EXPLORING ONLINE LEARNERS' PERSPECTIVES IN RELATION TO PROCTORED EXAMS

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ABSTRACT

This study targets to investigate the opinions and perceptions of the online and distance learners regarding to online proctored exams. A qualitative case study was employed to explore views of the participants related to the online proctored exam practice. The data were collected from 69 undergraduate distance learners via an online form. A content analysis approach were employed to analyze the data. As a result of the content analysis three themes namely, satisfaction, dissatisfaction, and exam administration emerged. The findings indicated that while online and distance learners were satisfied with the online proctored exams as they are secure, convenient, accessible, and reliable they also dissatisfied because of the technical problems and surveillance. Furthermore, the results also revealed that the administration of the online proctored exams needs to be reviewed. It is hoped that the findings will pave the way for future applications and research on the design and implementation of online proctored exams. Implications and future research suggestions are discussed.

Keywords: Online proctored exam, online and distance learning, distance education, proctoring online assessment.

INTRODUCTION

Many institutions and universities around the world were forced to close their doors and switch to online learning as a result of the Covid-19 pandemic, which significantly altered how we live and learn. The sudden shift to distance learning has become more popular as a result of the pandemic, making it clear that both students and teachers must use it (Doz et al., 2022). In online distance learning programs, online proctored exams for evaluating students' skills and knowledge are becoming more popular (Andreou et al., 2021; Lee & Fanguy, 2022). These tests are frequently carried out online and monitored by a proctor, either in person or remotely, to maintain the integrity of the assessment process. In this paper, we aim to investigate the opinions and perceptions of the online and distance learners regarding to online proctored exams

Proctored exams have become an essential component of education today, providing students with flexibility and accessibility while also maintaining the integrity of the assessment process (Kharbat & Daabes, 2021).

These tests can be taken by learners anywhere with an internet connection, including their own home. Learners who might have trouble getting to a physical testing location due to distance, disability, or other personal reasons can benefit from adaptability best. Furthermore, by utilizing cutting-edge monitoring techniques such as camera, microphone and screen recording, online proctoring can aid in the prevention of cheating (Han et al., 2021). Considering the fact that information and communication technologies are supported in the processes of communication, interaction and evaluation of learner success in addition to transferring the course contents, the design and implementation dimension of online supervised exam applications gains importance (Daniel, 1996). Overall, online proctored examinations can increase access to education while also ensuring the integrity of assessment processes in open and distance learning (Gudino et.al, 2021).

Proctored assessments strive to maintain the integrity and security of the testing procedure by guaranteeing the accuracy and dependability of the test outcomes (Chen et al., 2021). These online assessments can be administered in modes, such as sessions, automated processes, or recorded sessions depending on the level of supervision and intervention needed. Exams are administered to learners in online distance programs through proctored exams, typically referred to as remote proctoring. Instead of taking these tests in a physical location, learners can take them from home under the supervision of a proctor, who may be present or not, to ensure the credibility of the online assessment process. The proctor can monitor the student during or after the exam and make sure they are adhering to the rules and regulations by using a range of equipment, including cameras, microphones, and proctoring software. They can also be integrated with types of exams like multiple choice questions, essay writing tasks or performance-based assessments. Proctored exams offer advantages compared to conventional testing methods, including convenience, flexibility, scalability, and accessibility (Reedy et al., 2021). Nevertheless, there are drawbacks to this strategy as well, including technological difficulties, security issues, a lack of interpersonal connection, and the possibility of cheating (Balderas & Hernandez, 2020; Zhao et al., 2022). Moreover, these types of assessments also come with challenges and limitations such as difficulties, concerns regarding privacy issues and ethics dilemmas as well as potential cultural biases (Coghlan et al., 2021). These advantages and disadvantages, as well as the necessary hardware and software and industry-recognized best practices for exam integrity, must all be carefully taken into account when designing and executing online proctored examinations for online learners (Lee & Fanguy, 2022). Consequently, it is crucial to design and implement proctored exams while continuously evaluating and enhancing them to ensure their effectiveness and fairness. Taking all these into account, this study was conducted to explore perspectives of online learners in relation to the proctored exam practice.

LITERATURE

Assessments conducted through internet-based platforms, such as learning management systems (LMSs), web browsers, or dedicated software applications, are generally known as online examinations. These evaluations can be categorized according to several criteria, such as their format, content, goals, and the particular circumstances in which they are administered. Three commonly employed modes of proctoring are live, recorded, and automated methods (Hussein et al., 2020). Furthermore, Aurelia et al. (2023) presents an alternative form of proctoring known as image proctoring.

Live proctoring online assessments done in real time are monitored and authenticated by a proctor. These assessments utilize techniques such as verifying identity, conducting environment inspections, enforcing rules, and intervening to monitor and analyze the behavior of those taking the exam and the surrounding environment (Coghlan et.al., 2021). The main objective of this endeavor is to guarantee the integrity as well as the security of the testing process. The availability of online examinations proctored by human proctors whose interactive proctoring makes them well-suited for exam scenarios that include high stakes or intricate circumstances. Moreover, they facilitate the settlement of any academic challenges that may develop throughout the examination.

Recorded proctoring online assessments are a type of online testing where the test-takers' screen, camera, and audio are recorded during the exam session. These recordings are then reviewed at a later time by either a human or automated proctor. The purpose of this strategy is to ensure the integrity and authenticity

of online assessments by recognizing and foiling any instances of cheating or impersonation by the individuals taking the exam. In comparison to alternative approaches, the utilization of recorded proctoring for examinations presents both benefits and drawbacks. The utilization of recorded proctoring has several benefits, such as reduced expenses, enhanced scalability, more adaptability, and a less disruptive encounter. Implementing this approach can effectively decrease expenses related to the recruitment and instruction of proctors, while simultaneously accommodating a substantial number of test takers at different times and locations (Han et al., 2023; Aurelia et al., 2023; Nigam et al., 2021). Nevertheless, it is not without its drawbacks. The efficacy of recorded proctoring in identifying occurrences of cheating or impersonation may be compromised, particularly in cases when test takers use numerous tools or devices. Furthermore, it has the potential to result in delays and increased weakness to privacy intrusions. The process of post-exam analysis and verification of records has the potential to extend the duration needed for the communication of findings and interpretations.

In automated proctoring online assessments, online proctoring software verifies students based on facial recognition, student´s movements, the positions of students' devices like mobile phones, tablets, and additional gadgets, the findings of other people in the room, and other distractions such as the voices of other people. The software then generates a full report, where potential infringements are portrayed as flags or other signs on the exam duration timeline. Software algorithms, machine learning, computer vision, and other forms of artificial intelligence (AI) are used to monitor and verify the validity of online exams known as automated proctored assessments. Motwani et al. (2021) lists a number of methods and tools used by automated proctored online assessments to keep tabs on test takers, record their screen activity, analyze their keystrokes, and identify any questionable or inappropriate behavior. Because it may provide consistent and objective monitoring while reducing the time and money needed for human intervention, automated monitoring of online tests can be helpful for large-scale or high-stakes testing. The use of AI technology, which relies on camera and microphone data to monitor and assess test takers, has led to an increase in online assessments with automated proctoring. In order to explore test takers for any behavioral patterns, these systems analyze various markers such as eye tracking, speech patterns, ambient noises, and objects in the area (Potluri et al., 2023). While automated proctoring with camera support can be critical in maintaining academic integrity, it is essential to concede the potential privacy concerns (Coghlan et al., 2021). The access to and recording of sensitive data during online exams raise legal and ethical considerations that institutions need to address to ensure compliance and protect individuals' privacy rights (Coghlan et al., 2021).

Several studies have investigated the structure of automated proctoring systems and their impact on online assessments. Researchers have conducted research to assess the level of accuracy of AI-driven proctoring strategies (Tweissi et al., 2022). Furthermore, a study conducted by Lee (2020) shed light on the influence of proctoring settings on student performance, revealing that the specific kind of proctoring does not have a substantial effect on academic attainment. The majority of online exam proctoring is carried out by AI systems that utilize the webcam and microphone of the test takers as data sources in order to verify and administer the examinations. These assessments use a variety of techniques and instruments, such as voice pattern analysis, eye movement monitoring, and object or background noise detection. The aim is to monitor and evaluate the behavior and environment of examination participants while notifying any unethical actions. Online assessments that are autonomously proctored and include camera support have the potential to improve the efficacy and dependability of recognizing deception. This is due to the ability of such assessments to capture voice data, facial expressions, and eye movements of test takers, which could potentially indicate collusion or cheating. Nevertheless, it is critical to acknowledge that these forms of evaluations may encroach upon the privacy of individuals due to their reliance on information access, and the recording of such data could potentially give rise to legal ramifications. In conclusion, automated proctored online exams enhance exam security and mitigates cheating through cutting-edge AI technologies; however, educational institutions must consider the balance between maintaining academic integrity and protecting privacy. Additional investigation and continuous review are required to effectively tackle possible ethical and legal concerns in online assessment settings and optimize the use of automated proctoring methods.

Image proctoring online assessments usually involve image proctoring to monitor applicants' behaviors and authenticate their identities. This approach involves utilizing the webcams of the applicants to take images, which are subsequently transmitted to either the test administrator or an artificial intelligence system. These

images undergo meticulous analysis to detect any signs of cheating, such as the presence or absence of faces, unidentifiable faces, or suspicious objects (Aurelia et al., 2023). Image proctoring can be integrated with monitoring methods such as tracking copy/paste actions, monitoring tabs, or employing picture identification (Gopalakrishnan, Dhiyaneshwaran, & Yugesh, 2022). The primary objective of picture proctoring is to ensure the integrity and dependability of assessments by deterring misconduct and imitation.

While numerous online proctoring solutions are accessible, providing the aforementioned types of online exam proctoring services, institutions currently in the process of selecting and deploying such systems must take various factors into account. These factors encompass but are not confined to, the ease and adaptability of integration with the institution's existing learning management system, the technical reliability and resilience of the proctoring system, even under adverse conditions like low internet bandwidth, limited hardware capabilities, or electrical outages, the extent of effective task automation, and the system's reporting capabilities (Hussein, et.al, 2020).

Online proctored assessments have long been recognized as one of the most popular online proctoring systems, combining the benefits of a traditional examination environment with the option to have proctor monitor test takers remotely. The use of online proctoring in education is not a new field of study and even before the Covid-19 pandemic and numerous educational institutions were utilizing proctoring frameworks for online courses (Nigam et al, 2021; Raman, Vachharajani, & Nedungadi, 2021). Online proctored assessments have become increasingly prominent as a method for ensuring the authenticity of online examinations, particularly within the realm of online remote education. To enhance the scholarly authenticity of online assessments, higher education institutions (HEIs) have recently adopted digital proctoring systems (Han et al., 2023).

Despite the increasing popularity of online education in the 21st century, mostly driven by the huge impact of the COVID-19 pandemic, ensuring the quality and reliability of online assessments has been a challenge for educators and institutions. An emerging solution to address this problem is the use of AI-based proctoring systems (AIPS). These software tools use artificial intelligence algorithms to watch and evaluate the behavior and performance of people during test-taking. Automated Intelligent Proctoring Systems (AIPS) are regarded as a technological innovation with the capacity to enhance the dependability and efficiency of tests. Despite their potential benefits, it is essential to acknowledge and address the concerns and limitations associated with these systems. In their study, Nigam et al. (2021) performed a thorough examination of AIPS, assessing both their present state and their prospects for future advancement. In their study, Nigam et al. (2021) analyzed AI-based proctoring systems (AIPS) to investigate their development and potential future opportunities. This study provides a complete analysis of several domains within the field of AIPS, including their architectural design, development requirements, prevailing trends, challenges, and potential future opportunities. The aforementioned reasons include security, privacy concerns, ethical ramifications, faith in artificial intelligence (AI) technology, and the accompanying expenses. The authors' conclusion emphasizes the need of achieving an acceptable balance while using AIPS, by considering the concerns expressed and prioritizing the reasons and suitable implementation.

Online proctoring is also a technique used to remotely monitor and verify the identification of students during tests. The process involves the use of advanced technology such as webcams, biometrics, and artificial intelligence. Nevertheless, online proctoring presents difficulties and ethical considerations including privacy, security, accessibility, and fairness. The practice of online proctoring, which is becoming more prevalent in educational settings, entails the use of technological tools like as cameras, biometrics, and artificial intelligence to oversee and verify the identities of students during examinations (Arnò et al., 2021). The objective of this method, referred to as remote proctoring, is to proactively identify and prevent any instances of academic dishonesty during examinations (Arnò et al., 2021). Online proctoring plays a vital role in upholding academic integrity, particularly in the realm of remote learning amidst circumstances such as the COVID-19 pandemic (Gribbins, 2023). However, it presents certain difficulties and ethical concerns pertaining to privacy, security, accessibility, and fairness (Arnò et al., 2021).

Numerous studies have been conducted to examine various facets of online proctoring. Previous studies have shown the efficacy of online proctoring technologies, such as artificial intelligence (AI) systems and human proctors, in overseeing students during online examinations with the aim of mitigating academic

dishonesty and upholding academic integrity (Coghlan et al., 2021; Tweissi et al., 2022). Nevertheless, there have been expressed apprehensions over the possible presence of biases in proctoring software, infringement upon privacy, and the promotion of a climate of mistrust among those taking tests (Alessio & Messinger, 2021). In addition, Meulmeester et al. (2021) have shown a correlation between the use of online proctoring technologies and heightened levels of concern and anxiety among students.

Regarding security and privacy issues for students, a similar study by Coghlan et al. (2021) was conducted by Balash et al. (2021) and investigated what students think about online proctoring services used to prevent cheating in online exams. User reviews and an online survey were utilized to collect data from students with online proctoring experience. The survey results reveal that students have concerns about the security and privacy of data collected by proctoring organizations. However, they are also aware of the imperative to maintain exam integrity in the ongoing pandemic.

PURPOSE OF THE STUDY

This research is primarily concerned with the opinions and perceptions of the online and distance learners regarding to online proctored exams, as well as providing suggestions on how to build and deploy effective online proctored exams for online and distance learners. With this purpose, the study targets to contribute to the existing literature on proctored exams and provide valuable recommendations for enhancing the precision, security, and user-friendliness of online assessments in online and distance learning environments.

Within this context, this research aims at an in-depth understanding of the experiences and perspectives of online learners regarding the proctored exams application. With this aim in mind, the study will address the following research questions:

- What are the views of online distance learners' towards online proctored exam practice?
- To what extent are online proctored exams aligned with learner expectations?

METHOD

In this study, researchers aimed to reveal learners' perspectives and examine their experiences regarding proctored exams in an open and distance learning environment. In accordance with this purpose, a qualitative case study approach was conducted. The case study approach is descriptive in nature to capture online and distance learners' views and experiences on online proctored exams and illustrate the issue. The case study was used because it enabled the creation of an in-depth understanding of the subject (Yin, 2018; Creswell & Guetterman, 2021).

Participants

This study was conducted with learners enrolled in Anadolu University open education system abroad programs. There are students from 31 countries enrolled in Anadolu University open education system abroad programs. The university has started to implement online proctored exams in order to conduct exams safely, especially in countries with a small number of students in the post-Covid-19 period. During the 2022-2023 academic year spring semester, 372 students took online proctored exam at the university. The data collection tool was sent all students took part in proctored exam. Participants in this study were 69 overseas students who participated in online proctored exams held in the 2022-2023 academic year spring semester and responded voluntarily.

Context

The context of the research is online proctored exams attended by students enrolled in Anadolu University open education system abroad programs. Students from 31 different countries are enrolled in these programs. Approximately five thousand students enroll in these programs every semester. With the closure during the Covid-19 period, exams started to be held under supervision. Proctored exams are conducted using the

QulakExam software. QulakExam features a user interface that makes it easy to conduct tests benefiting both test administrators and test takers (Figure 1). By utilizing intelligence technology QulakExam allows for the creation and customization of test questions while providing detailed analysis reports, for comprehensive feedback. Additionally, the platform includes security measures to prevent access and ensure exam integrity. QulakExam prioritizes information security by implementing encryption protocols to safeguard data during assessments. Furthermore, online proctored exams are carried out with an artificial intelligence-supported exam application and live human supervision is also provided.

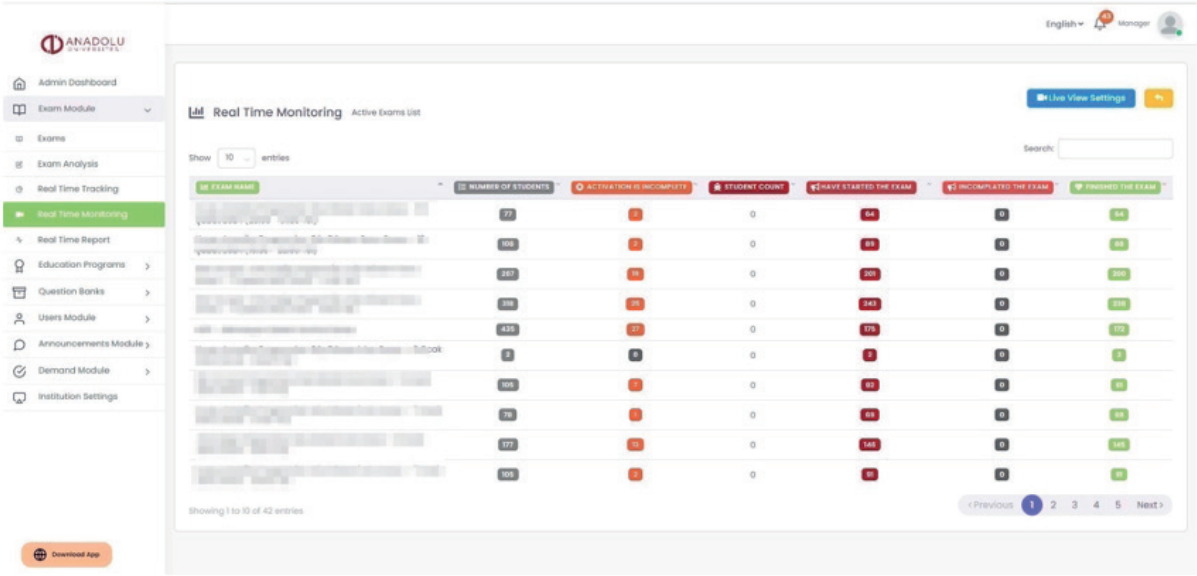

Figure 1. Real time monitoring in proctored exam practice

Real time tracking screen which provides information on start time, activation photos and warnings for possible violations during the proctored exam is given in Figure 2.

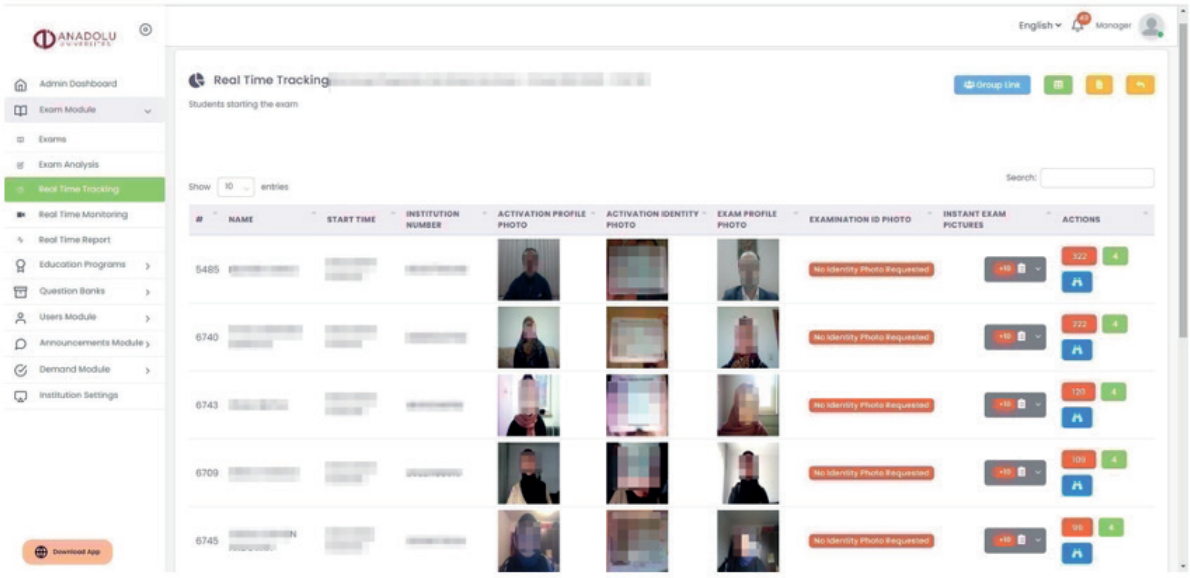

Figure 2. Real time tracking in proctored exam practice

The dashboard for the supervisor who has administrative capabilities in the software is shown in Figure 3.

Figure 3. Online proctored exam supervisor dashboard

The dashboard from the view of invigilators during an online proctored exam is given in Figure 4.

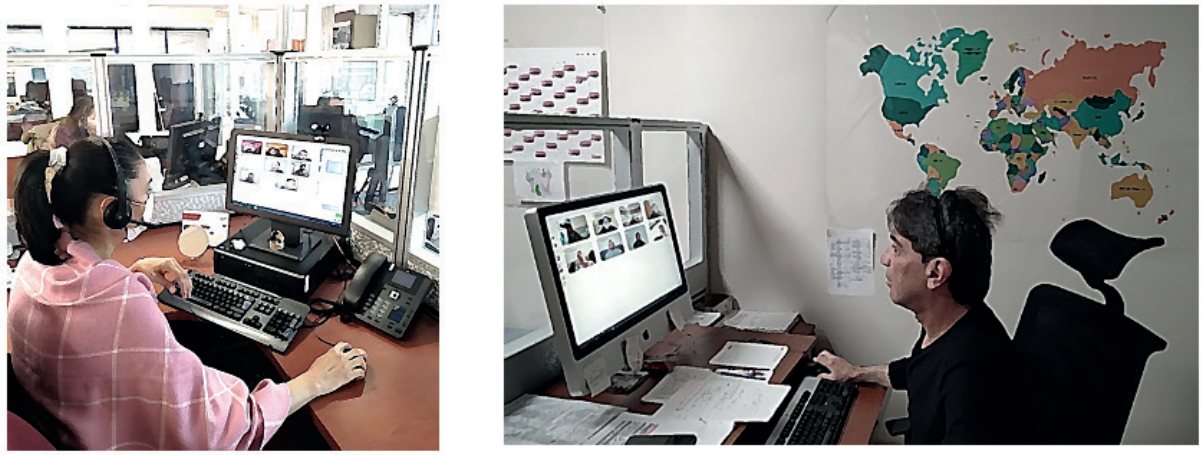

Figure 4. Exam monitoring by invigilators in online proctored exams

Data Collection and Analysis

The purpose of this case study is to provide broad data on online proctored exams. Research data were collected over a period of one week after the online proctored exams were conducted. The data sources used in the research are an open-ended question presented to students via Google forms and the researchers' observations during the exams. In addition, interviews were held with the invigilators in charge of the exam. Additionally, researchers took notes during the administration of online proctored exams. In this context, the data obtained with the online form was analyzed using the content analysis method. The students answered the following open-ended question: "What is your opinion about online proctored exams conducted at Anadolu University Abroad Programs?". Content analysis was applied to reveal categories from the data obtained.

We have built robust protocols to assure the dependability of the coding process in processing the data. We assembled a group of proficient academicians who have expertise in the analysis of qualitative data. Interrater reliability approach was utilized to improve the consistency and reliability of the coding. This included regular meetings among the coders to examine the codes they had extracted. Consensus was reached to settle any differences or conflicts, ensuring coding consistency and accuracy. To mitigate bias, each coder autonomously coded a segment of the data, and the results were then verified by another coder to guarantee uniformity. The utilization of overlapping dual coding facilitated the ongoing advancement of the coding theme and enhanced the dependability of the ultimate coding outcomes. As a result of the analysis, themes were obtained and direct quotations were presented to reflect the students' opinions. Additionally, a thematic map was created.

FINDINGS

The views of learners who took part in the online proctored exam and attended the study voluntarily were analyzed. The collected answers were examined using the content analysis method and three themes were created. Learners' comments were used as the unit of analysis while assessing these viewpoints. Table 1 displays the themes, categories, and corresponding number of coding instances.

Table 1. Themes, categories, and corresponding number of coding instances

Theme	Category	Coding
Dissatisfaction	Surveillance	17
Dissatisfaction	Technical Problem	12
Dissatisfaction	Physical Strain	11
Dissatisfaction	Exam Anxiety	9
Dissatisfaction	Preferring Face-to-Face Exams	8
Dissatisfaction	Other Dissatisfaction Opinions	3
Exam Administration	Implementation of Examinations and Other Expectations	25
Exam Administration	Navigation	16
Satisfaction	General Satisfaction and appreciation	21
Satisfaction	Convenient and Accessibility	9
Satisfaction	Secure and Reliable	2

The obtained themes and their categories are given in the thematic map in Figure 5.

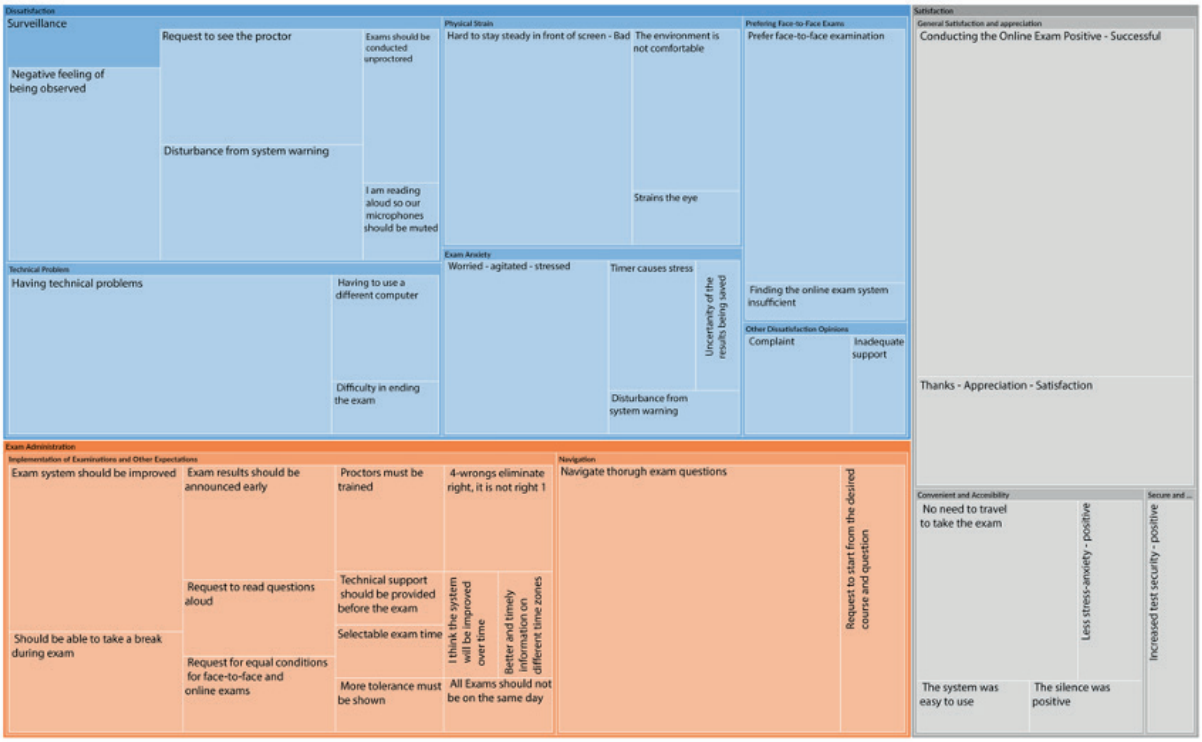

Figure 5. Themes and categories related to online proctored exam

The emerging opinions have been presented along with examples for each theme and category.

Dissatisfaction: Surveillance

Among the negative opinions, the issue that stands out prominently pertains to surveillance during examination. Notably, students who are similarly monitored during face-to-face exams express discomfort with the surveillance aspect in online assessments. This warrants careful examination as one of the critical areas of concern. Below, we present some illustrative examples of opinions related to this topic:

> *"Persistently feeling monitored has been a source of discomfort for me in terms of adapting to exams...."* S063
>
> *"The constant feeling of being observed is humiliating."* S030

In the context of surveillance anxiety, some students have expressed their dissatisfaction due to not being able to discern who is monitoring them. They emphasize that being able to see proctors could create a more favorable environment for them:

> *"It would be better if we could see the proctor as well."* S024
>
> *"The fact that proctors could see me made me feel a bit strange, albeit only slightly. Perhaps it's because it's the first time."* S068
>
> *"I believe the environment would have been more comfortable if we could see the proctors as well."* S013

The warnings issued by proctors during online proctored exams have caused dissatisfaction among some students:

> *"During the exam, the proctor continuously disrupted my concentration by instructing me not to look elsewhere."* S009
>
> *"My situation is one of enthusiasm and desire. We pay a considerable amount for courses, undergo scrutiny during exams, and even receive admonitions."* S015

In addition to these perspectives on surveillance, it has been brought up by two students those exams should be conducted without surveillance. Similarly, the idea of surveillance being not only visual but also auditory was perceived negatively by one student.

Dissatisfaction: Technical Problem

Technical issues experienced by students during online proctored exams are also among the negatively expressed situations.

> *"I was unable to attend both exams. The system continued to prompt, 'Please close the applications below and try again."* S004
>
> *"Despite participating in three different sessions, I encountered issues with both closing the application and saving answers in all of them, unfortunately."* S014
>
> *"There were still glitches in the system. For instance, when I clicked "finish exam", I couldn't log out of the system."* S033

In addition to these issues, some students who experienced difficulty connecting to the exam system have indicated that they were able to log in using a different computer.

> *"I had to borrow my colleague's computer for that day."* S067

Dissatisfaction: Physical Strain

Compared to the exams conducted face-to-face one of the most distinctive aspects is the fact that the entire exam takes place in front of a screen, in front of a camera, depending on the space and resources provided to the students. The AI-supported exam system is capable of issuing warnings if it detects that students have moved away from the screen (camera) or if invigilators observe suspicious behavior from the student in front of the screen. This structure has been highlighted as a negative aspect by some students.

> *"Remaining seated in a fixed position throughout the entire exam did not provide a favorable experience."* S001
>
> *"The mobility in front of the screen is very limited; it's even difficult to lean back due to exhaustion!!!"* S025
>
> *"Sitting in front of a computer for 2-3 hours straight is not very comprehensible either."* S050

In addition to students who mentioned that being in front of the screen and under supervision during the exam is physically demanding, some students have also pointed out that the environment is uncomfortable, with one student specifically noting eye strain.

Dissatisfaction: Exam Anxiety

In the online proctored exam, returning to a previously answered question was prevented, and no opportunity for resuming the exam was granted after its termination. Furthermore, students were empowered to conclude the exam within the allotted time frame. Some students expressed concerns and stress regarding these aspects of the system:

> *"The unilateral and stressful exam was challenging. I hesitated to scratch my head, and unfortunately, I couldn't even concentrate on the questions."* S013
>
> *"I contacted the AOF official in our WhatsApp group, and the stress gradually intensified until I received a response."* S033
>
> *"The concern about technical malfunctions during the exam (such as camera, microphone, or audio connection failure) slightly unnerves me."* S061

Some students have emphasized that the timer displaying the remaining time on the exam screen also contributes to stress:

> *"Moreover, the timer counting backward induces significant stress."* S042
>
> *"Contemplating when the last-second warning for answering a question will appear induces panic during answering."* S063

Warning message from the system and not being sure about saving the answers are also highlighted among anxiety increasing elements.

Dissemination: Preferring Face-to-Face Exams

After experiencing online proctored exams in the Anadolu University Open Education System, students who are new to this process have expressed a preference for face-to-face exams:

> *"I personally prefer proctored exams conducted in face-to-face environments, which mimic real-life settings."* S042
>
> *"I prefer the upcoming exams to be held in face-to-face examination centers."* S043
>
> *"I prefer exams that take place in face-to-face examination centers."* S060

One student has also expressed dissatisfaction with the technical support and the adequacy of the examination system following a technical issue s/he encountered:

> *"In our recent experience with the current macOS operating system, we encountered an issue related to the Safari browser's behavior. Specifically, the application failed to detect that Safari was open, preventing us from initiating the exam. Despite seeking assistance from Global Campus, their support was neither effective nor solution-oriented. However, we did identify an intriguing behavior: an unidentified application seems to utilize certain Safari resources, detecting its state even when Safari is not visibly open. I personally used my son's computer, while my wife installed the Windows operating system. Unfortunately, this system does not appear to be well-prepared."* S026

Exam Administration: Implementation of Examinations and other Expectations

Some students have offered suggestions regarding the management of exams and have expressed certain expectations. At the forefront of these suggestions and expectations is the provision of a system compatible with various hardware and software configurations:

"The application used for the exam system should be capable of running on a wider range of processor types..." S060

"I recommend that you also take into account the diversity of hardware and software." S026

"I hope that the deficiencies in the exam application are rectified before the next examination." S014

There are students who express the need for faster announcement of results following online exams.

"Unfortunately, the announcement of online exam results is excessively delayed..." S062

"If the purpose of online exams is to facilitate life, then we would also like to receive the exam results earlier:)" S064

"We will take the final exams, and despite the exams being conducted online, the results have not been announced yet." S010

In the face-to-face exams of Anadolu University Distance Education System, students are unable to re-enter the exam hall after leaving, whereas there are students in online proctored exams who express a need for breaks.

"Conducting examinations consecutively without any breaks was extremely exhausting." S066

"I took exams for 4 courses in one session; why can't I attend to my restroom needs between two exams?" S009

"If you could allow at least enough time for a brief water break after one exam before starting the next." S050

In online proctored exams, proctors have the authority to verbally or warn students by sending messages if they deem it necessary to maintain exam integrity. However, some students emphasize the need for further improvement of proctor communication during this process:

"I believe it is also important that the individuals conducting the monitoring are competent. When I requested to report a problem occurring in the system, I received a warning stating that keyboard usage is prohibited. In my opinion, individuals responsible for monitoring should first and foremost be knowledgeable about the subject matter." S028

"In the context of examination administration, it is essential to provide adequate training to the exam proctors." S050

In the context of distance education systems, one of the most significant challenges in providing services to students across different continents is the time zone difference. This situation necessitates meticulous planning for both enrollment, support, and examination processes. Furthermore, it is emphasized that students should receive clear and timely communication regarding this matter:

"It would be beneficial to provide more detailed information to those residing abroad. Until the last minute, I was uncertain whether the exams would be based on Turkish local time or the local time of the place where one resides. Unfortunately, when making payments or seeking answers to our questions, we always have to adjust to Turkish local time. A last-minute email arrived regarding the timing." S048

Exam Administration: Navigation

In the context of student feedback, one of the most frequently expressed opinions is the request for the ability to revisit questions during an exam. Anadolu University has previously restricted this feature in unproctored exams. Similarly, in the first-ever proctored exams, this practice has been included in the rule

set. However, the most significant demand from students remains the ability to revisit previously answered or left blank questions within the exam duration:

> *"The inability to review answered and unanswered questions is definitely an oversight. I kindly request that this matter be taken into consideration for future examinations."* S006
>
> *"I do not believe that it is fair to be unable to review the questions I have marked. Personally, I consider it essential to examine the questions I am confident about, mark those I know for sure, and then revisit other questions to verify my answers."* S007
>
> *"Not being able to review questions later is quite unfavorable. In traditional paper-based exams, we can revisit questions where we initially hesitated or those that didn't immediately come to mind. However, in online exams, such an opportunity is lacking. This situation seems unfair and warrants consideration."* S035
>
> *"It would be highly beneficial if we could later revisit the questions, we left unanswered."* S036
>
> *"I advocate for the ability to revisit questions, allowing us the opportunity to answer questions we initially left blank. The only drawback of the exam is the inability to go back to previous questions."* S046
>
> *"There are times when I encounter questions, I've left unanswered or wish to revisit. I believe there should be an option to go back."* S058

It has also been highlighted that the online proctored examination system allows students the flexibility to start with the course and question of their choice:

> *"Rather than sequentially solving questions of all courses according to the system's order, it may be preferable to choose the desired exam first and proceed with that selection within the system."* S002
>
> *"In a face-to-face examination, students have the option to view all the questions during the exam within the given time frame. They can then choose to start from any desired exam (course) and answer the questions they are most familiar with. This provides students with a sense of morale and confidence."* S042

Satisfaction: General Satisfaction and Appreciation

Within the Open Education System, there are students who generally express satisfaction with the exams being conducted online and proctored, appreciating the ability to keep up with innovation and the use of current technologies. Some of the statements reflecting this viewpoint include the following:

> *"The online examination approach is quite innovative and aligns well with today's technological trends. The online proctored exam is the method I would prefer to participate in from now on."* S014
>
> *"The exam was quite straightforward and comprehensible; thank you."* S019
>
> *"The online exam system was excellent overall; harnessing the benefits of technology and embracing the blessings of our digitized world. It would be wonderful if all exams were conducted online."* S051
>
> *"The online examination system was quite successful. I felt proud to be a part of our digitalizing world."* S062
>
> *"The system was functioning quite nicely, securely, and successfully. I was very satisfied with the examination system; I read and answered the questions very well."* S053
>
> *"The new examination system was quite successful; it went smoothly. I hope our remaining exams will be like this as well."* S054
>
> *"The examination system was highly successful and executed smoothly."* S066
>
> *"Despite all the challenges faced during the pandemic, the provision of such a system to us international students is commendable. I sincerely thank you for all the efforts made to benefit us."* S044
>
> *"I extend my sincere thanks once again for this new initiative!"* S063

Satisfaction: Convenient and Accessibility

Among the expressed satisfactions, it is particularly highlighted that online proctored exams provide time and location flexibility for students who are distant from examination centers where face-to-face exams can be conducted, and this environment is noted to induce less anxiety:

> *"It provided time and space savings and convenience."* S037
>
> *"Instead of having to travel for 2 hours to take the exam, I was able to participate in the secure exam from the comfort of my home."* S052
>
> *"Taking the online exam from the comfort of my home environment has reduced my anxiety."* S039
>
> *"The online exam system was incredibly enjoyable and convenient. Due to work requirements, I will have to move from New York to another city, which would have forced me to take a break from my distance education. I was very upset about this because I wouldn't have the time or the means to travel to the nearest exam center for just one day, and it would have been very expensive. If I can continue taking exams from home like this, I am considering studying another degree."* S059
>
> *"I am very pleased. Otherwise, I would have had to travel hundreds of kilometers."* S067

Satisfaction: Secure and Reliable

Students also emphasize that the implementation of online exams with proctoring and centralized control enhances exam security:

> *"For exam security, I can only say it was good."* S024
>
> *"I strongly believe that exam security has significantly improved."* S036

DISCUSSIONS AND CONCLUSION

The result of the study illustrated that online learners were satisfied with the online proctored exams as they are secure, convenient, accessible, and reliable. However, the learners dissatisfied because of the technical problems and surveillance. In addition, the findings also revealed that the administration of the online proctored exams needs to be reviewed. Previous studies that investigate the proctored exams reveled similar and different findings. In their study, Selwyn et.al (2023) conducted a research to examine the use and transformation of proctoring technology, focusing on its 'appropriation', 'objectification', 'incorporation', and 'conversion' by commercial suppliers, university authorities, university personnel, and student groups. One of their findings represented under 'Student perspectives' heading focuses on initial concerns on privacy with regards to "in-home surveillance and eye-movement detection". The concern on privacy is also stated by participants of the study. However, as Selwyn et.al (2023) found out in the study, these concerns will probably fade away in the future. People share their personal data on social platforms and it is possible that their concerns on privacy in proctored exam environment will fade away in the future, as they adapt to the changing circumstances, gain more confidence and empowerment, and enjoy more convenience and quality in online education. However, this does not mean that privacy issues will disappear or become irrelevant, but rather that they will require continuous attention and evaluation from all the stakeholders involved.

Concerns about privacy are a significant ethical issue that arises from both studies, specifically in the context of online proctoring. Just like Coghlan et al.'s thorough examination of the intersection between privacy and AI ethics in their 2021 study, we found similar sentiments expressed by some participants in our own investigation. They shared a common worry about privacy concerns, especially regarding the intrusive nature of surveillance technologies used in educational settings. Similar to Coghlan et al.'s analysis of privacy intrusion, our study participants expressed unease about their personal spaces, such as bedrooms and living rooms, being subjected to scrutiny.

One of the challenges of online proctoring is ensuring the compatibility and functionality of the devices and software used by the examinees. In their research, Nigam and colleagues (2023) underscored the significance

of employing devices equipped with current hardware. While they accentuated the need for contemporary peripheral devices, in this study participants highlighted the necessity of having an up-to-date operating system for the proctoring software function.

Exam Satisfaction is a crucial measure of how examinees perceive and accept online proctoring. Consistent with the findings of Milone et al. (2017), our study also found that a large number of participants were very satisfied with the experience of taking an online proctored exam. Both studies indicate that a significant proportion of the participants express satisfaction with their experience of taking an online proctored exam. They see it as convenient, flexible, and secure. Nevertheless, both studies also pinpoint several factors that cause discontent among the test takers, including the protracted and intricate setup procedure, technological malfunctions and disruptions, and the unprofessional or unforeseen interruption by the proctors.

Exam Anxiety is a common phenomenon that affects many students who take online exams. Analogous to the findings of Woldeab and Brothen (2019) in their examination of 631 undergraduate students at a prominent midwestern US university, our study participants reported that they felt more nervous and stressed when taking online proctored exams, as they had to deal with the technical and ethical challenges of online proctoring.

Surveillance concern is another factor that influences the examinees' experience and performance in online exams. In line with what Nigam et al. (2021) concluded in their recent study, some participants in our study expressed similar concerns about the implications of ongoing surveillance. Both studies highlight how participants worry about the potential negative effects on their mental well-being when they are continuously monitored. The idea that prolonged surveillance can lead to self-doubt and distract from the learning process is a common theme found in both Nigam et al. (2021) and our own study's findings. This similarity highlights the complex challenges that arise from constant scrutiny in educational environments and emphasizes the importance of carefully considering the implementation of surveillance measures.

Training Proctor is another crucial aspect that affects the quality and credibility of online exams. As stated by Furby (2020) since the proctors are responsible for monitoring and verifying the test-takers' identity and behavior, they need to have adequate skills and knowledge to perform their duties effectively. Similarly, some participants of the study suggested that the proctors should receive regular training on the latest technologies, policies, and ethical standards of online proctoring. They also emphasized the importance of having clear and consistent guidelines for the proctors to follow in case of any issues or violations during the exams. Future research could explore the invigilators and instructors' perspective in relation to proctored exams. Additionally, future studies are suggested to concentrate on the design and development of the proctored exams.

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