


## Online Exam Proctoring Services: Students' Perceptions of Privacy and Equity

**Derar Serhan**

Arizona State University, USA,  <https://orcid.org/0000-0003-3767-1046>

**Natalie Welcome**

Arizona State University, USA,  <https://orcid.org/0000-0002-7519-9136>

**Abstract:** Recently, institutions have increased their online course offerings as well as their online degrees. With this significant growth in online offerings, assessment integrity becomes a concern. In response to this concern, many institutions have adopted the use of online proctoring services. The aim of using these online proctoring services is to provide a fair testing environment as well as to protect academic integrity of online assessments. In addition, they provide flexibility to students who are able to take the exam any time during the exam opening period. With all their benefits, the use of these systems brings out issues regarding student privacy and equity. This study aims at investigating students' perceptions of privacy and equity while using the online proctoring service, Honorlock. The results of this study indicated that the participants were aware of privacy issues and that the majority were concerned about their privacy while taking online proctored exams.

**Keywords:** Online proctoring, Artificial intelligence, Privacy, Equity, Student perception

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### Introduction

With the growth in online course offerings, and the increasing demand for online proctoring services, it becomes important to investigate student perceptions of the privacy and equity of online testing using online proctoring services.

Many recent studies have focused on investigating student perceptions of online exams (Afacan Adanır, İsmailova, Omuraliev & Muhametjanova, 2020; Böhmer, Feldmann & Ibsen, 2018; Elmehdi & Ibrahem, 2019; Hillier, 2014). Some focused on the benefits of online testing (Al-Mashaqbeh & Al Hamad, 2010; Angus & Watson, 2009; Sarrayrih & Ilyas, 2013), while others focused on the disadvantages and challenges of online exams (Alsadoon, 2017).

Afacan Adanır, İsmailova, Omuraliev & Muhametjanova (2020) investigated student perceptions of online exams at two state universities; one in Turkey, the other in Kyrgyzstan. They compared between student perceptions in the two universities. Data were collected using a survey with open-ended questions. The survey was conducted during the 2018-2019 fall term. The participants were 370 undergraduate first-year students enrolled in online courses. The researchers found that student perceptions differed according to gender, major, and prior online course experience. The results indicated that Turkish female students felt more stressed out than male students about online testing but Kyrgyz female participants felt more disadvantaged in comparison to male participants. In addition, Turkish participants felt that online exams were less stressful, more reliable and more fair than traditional paper-based exams in comparison with Kyrgyz participants.

A few articles addressed privacy and ethical concerns of the use of online proctoring services (Balash et al., 2021; Barrett, 2023; Burgess et al., 2022; Coghlan et al., 2020; Cohney et al., 2020; Henry & Oliver, 2021; Kharbat & Daabes, 2021; Swauger, 2020). Balash et al. (2021) conducted an online survey of 102 students and found out that students were concerned about the nature and amount and of the personal information that they shared with the exam proctoring companies.

Han et al. (2022) conducted a literature review of 115 publications that focused on digital proctoring in higher education. Their results indicated that these publications focused for the most part on the following: systems' development; adoption of the systems; the impact of proctored online exams on student achievement; and the legal, ethical, security, and privacy issues of digital proctoring.

Mutimukwe et al. (2022) analyzed 17 peer-reviewed articles between 2018-2022 that focused on privacy of online proctoring systems (OPS). They relied on the theory of privacy as contextual integrity to conduct the review of these articles. They looked for answers for the following research questions: 1. What are the information types that are collected through the use of OPS in higher education? 2. What are the roles of actors involved in the process of information flow in OPS in higher education? 3. What are the principles to govern the information flows in OPS in higher education? According to their review, only four articles explicitly investigated privacy issues and the remaining 13 articles only implicitly investigated privacy.

Barrett (2023) emphasized that the harms of the use of proctoring software systems surpasses the benefits. Barrett posited that these systems can be harmful to students; they pose a risk to student privacy, and intellectual freedom. They can cause heightened anxiety among students in regards to data collection and use. In addition, Barrett indicated that these systems are especially harmful to students of color and students with disabilities who go through discriminatory flagging. For example, students of color have complained about getting the systems to recognize their faces. Students with disabilities were questioned by proctors over approved accommodations. In addition, low-income students have reported feelings of discomfort and shame at having to show a 360-degree view of their bedrooms. They were concerned about being accused of cheating due to the unavoidable presence of family members in the same space. Barret concluded that any software that violates the privacy of

students and harms marginalized people can create more worrisome problems than the ones it solves. Barrett recommended that colleges and universities abandon remote proctoring software systems.

### **What is Honorlock?**

Honorlock is an online proctoring service which monitors online assessments using a blended online proctoring approach that combines AI software with live test proctors. The goal of this approach is to “protect academic integrity and prevent cheating, reduce test anxiety, and provide more options to assess knowledge” (Honorlock a, 2022). Honorlock’s online proctoring AI monitors the exam session and alerts a live proctor if it detects any potential suspicious behavior. The live proctor can then review the situation in an analysis window before deciding to intervene. This blend of AI and human review provides students with a noninvasive and less intimidating experience without feeling constantly monitored.

The main features of Honorlock include the following: There is no scheduling needed; students can take proctored exams any time; live support is available on demand; it provides intelligent voice detection; it can detect cell phones; it gives instructors easy-to-read, time-stamped reports and recordings; it can find leaked test content and can provide steps to take action; it secures and protects student data (Honorlock b, 2022).

Honorlock’s proctoring platform integrates directly with the LMS as follows:

- After the instructors create their exams, they select remote proctoring tools and set the setting according to their preferences.
- Learners can log into the LMS without extra logins, they verify their ID and launch the proctored exam.
- The proctoring system monitors the exam and sends an alert to a proctor if it detects any problematic behavior.
- The proctor is able to respond to the alert by opening an analysis window and examining the situation. The proctor can then determine whether to intervene or not.
- Once the students complete their exams, instructors are able to access reports and timestamped recordings from within the LMS.

### *Addressing Equity and Inclusion in Honorlock*

In addition to academic integrity of exams, institutions are also invested in providing fair and equitable testing. Honorlock allows students to take the exam at their convenience. Instructors are able to ask for special proctoring accommodations according to student needs. These accommodations include providing a) extended

exam time limits and due dates, b) bathroom breaks as needed and 3) assistive technology and devices (Honorlock c, 2022).

## Research Questions

This study aims at answering the following question: What are student perceptions of privacy and equity while using online proctoring services?

## Method

The participants in this study were 22 undergraduate students enrolled in a math class at Arizona State University in the US in fall 2022. The participants were enrolled in a Business Mathematics online class that used Honorlock as an online proctoring system. The students were informed that the study was anonymous and voluntary. They were also informed that no private data will be collected and that confidentiality is granted. The participants filled an online survey on Canvas. The survey consisted of a 5-point Likert-type questionnaire that included 11 items as well as three open-ended questions. The survey was developed based on the literature review and the aim of the study. The scale of the 5-point Likert-type survey responses ranged from Strongly Disagree (1) to Strongly Agree (5). The first seven items of the survey focused on student perceptions of privacy of the online proctoring system, while the other four focused on student perceptions of equity. In addition, the survey included the following three free response items: Please explain your views on the privacy of online exam proctoring; please describe your overall experience being monitored during your online proctored exam; and if you requested exam accommodations, please mention the accommodations that were provided for you and the accommodations that were not provided for you despite your request. You may indicate N/A if you prefer not to answer.

## Results and Discussion

The responses collected from the 5-point Likert-type survey items were grouped into two categories: student perceptions of the privacy of the online proctoring system and student perceptions of equity. In addition, students' responses to the three open-ended questions were tabulated. In the following discussion, the designation of "agree" includes all "agree" and "strongly agree" responses while the "disagree" designation includes all "disagree" and "strongly disagree" survey responses.

In regards to student perceptions of the privacy of the online proctoring system, 54% agreed that they were concerned about sharing information with the online exam proctoring companies while 9% disagreed. In addition, 72% indicated that online exam proctoring is an invasion of their privacy, while 10% disagreed. Moreover, 54% of the participants indicated that they were concerned about the amount of information that the online proctoring services collected during the exam, while 18% were not concerned about that. This indicates

that the participants were aware of privacy issues while taking their proctored exams, and that the majority were concerned about their privacy (see Table 1).

Table 1. Students' perceptions of privacy the online proctoring system

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am concerned about sharing information with online exam proctoring companies.	27	27	36	9	0
I think online exam proctoring is an invasion of my privacy.	36	36	27	5	5
I think online exam proctoring is an appropriate option that maintains academic integrity and respects my privacy.	0	32	45	14	9
I am concerned about the amount of information that online proctoring services collect during the exam.	27	27	27	18	0
I am concerned about installing online exam proctoring software on my computer.	18	41	27	14	0
I am aware of the methods used by online exam proctoring services to monitor exam takers.	18	32	23	23	5
I am comfortable with the methods used to proctor the online exam.	0	14	50	23	14

Regarding student perceptions of equity while using online proctoring systems, only 23% agreed that the online proctoring service made the necessary exam accommodations based on their needs, while 36% disagreed. On the other hand, 54% agreed that they had access to all resources that were needed to complete the exam, while 10% disagreed. All the participants either agreed (36%) that they were provided with the exam accommodations that they had requested or were neutral (64%). None of them indicated not receiving the requested accommodations (see Table 2). This indicates that the students were provided with the requested necessary accommodations while taking the exam using the online proctoring system Honorlock.

Table 2. Student perceptions of equity

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The online proctoring service made the necessary exam accommodations based on my needs.	9	14	41	18	18
I had access to all resources that were needed to	18	36	36	5	5

complete the exam.

I was provided with the exam accommodations that I requested.	9	27	64	0	0
I was not provided with the exam accommodations that I requested.	0	0	59	32	9

Student views of the online proctoring systems can be categorized into two main categories: concerned and not concerned. Participants who were concerned about the use of online proctoring systems indicated that it was an invasion of their privacy. They felt unconfident about being watched while taking the exam and some felt anxious. The concerns they shared included the following: concern about sharing a photo of their license, concern about showing their rooms and homes, and concern about future stalking based on the information that was gathered for online testing (see Table 3) for a sample of student comments.

Table 3. Students' views of the online proctoring systems

Concerned	Not-concerned
I feel some invasion of my privacy by having to show my room.	Not my biggest concern.
My only concerns are sharing a photo of my license, hopefully nobody else is able to access the information I have provided.	It was reasonable and I didn't feel invaded
I believe that it is necessary, however there is flaws with the program. I am often anxious to look away for a second or adjust myself in the chair because i may be accused of cheating etc. Also, i believe the room scan is a little invasive because people can sometimes leave things out that are personal or inappropriate.	Online exam proctoring is a way to keep kids from cheating. Although, I may think it collects information, especially honorlock, I think it is a good way to keep academic integrity.
I do not like that proctoring services can view my room/personal space and logging all websites I visit.	I understand the need for it and have confidence that those who lack integrity are receiving appropriate and fair repercussions.
We do not know who is proctoring our exams. But, some random person will get to watch us in our homes to be able to gather information about us. This could lead to a home invasion or someone stalking us with the information gathered. You cannot guarantee that there will not be someone who is willing to exploit this system to cause harm to others. Total invasion of privacy and it opens the door for	

more harm than good.

I believe online exam proctoring is an invasion of privacy as it requires all individuals to scan their environment and ID. The online proctoring has webcam and microphone access and it is very unclear as to what other controls they have such as access to web history, files, and screen recording. I think in the future if using online proctoring it is VERY clear and transparent as to what the program can access and view.

I feel like it is just a little too much. It gives me anxiety knowing that im being watched

Students' responses in regards to their perceptions of being monitored during the proctored exam were divided into three categories: positive (ok, fine...etc), negative (hate it, complex...etc) and neutral; (see Table 4) for a sample of student comments.

Table 4. Students' overall experience with online proctored exams

Positive	Negative	Neutral
I thought it was just fine, got my work done, submitted it, and deleted it off my computer right away.	gave me more anxiety and stress worrying more about the proctoring than my exam	Overall, I haven't had much technical issue with online proctoring, but it has been a bit uncomfortable. So overall it's been a neutral experience.
I didn't enjoy it but It was fine.	It is very complex, there is a lot of things that are needed to be done for the proctored exam. it could be very overwhelming	I'm feel ok with it. Not positive or negative
I feel as if I am in a classroom environment. The experience was very positive. I did not feel rushed or pressured. I felt very well prepared for my exam and would definitely recommend the service to others.	I have found myself looking at myself in the camera, which takes away my time for the exam.	Very standard, I just took the test.
My overall experience being monitored during my online proctored exam was very positive.	I find it a little creepy that I can see what the software is recording and gives a little window of the other viewpoint.	Since my main focus is on the problem, I don't care about the camera

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	I would much rather you don't record my face at all but I believe that this personal opinion of mine will not be accepted.
Overall experience has been fair except for the amounts of information they collect.	I hate it. Most of the time I get notified of some violation that is under review because I took a drink of water, or sneezed. Proctoring exams should not feel like an interrogation. I have had someone walk into the room not knowing that I am taking a test and my whole test was under review because of this. It is a completely awful system, and one that I do not feel comfortable downloading onto my personal computer. How do I know that it isn't collecting data from me? I do not trust anything about it.
Not bad at all.	
I have not had any issues so far.	

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In regards to the third open ended question: "If you requested exam accommodations, please mention the accommodations that were provided for you and the accommodations that were not provided for you despite your request. You may indicate N/A if you prefer not to answer". Only 9% of the participants indicated that they had not requested any accommodations; 14% of the participants did not provide any answer and 77% preferred not to provide any information by answering N/A. None of the participants had indicated requesting any accommodations.

## Conclusion

The Covid-19 pandemic has left a strong impact on teaching and learning at many institutions all over the world. As a result, many institutions increased their online course offerings as well as their online degrees. With this shift to remote learning, the need for online proctoring services increased (Flaherty, 2020). The purpose of this study was to investigate student perceptions of privacy and equity while using online proctoring services.



The findings of this study indicated that students were not fully satisfied with their online proctoring experience. Many participants indicated that they were concerned about their privacy. Participants who were concerned about the use of online proctoring systems indicated that it was an invasion of their privacy, that they felt unconfident while being monitored while taking the exam and some reported feeling anxious. Some expressed their concern about sharing a photo of their license, concern about showing their room and home and concern about someone stalking them based on the information that was gathered. On the other hand, students indicated that they were provided with the requested necessary accommodations while taking the exam using the online proctoring system Honorlock.

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