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ONLINE PROCTORING IN HIGHER EDUCATION: AN EVALUATION OF EFFECTIVENESS AND STUDENT PERCEPTION

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ABSTRACT

The speedy digitalization of education, accelerated by the COVID-19 pandemic, has made online proctoring systems (OPS) an necessary component of higher education assessments. These systems aim to maintain academic integrity by combining tools such as webcams, screen monitoring, and artificial intelligence to retroflex traditional exam supervision. This study investigates the effectiveness of OPS in university exams, with a dual focus on technical reliability as well as student perception. Using both primary and secondary data, a Google Form survey was conducted among 51 students from various academic backgrounds across Mumbai, supported by literature review from global research and reports. Quantitative analysis revealed that while majority of students acknowledged OPS as effective in reducing cheating and ensuring fairness, evidential concerns persisted regarding privacy, stress, technical failures, and trust in AI-based monitoring. Findings showed that OPS often disturbs compactness and increases anxiety, yet many students still perceived it as more flexible and less stressful compared to offline exams. The research details gaps such as the absence of a holistic framework addressing equity, ethics, and also cultural acceptance of OPS. At last, the study concludes that OPS can safeguard exam integrity but must develop to balance security with student well-being. Recommendations include enhancing transparency, addressing privacy concerns, and adopting student-centered designs to build trust and adoption in the digital learning era.

Keywords: *Online Proctoring Systems, Academic Integrity, Student Perception, Online Assessment, Higher Education.*

INTRODUCTION

The rapid shift towards digital education has changed the way assessments are conducted in universities world-wide. Online proctoring systems have emerged as primary tools to maintain academic honesty in remote examinations.1 These systems syndicate technology such as webcams, microphones, screen monitoring, as well as artificial intelligence to supervise students during online tests. The speedy spread of the COVID-19 virus forced most educational institutions to move to online learning during the pandemic. The increased use of online instruction at the college level in recent years and particularly during the worldwide pandemic prompted the need for controls to prevent or decrease cheating during online exams (Hosseini et al., 2021; Nigam et al., 2021). Many educational institutions expanded with providers of online proctoring software to increase the integrity of their programs (Lieberman, 2018; Nigam et al., 2021; Woldeab & Brothen, 2019). Regrettably, academic dishonesty is an important problem in online courses (Dendir & Maxwell, 2020; Oeding, 2022). Without sufficient controls in place, online testing opens the door for students to take exams with other students as well as refer to illegitimate materials during the examination (James, 2016; Oeding, 2022). The effectiveness of online proctoring is influenced by different factors, including technical reliability, fairness, accessibility, privacy concerns, and student approval. While these platforms provide universities with ascendable and cost-effective solutions for large student populations, they also raise debates about stress, equity, as well as trust in the examination procedures. The COVID-19 pandemic further expedited the adoption of these systems, making them a central part of higher education assessment strategies. Contempt of their benefits, challenges prevail, such as internet instability, false flagging of suspicious behaviors, ethical concerns about constant surveillance, and student opposition due to privacy issues. Lee and Fanguy (2022) found online proctoring systems presume students are willing to cheat, which degrades the value of student engagement while creating distrust among students and also teachers.Woldeab and Brothen (2021) addressed exam anxiety as it relates to exam execution. Hence, understanding the real effectiveness of online proctoring systems in guaranteeing exam integrity without vulnerability of student well-being is crucial for their sustainable implementation.

UNDERSTANDING STUDENT PERCEPTION

Good fortune of any technological intervention in higher education largely depends on student perception. Students' views on online proctoring systems reveal whether these platforms assist or hinder their learning and assessment experiences. Students prefer online proctoring systems that are easy to use, reliable, and compatible across devices. However, concerns about fairness and transparency arise when AI incorrectly flags normal behavior, making clear communication essential. Privacy and ethical issues also affect student comfort, as constant monitoring can increase anxiety. Technical reliability, including stable internet and smooth functioning software, is crucial for a seamless experience.

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IMPORTANCE OF ONLINE PROCTORING SYSTEMS IN HIGHER EDUCATION IN

RECENT TIMES: Online proctoring systems play a vital role in maintaining academic integrity in remote learning environments by preventing cheating and ensuring fairness in assessments. They offer greater accessibility and flexibility, allowing students to take exams from any location without geographical constraints. Additionally, these systems are highly scalable, enabling institutions to conduct large-scale examinations efficiently. They also prove to be cost-effective by reducing the need for physical exam centers and associated expenses, while seamlessly supporting hybrid and distance learning models through integration with digital platforms like Learning Management Systems (LMS).

WHY STUDENT PERCEPTION MATTERS IN ONLINE PROCTORING : Students are the primary stakeholders in any assessment system, and their perception of online proctoring significantly influences its effectiveness. If students find the system intrusive or stressful, it may impact their performance and sense of fairness, whereas a comfortable and secure environment can enhance learning outcomes. Their feedback is crucial for improving system usability, resolving technical issues, and ensuring fairness.

Gap in the study

Research has shown that online proctoring can effectively reject cheating and uphold exam integrity. Studies highlight its cognition to reduce malpractice by monitoring student activities in its real time. Nevertheless, findings also emphasizes recurring concerns: technical failures, privacy issues, cultural differences in acceptance, and heightened anxiety during examinations. While much research has been conducted on the technical effectiveness of online proctoring, fewer studies focus on student-centered experiences such as how stress, fairness, and availability influence overall outcomes. Furthermore, limited research compares various online proctoring tools or evaluates long-term acceptance across diverse student populations. This gap highlights the need for more qualitative as well as quantitative research exploring how online proctoring impacts students holistically, beyond simply preventing cheating.

OBJECTIVES OF THE STUDY

- To investigate and analyse student satisfaction and Trustworthy levels with online proctoring systems.
- To identify challenges students face, such as stress, privacy concerns, and technical issues.
- To provide recommendations for improving the design, implementation, and acceptance of online proctoring systems in higher education.

METHODOLOGY

Secondary data is obtained from articles, research papers, government reports, and online publications related to Security in Exam. Primary data is collected through a Google Form survey containing 10 structured questions. The survey was been conducted with a sample of 51 Students. Participants included individuals of different age groups, genders, and academic backgrounds, ensuring diversity and balanced representation. The questionnaire focused on Student's Perception , their interest as well as their views on the same. Respondents were drawn from various colleges across Mumbai, covering a range of academic streams. .

TOOLS USED

- Google Forms → To design and distribute the questionnaire.
- Microsoft Excel → To organize responses, create charts, and conduct basic analysis.

Python (Matplotlib library) → To create professional graphs and visual representations of the collected data. The study followed a quantitative descriptive research approach. Data was analysed using statistical tools such as percentages, bar graphs, and pie charts to interpret awareness levels and practices with students.

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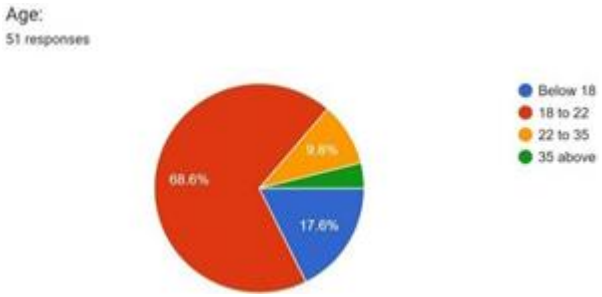
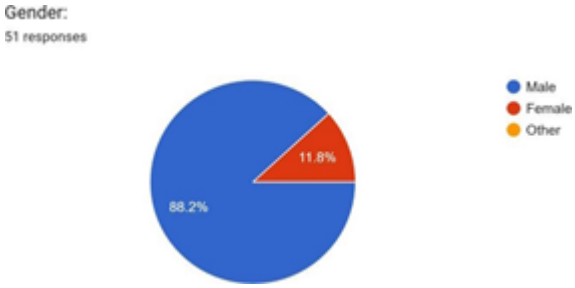
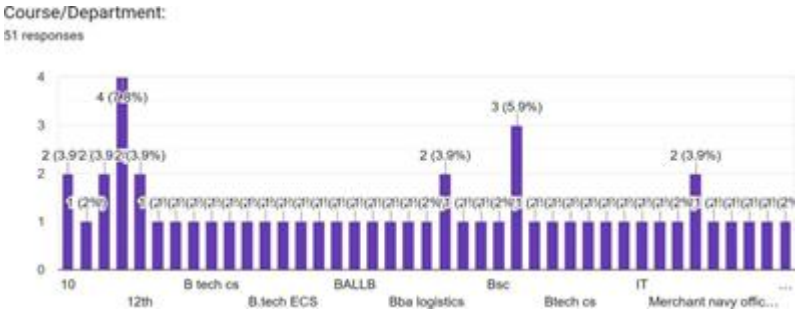
DATA ANALYSIS AND INTERPRETATIONS



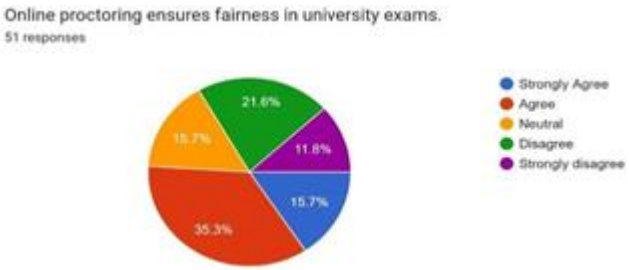
The survey collected 51 responses, with the majority of participants **(68.6%)** falling in the **18– 22 age** group, indicating that most respondents are young adults, likely students. About **17.6%** were below **18 years**, while 9.8% belonged to the **22–35** age range, and **only 3.9%** were above 35.



The pie chart on gender distribution reveals that out of **51** respondents, a large majority are male (**88.2%**), while only **11.8%** are female, and no responses were recorded under the "Other" category.



The chart represents different courses or departments based on 51 responses. The highest representation is from B.Tech CS with 4 respondents (7.8%), followed by B.Sc with 3 respondents (5.9%), and IT and Merchant Navy with 2 respondents each (3.9%) and most of the other courses, including 10th, 12th, BALLB, BBA, and B.Tech (various specializations), recorded only 1 respondent each (about 2%), indicating very minimal participation from them.



The largest proportion, **35.3%**, agreed that online proctoring promotes fairness, while **15.7%** strongly agreed, together forming just over half (**51%**) with a positive outlook. On the other hand, **21.6%** disagreed and **11.8%** strongly disagreed, meaning about one-third (**33.4%**) held negative views. Additionally, **15.7%** remained neutral, showing uncertainty or mixed feelings.

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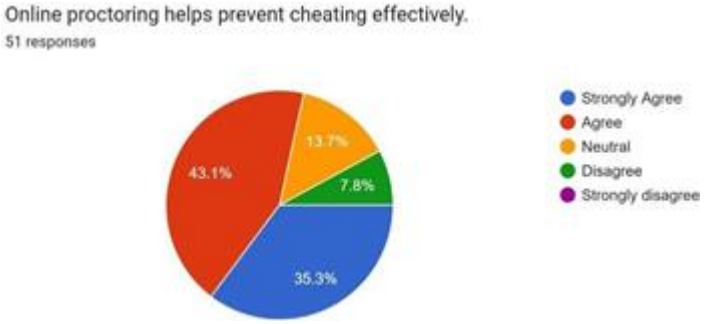
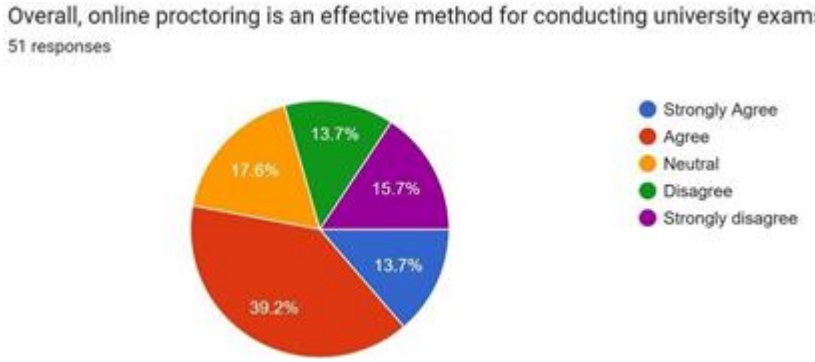


Out of **51** responses, **43.1%** agreed and **35.3%** strongly agreed, meaning nearly four out of five participants (**78.4%**) believe online proctoring is effective in reducing cheating. Meanwhile, **13.7%** remained neutral, while only **7.8%** disagreed, and none strongly disagreed.

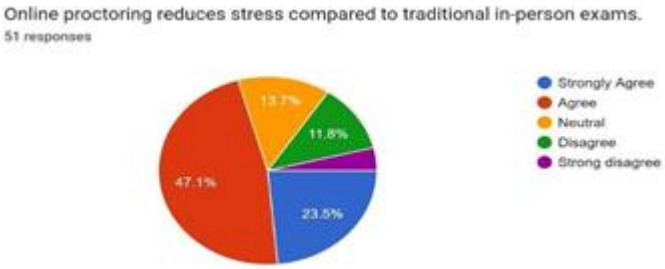


A majority of students (**39.2%**) agreed that online proctoring is effective, while **15.7%** strongly agreed, indicating that over half of the respondents hold a positive view. On the other hand, **13.7%** disagreed and another **15.7%** strongly disagreed, reflecting a considerable portion who doubt its effectiveness. Additionally, **17.6%** remained neutral, suggesting uncertainty or mixed feelings.

Hypothesis of the study

1. **H0:Students perceive online proctoring as less fair and less trustworthy than traditional examination methods.**

HI: Students perceive online proctoring as fair and trustworthy compared to traditional examination methods.



The pie chart on whether online proctoring provides a secure and trustworthy exam environment reveals mixed opinions. Out of **51** respondents, **43.1%** agreed and **15.7%** strongly agreed, making nearly **59%** positive responses. However, skepticism is also visible, with **13.7%** disagreeing and **15.7%** strongly disagreeing—almost **30%** doubting its trustworthiness. Additionally, **11.8%** remained neutral. Overall, while a majority see online proctoring as secure, a considerable share of students question its reliability.

2. **H0: Online proctoring increases stress and anxiety levels among students compared to traditional exams.**

HI: Online proctoring reduces or does not increase stress and anxiety levels among students compared to traditional exams.

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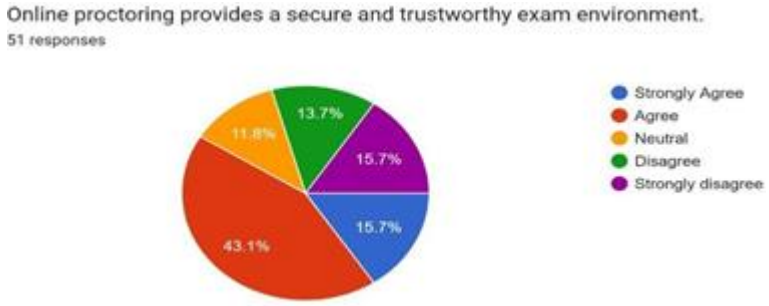

Out of **51** respondents, nearly half (**47.1%**) agreed that it helps reduce stress, while **23.5%** strongly agreed, showing that a majority view online proctoring as less stressful. On the other hand, **13.7%** remained neutral, **11.8%** disagreed, and a small minority strongly disagreed.

FINDINGS, CONCLUSION, RECOMMENDATION

Findings:

The study surveyed 51 respondents, primarily young students. A majority (68.6%) were aged 18–22, with very limited representation from older age groups. The sample was heavily male-dominated (88.2%), showing gender imbalance. Participants came from different academic backgrounds, though each course had relatively small representation, limiting detailed comparisons. In terms of fairness, opinions were mixed. About 51% of respondents believed online proctoring ensures fairness, while 33.4% expressed doubts and 15.7% remained neutral. This suggests moderate acceptance but noticeable skepticism regarding bias as well as consistency. Nevertheless, effectiveness in preventing cheating received strong support. A significant 78.4% agreed that online proctoring helps reduce malpractice, indicating trust in its core purpose.

Regarding security and trust, 59% of students felt that online proctoring creates a secure exam environment, but almost 29.4% disagreed, highlighting a gap in self-confidence. The most critical issue identified was secrecy concerns. An intense 82.4% of respondents felt that online proctoring invades personal privacy due to features like constant camera monitoring and environment scanning.

Students suggested several modifications, including offering offline alternatives, reducing interfering monitoring, improving technical support, providing clear guidelines, conducting mock tests, and ensuring flexibility in exam design. In terms of comfortableness, 62.7% reported feeling comfortable with online proctoring, though a notable portion remained neutral or uncomfortable. A major drawback was its impact on density, with 68.6% stating that constant monitoring disrupts focus and increases performance pressure.

Findings on anxiety and stress were mixed. While 70.6% reported lower overall stress as compared to the traditional exams, nearly half (49%) experienced increased anxiety due to continuous surveillance. This shows that logistical stress is reduced, but psychological discomfort still persists.

Conclusion:

Online proctoring systems play a momentous role in recent advancements in education by enabling secure, scalable, also flexible assessment methods in a rapidly digitalizing learning environment. With the rise of online learning platforms, remote education, and global classrooms, these systems support institutions in conducting exams anytime and anywhere without conciliatory academic integrity. Integration with artificial intelligence, facial recognition, and data analytics has further reinforced monitoring efficiency and detection of unfair practices. In addition, online proctoring reduces administrative costs, supports large-scale examinations, as well as aligns with modern trends such as hybrid learning and digital transformation. Hence, it serves as a decisive tool in advancing accessible, technology-driven, and future-ready education systems.

Recommendations:

Based on the findings and conclusion, the following recommendations are projected to improve the fairness, reliability, and acceptance of online proctoring systems:

- Reduce the Intrusiveness of Surveillance: Excessive surveillance features such as 360-degree room scans and continuous microphone access should be minimized or eliminated. Instead, identity verification as well as limited AI-driven monitoring can be employed to achieve security goals without making students feel constantly watched will help restore trust while still maintaining integrity.
- Offer Flexible Examination Options: Universities or Academics should not impose a one-size-fits-all model. Providing offline or hybrid examination alternatives will ensure inclusivity for students with not so

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strong internet connections, inadequate devices, or discomfort with digital surveillance. Flexibility also enhances fairness by recognizing diverse student requirements and contexts.

- Strengthen Technical Infrastructure and Support: To avoid disruptions, institutions must invest in stronger digital infrastructure and ensure that the online proctoring platforms used are reliable and stable. Real-time technical support teams should be made available during examinations to promptly address problems such as connectivity issues or software failures, thereby minimizing unfair disadvantages.

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