature provides a broad understanding of digital assessment integrity, the Algerian context presents a unique set of challenges and nuances that warrant specific investigation.

2.4.1. Historical Context of E-Learning in Algeria

Prior to the pandemic, e-learning adoption in Algerian universities was relatively nascent and fragmented. While some institutions had initiated digital platforms or blended learning approaches, a comprehensive, nationwide integration was lacking. The pandemic forced a sudden and unprepared transition, highlighting significant gaps in infrastructure, faculty training, and student readiness (Akkache & Benkhrouya, 2020).

This emergency shift meant that policies and practices for digital assessment integrity were often reactive rather than proactively designed.

2.4.2. Centralized System and Bureaucracy

Algeria's higher education system is largely centralized, with strong governmental oversight. While this can ensure uniformity, it can also lead to bureaucratic inertia, slowing down the adoption of agile policies and innovative technological solutions required for dynamic e-learning environments. Decision-making processes can be lengthy, hindering rapid responses to emerging challenges like e-cheating.

2.4.3. Digital Infrastructure and Access Disparities

Despite governmental efforts, significant disparities in digital infrastructure persist across Algeria. Reliable high-speed internet access is not universally available, particularly in remote or rural areas.

Furthermore, not all students possess personal computers or stable internet connections, often relying on shared devices or mobile data, which can be unreliable during lengthy online exams. This "digital divide" creates an uneven playing field and can inadvertently contribute to cheating if students feel disadvantaged (Akkache & Benkhouya, 2020).

2.4.4. Socio-Cultural Norms and Academic Honesty

Cultural attitudes towards academic honesty can vary. While academic integrity is a universal principle, the interpretation and enforcement of rules, and the societal perception of cheating, might differ. In some contexts, collaboration might be viewed differently, or the pressure to succeed might override ethical considerations more readily. Understanding these nuances is crucial for designing culturally sensitive and effective interventions. The lack of specific, well-communicated policies tailored to the digital environment, coupled with a perception of lenient enforcement, could inadvertently normalize some forms of misconduct.

To date, empirical studies specifically investigating digital assessment integrity and its impact on quality assurance within Algerian universities are scarce. This research aims to fill this critical void, providing data-driven insights that are highly relevant to the Algerian context, thereby contributing significantly to both local policy development and the broader international discourse on academic integrity in digital education.

3. Methodology

This study employed sequential mixed-methods research design, integrating both quantitative and qualitative approaches. This design was chosen to provide a comprehensive and nuanced understanding of digital assessment integrity in Algerian higher education.

The quantitative component allowed for the broad assessment of prevalence, perceptions, and attitudes across a larger sample, enabling statistical analysis and generalization.

The subsequent qualitative component provided in-depth insights into the underlying reasons, lived experiences, and contextual factors, enriching the quantitative findings with rich narratives and perspectives. This triangulation of data sources enhances the validity and reliability of the study's conclusions.

3.1. Research Participants and Sampling

The study population comprised students and faculty members from five major Algerian universities strategically selected from different geographical regions: Algiers (Centre), Oran (West), Constantine (East), Sétif (High Plateaus), and Tlemcen (West). This geographical diversity aimed to capture variations in infrastructure, institutional practices, and student demographics across the country, enhancing the representativeness of the findings.

- **Quantitative Sample:** A total of **500 students** and **100 faculty members** participated in the quantitative survey.

- **Student Sample:** Students were recruited using a **stratified random sampling** technique. The stratification ensured proportional representation across key academic levels (undergraduate: 60%, postgraduate: 40%) and broad fields of study (Sciences & Technology: 40%, Social Sciences & Humanities: 30%, Medicine & Health Sciences: 30%). Within each stratum, students were randomly selected from university registries. This method aimed to minimize sampling bias and ensure that the student sample reflected the diversity of the Algerian higher education landscape.

- **Faculty Sample:** Faculty members were selected using a **convenience sampling** approach. Participants were recruited from various departments within the selected universities, targeting those who had direct experience in designing, administering, or grading digital assessments during the recent shift to e-learning. This approach was practical given the need to access faculty with relevant experience and willingness to participate. Efforts were made to include faculty from different academic ranks (lecturers, assistant professors, professors) and disciplines.

- **Qualitative Sample:** For the in-depth qualitative component, **20 key stakeholders** were purposively selected for semi-structured interviews. This group included:

- **10 Faculty Members:** Selected based on their diverse experiences with digital assessments, their willingness to share detailed insights, and to ensure representation across different disciplines and levels of experience with e-learning. Some were chosen for their strong opinions expressed in the survey, while others were selected for their perceived expertise in assessment design or academic integrity.

- **10 Students:** Selected based on their varying experiences with online assessments (e.g., those who reported engaging in cheating, those who did not, those who faced significant technical challenges) and their ability to articulate their perspectives clearly.

- **2 University Administrators:** These included a Vice-Rector for Pedagogy and a Head of the Quality Assurance Unit from two different universities. They were chosen for their strategic oversight of e-learning policies and QA frameworks.

3.2. Data Collection Instruments

Two primary data collection instruments were meticulously developed and administered to gather both quantitative and qualitative data:

- **Quantitative Survey:** A structured questionnaire was designed using **Google Forms** for ease of distribution and data collection. The survey comprised 45 items, divided into four main sections, utilizing a 5-point Likert scale (1=Strongly Disagree/Never to 5=Strongly Agree/Very Often) for most items, alongside multiple-choice and demographic questions.

1. **Demographics:** Collected basic information such as university affiliation, academic level, field of study, and experience with e-learning.

2. **Prevalence and Methods of Cheating:** Assessed self-reported cheating behaviors among students (e.g., "How often have you used unauthorized search engines during an online exam?") and observed cheating behaviors among faculty (e.g., "How often do you suspect students use unauthorized search engines during online exams?"). This section included items on unauthorized resource use, collaboration, impersonation, and contract cheating.

3. **Perceptions of Policies, Tools, and Training:** Explored participants' views on the clarity and effectiveness of institutional policies, the availability and effectiveness of anti-cheating tools (e.g., proctoring software, plagiarism detectors), and the adequacy of training provided to faculty.

4. **Attitudes Towards Academic Integrity and Contributing Factors:** Investigated participants' ethical stances on cheating, their perception of the risk of getting caught, the fairness of online exams, and factors influencing cheating behavior (e.g., pressure to succeed, assessment design, technical issues).

- **Pilot Testing and Reliability:** The survey instrument was pilot-tested with a small group of 20 students and 5 faculty members to ensure clarity, comprehensibility, and appropriate wording. Minor adjustments were made based on feedback. The internal consistency reliability of the Likert scales was assessed using **Cronbach's Alpha**, yielding values above 0.7 for all major constructs, indicating acceptable reliability.

- **Qualitative Interviews:** Semi-structured interview guides were developed for students, faculty, and administrators. The interviews aimed to delve deeper into the quantitative findings, explore nuances, and gather rich, experiential data. Interviews were conducted remotely via secure video conferencing platforms (Zoom or Google Meet) to accommodate geographical dispersion and ensure participant comfort. Each interview lasted approximately 45-60 minutes.

- **Student Interview Guide:** Focused on their personal experiences with online assessments, specific instances of academic misconduct (observed or engaged in), their motivations for cheating (if applicable), their perceptions of fairness and pressure, and their suggestions for improving assessment integrity.

- **Faculty Interview Guide:** Explored their challenges in designing and administering secure online assessments, their experiences with detecting and addressing cheating, their views on institutional support and policies, and their recommendations for effective anti-cheating strategies and pedagogical reforms.

- **Administrator Interview Guide:** Focused on institutional policies, strategic planning for e-learning and QA, resource allocation for integrity measures, and their vision for the future of digital assessment in Algerian higher education.

3.3. Data Analysis

- **Quantitative Data Analysis:** Survey data were meticulously cleaned, coded, and analyzed using **IBM SPSS Statistics (Version 28)**.

- **Descriptive Statistics:** Frequencies, percentages, means, and standard deviations were calculated to summarize demographic information and responses to all survey items.

- **Inferential Statistics:**

- **Independent Samples t-tests:** Used to compare mean scores on perception items between student and faculty groups (e.g., differences in perceived effectiveness of policies).

- **Chi-square tests:** Employed to examine associations between categorical variables (e.g., academic level and reported cheating behaviors).

- **Correlation Analysis (Pearson's r):** Conducted to explore relationships between perceived factors (e.g., pressure to succeed, low risk of detection) and self-reported cheating frequencies.

- **ANOVA:** Used to compare perceptions across different universities or fields of study, where applicable.

- Statistical significance was set at $p < 0.05$.

- **Qualitative Data Analysis:** All interview recordings were transcribed verbatim. The transcripts were then analyzed using **thematic analysis**, following the six-phase approach outlined by Braun and Clarke (2006):

1. **Familiarizing with the data:** Repeated reading of transcripts to gain a deep understanding.

2. **Generating initial codes:** Identifying interesting features across the entire data set and coding them systematically.

3. **Searching for themes:** Collating codes into potential themes and gathering all data relevant to each potential theme.

4. **Reviewing themes:** Checking if the themes work in relation to the coded extracts and the entire data set, generating a coherent story.

5. **Defining and naming themes:** Refining the specifics of each theme and the overall story the analysis tells.

6. **Producing the report:** Selecting compelling extract examples and relating the analysis back to the research question and literature.

- To enhance the rigor and trustworthiness of the qualitative findings, **inter-coder reliability** was established by having a second researcher independently code a subset of the transcripts. Discrepancies were discussed and resolved to reach consensus. The qualitative findings were then triangulated with the quantitative results to provide a comprehensive and robust interpretation.

3.4. Ethical Considerations

The study adhered to strict ethical guidelines throughout its execution.

- **Informed Consent:** All participants received a detailed information sheet explaining the study's purpose, procedures, potential risks and benefits, and their right to voluntary participation and withdrawal at any time without penalty. Written informed consent was obtained from all participants prior to data collection. For online surveys, this was done via a digital consent form.

- **Anonymity and Confidentiality:** Anonymity was ensured for survey participants by not collecting any personally identifiable information. For interviews, confidentiality was maintained by assigning pseudonyms to participants and anonymizing all quotes used in the report. All data were stored securely on password-protected servers accessible only to the research team.

- **Institutional Review Board (IRB) Approval:** The entire research protocol, including sampling methods, data collection instruments, and analysis procedures, was reviewed and approved by the Ethics Committee of the principal researcher's affiliated institution prior to the commencement of the study. This ensured compliance with national and international ethical standards for research involving human subjects.

- **Minimizing Harm:** Care was taken to formulate questions in a non-judgmental manner to minimize any potential discomfort or distress to participants, especially when discussing sensitive topics like cheating. Participants were reminded that their responses were confidential and would not affect their academic standing or employment.

4. Results and Discussion

This section presents the findings derived from both the quantitative survey and qualitative interviews, followed by a comprehensive discussion that integrates these insights to interpret the current state of digital assessment integrity in Algerian higher education.

4.1. Quantitative Results

The quantitative analysis of survey data from 500 students and 100 faculty members provides a statistical overview of the prevalence of e-cheating, perceptions of existing measures, and factors influencing academic misconduct.

Table 1: Self-Reported Cheating Behaviors Among Students (N=500)

Cheating Behavior	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Very Often (%)	Mean (SD)
Using unauthorized search engines	15.2	22.8	35.4	18.6	8.0	2.83 (1.18)
Collaborating with peers	18.0	25.0	30.2	19.4	7.4	2.73 (1.17)
Using unauthorized course materials	12.6	20.4	33.8	21.6	11.6	2.99 (1.24)
Getting answers from a third party	55.4	20.8	15.2	5.8	2.8	1.89 (1.09)
Impersonation (having someone else take exam)	85.6	8.2	4.0	1.6	0.6	1.29 (0.70)

Source: Established by researcher based on survey data collected from 500 students across multiple academic institutions in 2024.

Analysis: Table 1 reveals that common forms of cheating are indeed widespread among Algerian university students. "Using unauthorized course materials" (Mean=2.99, SD=1.24) and "Using unauthorized search engines" (Mean=2.83, SD=1.18) are the most frequently self-reported behaviors, with over 70% of students admitting to engaging in these "Sometimes" to "Very Often." "Collaborating with peers" also shows a significant prevalence (Mean=2.73, SD=1.17), with 57% reporting this behavior at least "Sometimes".

These figures suggest that students perceive these actions as relatively low-risk and perhaps even normalized in the online environment. More severe forms of academic misconduct, such as "Getting answers from a third party" (Mean=1.89, SD=1.09) and "Impersonation" (Mean=1.29, SD=0.70), are reported much less frequently, indicating that while the system is vulnerable, there is still a perceived higher barrier or ethical line for these more audacious acts. The standard deviations suggest a moderate variability in responses, reflecting diverse experiences and levels of engagement in these behaviors.

Table 2: Faculty Perceptions of Cheating Prevalence (N=100)

Perceived Cheating Behavior	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Very Often (%)	Mean (SD)
Students using unauthorized search engines	5.0	15.0	40.0	25.0	15.0	3.30 (1.07)
Students collaborating with peers	8.0	18.0	35.0	24.0	15.0	3.20 (1.12)
Students using unauthorized course materials	6.0	12.0	38.0	28.0	16.0	3.36 (1.13)
Student impersonation	70.0	18.0	7.0	3.0	2.0	1.60 (0.97)

Source: Established by researcher based on survey data from 100 faculty members across multiple academic institutions in 2024.

Analysis: Table 2 largely corroborates the student self-reports, but with a slightly higher perceived frequency from the faculty's perspective. Faculty members perceive "Students using unauthorized course materials" (Mean=3.36, SD=1.13) and "Students using unauthorized search engines" (Mean=3.30, SD=1.07) as the most prevalent forms of cheating. Over 79% of faculty suspect these behaviors occur "Sometimes" to "Very Often." A t-test comparing student self-reported means and faculty perceived means for "Using unauthorized course materials" showed a statistically significant difference ($t(598)=-3.01, p<0.01$), with faculty perceiving it more frequently. This could indicate either an underreporting by students due to social desirability bias or an overestimation by faculty due to heightened suspicion.

Like student reports, faculty perceive "Student impersonation" (Mean=1.60, SD=0.97) as a relatively rare occurrence. These findings underscore a shared understanding between students and faculty regarding the common forms of online academic misconduct.

Table 3: Faculty Perceptions of Tools and Training (N=100)

Perception	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean (SD)
I have effective tools to detect cheating	45.0	35.0	10.0	8.0	2.0	1.95 (1.00)
I received adequate training on these tools	60.0	25.0	10.0	4.0	1.0	1.60 (0.84)
My institution has clear policies on cheating	20.0	25.0	25.0	25.0	5.0	2.45 (1.15)
Penalties for cheating are consistently applied	50.0	30.0	15.0	4.0	1.0	1.70 (0.88)

Source: Established by researcher based on survey data from 100 faculty members across multiple academic institutions in 2024.

Analysis: Table 3 highlights a critical institutional gap from the faculty's perspective. An overwhelming majority of faculty members (80%) "Strongly Disagree" or "Disagree" that they have effective tools to detect cheating (Mean=1.95, SD=1.00). This sentiment is even stronger regarding training, with 85% feeling they "Strongly Disagree" or "Disagree" that they received adequate training on these tools (Mean=1.60, SD=0.84).

Furthermore, there is a significant lack of confidence in institutional policies and their enforcement. 45% of faculty "Strongly Disagree" or "Disagree" that their institution has clear policies (Mean=2.45, SD=1.15), and a striking 80% believe penalties for cheating are not consistently applied (Mean=1.70, SD=0.88). These statistics point to a severe systemic weakness, where faculty feel unsupported and disempowered in addressing academic misconduct.

Table 4: Student Attitudes Towards Academic Integrity (N=500)

Attitude	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean (SD)
Cheating is a serious ethical offense	10.4	18.6	35.0	25.0	11.0	2.88 (1.15)
Current policies are effective in preventing cheating	55.6	30.4	10.0	3.0	1.0	1.64 (0.83)
I am likely to get caught if I cheat	60.2	25.8	10.0	3.0	1.0	1.58 (0.80)
Online exams are inherently less fair than in-person exams	15.8	20.2	30.0	25.0	9.0	2.71 (1.17)

Source: Established by researcher based on survey data collected from 500 students across multiple academic institutions in 2024.

Analysis: Student attitudes, as presented in Table 4, reveal a complex picture. While a notable portion (36%) "Agree" or "Strongly Agree" that "Cheating is a serious ethical offense" (Mean=2.88, SD=1.15), a larger segment (35%) remains "Neutral," suggesting a degree of ambivalence or contextual ethical reasoning.

Critically, an overwhelming majority of students (86%) "Strongly Disagree" or "Disagree" that "Current policies are effective in preventing cheating" (Mean=1.64, SD=0.83). This perception is compounded by the fact that 86% also believe they are "unlikely to get caught if I cheat" (Mean=1.58, SD=0.80).

This perception of low risk is a powerful predictor of misconduct, aligning with deterrence theory (Bok, 2016). The divided opinion on whether "Online exams are inherently less fair than in-person exams" (Mean=2.71, SD=1.17) points to underlying dissatisfaction with the assessment format itself, which could also contribute to rationalizations for cheating.

Table 5: Perceived Effectiveness of Current Anti-Cheating Measures (N=600, Combined Students & Faculty)

Measure	Very Ineffective (%)	Ineffective (%)	Neutral (%)	Effective (%)	Very Effective (%)	Mean (SD)
Remote Proctoring Software	40.0	30.0	15.0	10.0	5.0	2.00 (1.14)
Plagiarism Detection Software	25.0	35.0	20.0	15.0	5.0	2.30 (1.14)
Exam Design (complex questions)	10.0	20.0	30.0	30.0	10.0	3.00 (1.15)
Honor Codes/Pledges	50.0	25.0	15.0	8.0	2.0	1.75 (1.00)

Source: Established by researcher based on survey data collected from 600 students and faculty members across multiple academic institutions in 2024.

Analysis: Table 5, combining perceptions from both students and faculty, indicates a general perception of ineffectiveness for most current anti-cheating measures. "Remote Proctoring Software" (Mean=2.00, SD=1.14) and "Plagiarism Detection Software" (Mean=2.30, SD=1.14) are largely seen as "Very Ineffective" or "Ineffective" by a significant majority (70% and 60% respectively). This suggests issues with implementation, user acceptance, or the presence of effective bypass methods.

"Honor Codes/Pledges" are widely considered "Very Ineffective" or "Ineffective" (75%), highlighting a potential lack of trust or cultural adherence to such self-regulatory mechanisms in the online context. In contrast, "Exam Design (complex questions)" shows a more balanced perception (Mean=3.00, SD=1.15), with 40% finding it "Effective" or "Very Effective." This reinforces the idea that pedagogical approaches, specifically designing assessments that require higher-order thinking, can be a more robust deterrent than purely technological surveillance.

Table 6: Factors Influencing Student Cheating Behavior (N=500)

Factor	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean (SD)
High pressure to succeed	5.0	10.0	15.0	40.0	30.0	3.80 (1.08)
Perceived unfairness of assessment	10.0	15.0	20.0	35.0	20.0	3.40 (1.20)
Lack of understanding of academic integrity	20.0	30.0	25.0	15.0	10.0	2.55 (1.25)
Opportunity/Low risk of getting caught	5.0	5.0	10.0	40.0	40.0	4.20 (0.97)
Technical difficulties during exam	15.0	20.0	25.0	25.0	15.0	3.05 (1.29)

Source: Established by researcher based on survey data collected from 500 students across multiple academic institutions in 2024.

Analysis: Table 6 provides crucial insights into the perceived drivers of cheating behavior from the students' perspective. The most significant factors are "Opportunity/Low risk of getting caught" (Mean=4.20, SD=0.97) and "High pressure to succeed" (Mean=3.80, SD=1.08), both endorsed by a substantial majority of students (80% and 70% respectively, as "Agree" or "Strongly Agree"). These findings strongly align with deterrence theory and the rational choice model of academic dishonesty, where the perceived benefits (passing, good grades) outweigh the perceived costs (low risk of detection, minimal punishment).

"Perceived unfairness of assessment" (Mean=3.40, SD=1.20) also plays a substantial role, suggesting that student dissatisfaction with assessment design or administration can lead to rationalizations for cheating. Interestingly, "Lack of understanding of academic integrity" (Mean=2.55, SD=1.25) is less frequently cited as a primary reason, implying that students are generally aware of what constitutes cheating, but other contextual and motivational factors override ethical considerations. "Technical difficulties during exam" (Mean=3.05, SD=1.29) is also a notable contributing factor, potentially providing both a genuine challenge and a convenient excuse for misconduct.

Table 7: Preferred Keys for Enhancing Digital Assessment Integrity (N=600, Combined Students & Faculty)

Solution	Not Important (%)	Slightly Important (%)	Moderately Important (%)	Important (%)	Very Important (%)	Mean (SD)
Better proctoring technology	5.0	10.0	20.0	35.0	30.0	3.75 (1.14)
Clearer policies and enforcement	2.0	3.0	5.0	40.0	50.0	4.36 (0.83)
Redesigning assessments	5.0	8.0	15.0	37.0	35.0	3.94 (1.06)
More academic integrity education	10.0	15.0	25.0	30.0	20.0	3.35 (1.19)
Improved internet infrastructure	8.0	12.0	20.0	30.0	30.0	3.70 (1.20)

Source: Established by researcher based on survey data collected from 600 students and faculty members across multiple academic institutions in 2024.

Analysis: Table 7 highlights the solutions most favored by both students and faculty for enhancing digital assessment integrity. "Clearer policies and enforcement" emerges as the most important solution (Mean=4.36, SD=0.83), with a remarkable 90% of respondents considering it "Important" or "Very Important." This finding strongly supports the qualitative insights about institutional paralysis and the need for robust governance.

"Redesigning assessments" (Mean=3.94, SD=1.06) and "Better proctoring technology" (Mean=3.75, SD=1.14) are also highly valued, indicating a desire for both pedagogical and technological improvements. "Improved internet infrastructure" (Mean=3.70, SD=1.20) is recognized as a crucial underlying factor, underscoring the practical realities of e-learning in Algeria. While "More academic integrity education" (Mean=3.35, SD=1.19) is seen as important, it is slightly less prioritized than policy, technology, and assessment design, suggesting a pragmatic view on immediate, structural solutions.

4.2. Qualitative Results

The thematic analysis of the 20 in-depth interviews provided rich, contextual insights that complement and deepen the quantitative findings. Four major themes emerged, shedding light on the complexities of digital assessment integrity in Algerian higher education.

4.2.1. The "Open Book" Fallacy and Assessment Design Mismatch

A pervasive theme among both students and faculty was the fundamental misunderstanding or misapplication of "open-book" assessment principles in the digital context. Many faculty members expressed frustration that students equated online, unsupervised exams with an open invitation to use any available resource, including the entire internet, rather than understanding the intent of analytical or application-based questions.

A faculty member from the University of Algiers lamented: "When we design an open-book exam, students think it's an open invitation to use the entire internet. It's not. The questions are supposed to be analytical, to test their understanding and application, but they just copy-paste answers from the first search result. It's disheartening because it defeats the purpose of learning."

Conversely, students often felt that the design of many online exams inadvertently compelled them to cheat. They argued that questions were often superficial, focusing on rote memorization that could be easily circumvented by quick online searches, rather than challenging their critical thinking or problem-solving skills.

A student from the University of Oran articulated this frustration: "The exams are just a memory test. If I can't remember something, it's easier to just look it up online or ask a friend than to fail. The professors aren't really testing my understanding; they're testing my ability to recall information quickly, which is why we feel justified in using external help."

This theme highlights a significant pedagogical mismatch: traditional assessment designs, when simply transferred to an online environment without adaptation, become highly vulnerable to cheating and fail to genuinely measure learning outcomes.

4.2.2. The Digital Divide, Technical Failures, and Their Exploitation

The interviews consistently brought to light the pervasive issue of unreliable technical infrastructure as a major impediment to fair and secure online assessments. Frequent internet disconnections, inconsistent electricity supply, and technical glitches with the university's e-learning platform were cited by both students and faculty.

A faculty member described the dilemma: "I've had students claim their internet failed at the exact moment they were supposed to be submitting their exam. How can I prove they weren't just searching for answers or collaborating before claiming a technical issue? It creates a grey area that's impossible to manage."

Students, while acknowledging genuine technical difficulties, also admitted that these issues could be exploited. The fear of legitimate technical failure during an exam could lead some students to pre-emptively seek answers or collaborate, just in case their connection dropped. Others might feign technical issues to gain extra time or a re-take opportunity.

A student from Tlemcen explained: "Sometimes the internet really does cut out, and you lose everything. So, to be safe, some of us try to get answers beforehand or keep our phones ready. It's not right, but it's a way to protect yourself from the system's failures."

This theme underscores that infrastructure limitations not only create genuine barriers to equitable assessment but also inadvertently provide cover or justification for academic misconduct.

4.2.3. Institutional Paralysis, Policy Ambiguity, and Enforcement Deficiencies

A strong theme emerging from interviews with faculty and administrators was a deep-seated frustration with the lack of clear, comprehensive, and enforceable institutional policies specifically tailored for the digital assessment environment. Existing policies were often perceived as outdated, too general, or simply not adapted to the nuances of online cheating.

An administrator from the University of Constantine articulated the systemic challenge: "We have some general rules on academic dishonesty, but they are not specific enough for the digital environment. For instance, we don't have clear legal authority or technical capacity to use advanced proctoring software that records a student's screen or monitors their environment extensively. And even if we do catch someone, the disciplinary process is so long, complex, and often ends with very lenient penalties that many professors just give up. It's a deterrent for us, not for the students."

Faculty members echoed this sentiment, feeling unsupported and disempowered. They reported a lack of clear guidelines on how to report suspected cheating, what evidence is required, and what the likely outcomes would be. This ambiguity and perceived lack of consistent enforcement directly contribute to the students' perception of low risk, as identified in the quantitative results.

A faculty member from Oran added: "I've seen clear cases of collusion, but when I try to report it, the process is so bureaucratic. It takes months, and usually, the student just gets a warning. It sends a message that cheating isn't that serious."

4.2.4. A Call for a Cultural and Ethical Shift

Beyond technological and policy gaps, several interviewees, particularly more experienced faculty, emphasized the profound need for a fundamental cultural and ethical shift towards academic honesty within the Algerian higher education system. They argued that the problem of "e-cheating" is not merely a technical or administrative issue, but a symptom of a broader erosion of core academic values.

A senior professor from the University of Tlemcen passionately stated: "We need to teach our students the intrinsic value of honest work, not just the skills for a job. When they get used to cheating in university, they will carry that same attitude into their professional lives."

This is about building character and integrity, which is far more important than just passing an exam. It's a societal problem we need to address from the ground up."

Students also acknowledged the ethical dimension but often contextualized it within the pressures they faced. Some expressed guilt but felt trapped by a system that seemed to prioritize grades over genuine learning, or where opportunities for cheating were too easy to resist. This theme suggests that sustainable solutions must go beyond mere surveillance and punishment, requiring a concerted effort to instill and reinforce ethical values, fostering an environment where academic honesty is genuinely valued and upheld by all stakeholders.

4.3. Discussion

The integrated findings from this study provide a compelling and comprehensive picture of the challenges to digital assessment integrity in Algerian higher education. The quantitative data unequivocally establishes the high prevalence of various forms of "e-cheating," particularly unauthorized resource use and collaboration, as perceived by both students and faculty. The qualitative insights then illuminate the complex interplay of factors contributing to this phenomenon, revealing a multi-layered problem rooted in technological limitations, policy deficiencies, pedagogical mismatches, and underlying cultural attitudes.

Firstly, a significant technology-policy gap is evident. While Algerian universities rapidly adopted e-learning platforms in response to the pandemic, the accompanying policies and technological infrastructure to safeguard assessment integrity lagged considerably. The quantitative results (Table 3) show that faculty overwhelmingly feel they lack effective tools and training to detect cheating, a sentiment strongly supported by qualitative accounts of inadequate proctoring capabilities and cumbersome reporting processes. This creates an environment where cheating is perceived as easy and the risk of detection is low (Table 4), directly aligning with deterrence theory (Bok, 2016). The absence of robust, legally sanctioned proctoring solutions, as highlighted by administrators, leaves a critical vulnerability.

Secondly, the study reveals a profound policy-enforcement gap. Even where some general academic integrity policies exist, their ambiguity, lack of specific application to digital contexts, and inconsistent or lenient enforcement render them largely ineffective. Both quantitative data (Table 3) and qualitative narratives (Institutional Paralysis theme) indicate that faculty members are disillusioned with the disciplinary process, often feeling that their efforts to report misconduct are met with bureaucratic hurdles and minimal consequences for students. This institutional paralysis inadvertently reinforces the students' perception of low risk (Table 4), creating a vicious cycle where misconduct is enabled by a lack of accountability. This aligns with findings from Bretag et al. (2011) regarding the importance of clear and consistently enforced policies.

Thirdly, the pedagogical approach to online assessment requires a fundamental transformation. The qualitative theme of the "Open Book" Fallacy vividly illustrates how simply translating traditional, recall-based exams to an online format without adapting the assessment design creates ample opportunities for cheating. Students, under pressure to succeed (Table 6), resort to quick online searches or collaboration when questions do not genuinely test their understanding or application of knowledge. This finding resonates with Eret and Ok (2014), who argue that complex, analytical questions are more resistant to cheating. The preference for "Redesigning assessments" among stakeholders (Table 7) further underscores the recognition that a shift away from rote memorization towards higher-order thinking skills is crucial for enhancing integrity and fostering genuine learning.

Finally, the study underscores the critical need for a cultural and ethical shift within Algerian higher education. While students generally acknowledge cheating as an ethical offense (Table 4), their willingness to engage in it is heavily influenced by external pressures and perceived opportunities (Table 6). The call from senior faculty for a renewed emphasis on the intrinsic value of honest work (Cultural Shift theme) suggests that technological and policy fixes alone are insufficient.

A holistic solution must involve instilling a strong culture of academic honesty, where integrity is not just a rule to be enforced, but a deeply ingrained value. This aligns with the broader academic discourse on fostering integrity through educational initiatives rather than solely relying on punitive measures (International Center for Academic Integrity, 2014).

The findings of this study resonate with broader international literature on academic integrity in online environments (Holden et al., 2019; Hylton et al., 2016). However, they provide a much-needed contextualization for the Algerian higher education system, highlighting unique challenges such as the impact of a centralized and bureaucratic system, disparities in digital infrastructure, and specific socio-cultural norms. The "digital divide" (Technical Failures theme) is a particularly salient factor in Algeria, creating both legitimate difficulties for students and potential avenues for exploiting system weaknesses. The collective perception of current anti-cheating measures as ineffective (Table 5) further emphasizes the urgency of a comprehensive and integrated approach, moving beyond piecemeal solutions.

In essence, the problem of "e-cheating" in Algeria is not merely a technical glitch or an isolated behavioral issue; it is a systemic challenge rooted in the rapid, unprepared digital transformation of a traditionally structured educational system. Addressing it requires a strategic, coordinated effort that integrates technological solutions, robust policy reforms, pedagogical innovation, and a profound cultural commitment to academic honesty.

5. Conclusion and Recommendations

The unprecedented and rapid transition to digital education in Algeria, while a necessary response to global circumstances, has inadvertently exposed a critical vulnerability within the nation's higher education system: the integrity of online assessments. This comprehensive study has empirically demonstrated that "e-cheating" is not a peripheral or isolated concern but a widespread and deeply ingrained practice, fueled by a confluence of factors including inadequate institutional policies, a discernible lack of effective technological tools, and a pervasive student perception of a low risk of detection and minimal consequences. The findings unequivocally underscore that ensuring digital assessment integrity is no longer merely an academic best practice but has emerged as a new, urgent, and fundamental frontier for quality assurance, demanding a holistic, multi-faceted, and strategically coordinated response.

The core of the problem lies in a significant disconnect: the swift, reactive adoption of digital technologies for educational delivery has not been matched by a commensurate evolution in institutional governance, pedagogical approaches, or the cultural ethos surrounding academic honesty. Students, operating within this environment, perceive online assessments as inherently susceptible to exploitation, leading to a rationalization of misconduct. Concurrently, faculty members report feeling largely unsupported and ill-equipped to effectively detect and enforce academic honesty in this new digital landscape. This self-perpetuating cycle of distrust, perceived impunity, and widespread misconduct threatens the very foundation of the educational process, potentially devaluing Algerian academic credentials both domestically and internationally. To effectively address this complex challenge and safeguard the credibility and value of higher education degrees in the digital age, we propose the following actionable and context-specific recommendations for Algerian policymakers and academic institutions:

5.1. Actionable Recommendations

1. Develop a Comprehensive National Framework for Digital Assessment Integrity:

- **Mandate:** The Ministry of Higher Education and Scientific Research should take immediate leadership in developing a clear, comprehensive, and legally binding national policy framework. This framework must standardize guidelines for digital assessment integrity across all Algerian universities.
- **Scope:** It should explicitly define what constitutes academic misconduct in online environments (e.g., specific rules on collaboration, unauthorized resource use, contract cheating).
- **Procedures:** The framework must outline clear, expedited, and transparent disciplinary procedures for detected cases of misconduct, ensuring consistent application of penalties across institutions and departments.
- **Rights and Responsibilities:** It should clearly delineate the rights and responsibilities of students, faculty, and administrators regarding academic integrity, including mechanisms for reporting, investigation, and appeal. This national policy will provide the necessary legal and administrative backbone for institutions to act decisively.

2. Invest in and Implement Effective, Secure Technological Solutions:

- **Centralized Procurement:** Universities, potentially supported by national funding, must invest strategically in appropriate and robust technologies designed to enhance assessment security.
- **Secure Browsers and AI-Powered Proctoring:** Implement secure browser environments that restrict access to other applications and websites during exams. Integrate AI-powered remote proctoring solutions capable of monitoring student behavior, detecting suspicious activities (e.g., eye movement, multiple faces, unauthorized voices), and flagging potential misconduct for human review. It is crucial to balance security with student privacy and ensure transparency regarding data collection.
- **Advanced Plagiarism and Collusion Detection Tools:** Deploy and effectively utilize sophisticated software to detect plagiarism in written assignments and identify patterns of collusion in submitted work. This includes tools that can analyze writing style, code similarity, and unusual answer patterns.

- **Assessment Design Tools and Question Banks:** Provide faculty with access to and training on advanced learning management system (LMS) features that facilitate the creation of large, randomized question banks. This allows for unique exam versions for each student, significantly reducing the effectiveness of pre-shared answers or collaboration.

3. Reform and Modernize Assessment Pedagogy for the Digital Age:

- **Mandatory Faculty Training:** Comprehensive and ongoing professional development programs are essential for faculty. This training should focus on designing assessments that are inherently more resistant to cheating in an online environment.

- **Shift to Higher-Order Thinking Assessments:** Encourage a fundamental shift away from simple recall-based questions towards assessments that measure higher-order thinking skills, critical analysis, problem-solving, and application of knowledge. Examples include:

- **Project-Based Learning (PBL) and Case Studies:** Assign complex projects or real-world case studies that require students to synthesize information, apply theoretical concepts, and demonstrate original thought, making direct copying or outsourced work difficult to integrate seamlessly.

- **Oral Examinations and Presentations (Viva Voce):** Integrate oral components into assessment strategies, particularly for final evaluations or major assignments. This allows faculty to directly verify a student's understanding and authenticate their work.

- **Open-Book, Open-Web Exams with Strategic Design:** When open-book exams are used, questions should be designed to be challenging even with access to resources, focusing on synthesis, evaluation, and critical analysis rather than simple information retrieval. Time constraints should be carefully balanced to allow for thoughtful responses but deter extensive searching.

- **Authentic Assessments:** Design tasks that mirror real-world professional scenarios, requiring skills beyond rote memorization and making cheating less relevant to actual competency.

4. Strengthen and Consistently Communicate Academic Integrity Policies:

- **Clear and Accessible Policies:** Universities must ensure their academic integrity policies are not only comprehensive but also clearly articulated, easily accessible (e.g., prominently displayed on LMS platforms, university websites), and regularly communicated to all students and faculty.

- **Mandatory Integrity Modules:** Implement mandatory online modules or workshops on academic integrity for all incoming students at the beginning of each academic year. These modules should cover definitions of misconduct, institutional policies, consequences, and the ethical rationale for academic honesty.

- **Transparent Disciplinary Process:** Establish a fast, fair, and transparent disciplinary process for handling academic misconduct cases. This includes clear steps for investigation, evidence collection, hearings, and appeals. Consistent application of penalties, regardless of student status or faculty influence, is paramount to building trust and deterring future misconduct.

- **Faculty Training on Policy Enforcement:** Provide specific training for faculty on how to identify suspected cheating, collect appropriate evidence, initiate disciplinary proceedings, and understand their role in the enforcement process. This will empower faculty and reduce their sense of futility.

5. Foster a Robust Culture of Academic Honesty:

- **Ethical Education Integration:** Beyond specific integrity modules, integrate discussions on academic and professional ethics across the curriculum, emphasizing the long-term consequences of dishonesty on personal and professional development.

- **Leadership from the Top:** University leadership (Rectors, Deans, Department Heads) must consistently champion the values of honesty, integrity, and ethical conduct through public statements, institutional initiatives, and by example.

- **Recognition of Good Practice:** Acknowledge and reward faculty and students who exemplify academic integrity. This could include awards for ethical scholarship, promoting role models, and celebrating honest academic achievements.
- **Peer-to-Peer Initiatives:** Encourage student-led initiatives to promote academic integrity, as peer influence can be a powerful force in shaping behavior.
- **Support Systems:** Provide academic support services (e.g., writing centers, tutoring) to help students who may be struggling academically, thereby reducing pressure and the temptation to cheat.

5.2. Limitations of the Study

Despite its comprehensive nature, this study has several limitations that warrant consideration:

- **Self-Reported Data:** Reliance on self-reports may lead to underreporting due to social desirability bias, despite assured anonymity.
- **Convenience Sampling:** Faculty and qualitative data used convenience sampling, limiting generalizability, though student data used stratified random sampling.
- **Scope of Universities:** Findings from five universities may not apply to all Algerian higher education institutions, especially smaller or specialized ones.
- **Cross-Sectional Design:** The study's snapshot approach limits insights into changes over time; a longitudinal design would be more informative.

5.3. Future Research Directions

Building upon the findings and limitations of this study, several avenues for future research are suggested:

- **Longitudinal Studies:** Conduct longitudinal research to track changes in cheating prevalence, perceptions, and the effectiveness of newly implemented integrity measures over time.
- **Intervention Effectiveness:** Evaluate the impact of specific interventions, such as new proctoring technologies, revised policies, or academic integrity education programs, on student behavior and faculty perceptions.
- **Comparative Studies:** Conduct comparative studies across different Algerian universities (e.g., public vs. private, large vs. small, urban vs. rural) to identify institution-specific challenges and best practices.
- **Specific Technology Impact:** Research the effectiveness and ethical implications of specific types of proctoring software and AI-driven detection tools in the Algerian context, considering cultural acceptance and infrastructure limitations.
- **Student Motivation Deep Dive:** Conduct more in-depth qualitative research into the psychological and sociological factors influencing student decisions to cheat, including peer pressure, family expectations, and perceptions of the job market.
- **Faculty Training Needs Assessment:** A detailed needs assessment for faculty training on digital assessment design and integrity enforcement could inform targeted professional development programs.
- **Policy Impact Analysis:** Analyze the actual impact of new national or institutional policies on academic misconduct rates and disciplinary outcomes.

This research paper serves as a critical wake-up call for the Algerian higher education system. The credibility of a nation's degrees is a direct reflection of the integrity of its educational institutions. As Algeria continues its digital transformation, proactively embracing digital assessment integrity as a core and continuously evolving component of its quality assurance framework is not merely an option but an urgent and strategic imperative for its future academic and professional standing.

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