Students' perceptions of distance examination in Higher Education

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ABSTRACT

The pandemic and the various natural disasters related to climate change force Universities to operate remotely during certain periods of time. Synchronous and asynchronous Learning Management System (LMS) platforms at University provide a framework for distant operation. But it is crucial to maintain low students' attrition rates and ensure the quality of offered education at universities. This paper presents a survey of students' perceptions regarding their participation in online distance examinations in a Department of a Greek University. In this research, an online questionnaire is used in order to capture students' opinions about online distance examinations and to reveal information concern accessibility issues during the educational activities. The survey also recorded the students' opinion concerning the use of distance learning platforms, the communication with the professors and interactions between the students. According to the analysis of the questionnaires, students are willing to express their opinion on critical issues, such as the distance examinations and the problems that they face this period anonymously. To a satisfactory degree, they have the necessary equipment needed to participate in the distance educational process and they use the existing blended learning infrastructure.

CCS CONCEPTS

• **Data mining, Distance Learning, Information Retrieval**;

KEYWORDS

Blended Learning, Quality Assurance, Distance Examination

1 INTRODUCTION

There are relatively few works studying the student involvement in institutional Quality Assurance (QA) [1],[2]. As mentioned by Meletiou, Sgouropoulou, & Skourlas (2020)[4], there is relatively limited literature focused on the student involvement in institutional Quality Assurance (QA) [1][2]. They also described relevant research works that suggested models for the activities of student involvement. According to Stalmeijer et al. (2016)[2], students can play an important role in internal QA (IQA), in fact they conducted a study so as to explore how students understand their role, and how they can contribute more in the IQA processes. Banta, Pike, and Hansen (2009)[3], based on the experience of many institutions, discuss how the outputs of student contribution can reform educational design and finally improve the current state of education.

Ta et al. (2023) stated that students (as key stakeholders) should have greater involvement and impact in QA. It is critical to make sure that they participate in evaluations and reviews of learning outcomes and communicate their opinion. They should provide critical feedback for the promotion of the educational activity and have the required academic support from the Faculty members. Their attendance is measured through their participation in lectures, labs, examinations, etc., in which they can provide feedback on important issues, e.g., the evolution of curricula, the institutional decision-making processes.

Meletiou, Karanikolas & Skourlas (2020)[5] discussed a framework for increasing the Students' participation in Quality Assurance procedures. They focused on the application of Knowledge Management techniques to the design and implementation of a Knowledge Management framework of Smart Learning Systems

in Higher Education. The proposed framework aims to maximize learning outcomes and both teachers and students participation in academia, by improving the services provided in the Smart University, and by establishing new and innovative services. Chytas et al. (2023a) [6]conducted research during the pandemic to identify the risk for increased students' attrition rates, as well as to measure the students' satisfaction for the education offered at universities. Their study also examines data collected during and after the COVID-19 outbreak, that underlines the importance of students' participation and online presence in the University's online platforms and the way that affects their performance in exams and courses in general. Chytas et al. (2023b)[7] created a data set which contain information about courses, assignments, marks, exams, and other academic elements of synchronous and asynchronous education carried out in the Department of Informatics and Computer Engineering of a Greek University. Their analysis included three semesters of the academic period 2019–2021. The sample is extracted from the two distance learning platforms (open e-class and MS-Teams) of the department, consisted of 4765 total records (statistics) of 20 courses attended by students, and is related to 1661 unique students within the university.

2 METHODOLOGY

In this study, we focused on recording and processing students' views on online distance exams and investigated the possibility of conducting online distance exams. Our final goal is to activate students to contribute to the activities of the University and to share their opinions on important issues of academic life.

The methodology we have chosen includes:

Informing students about their professor's perception (about the way of conducting the examinations) with announcements on the department's LMS platforms.

Publishing a questionnaire to be filled out anonymously by the students (outside the LMS platforms).

Ensure the anonymity of the students (avoid writing personal information and credentials when completing their answers).

In the questionnaire, students were also encouraged to freely write their thoughts about the exams and the possible reasons that hinder their participation.

In particular, our research methodology tackles the following issues:

Informing students about the Faculty's proposal for the online distance examination scheme and encouraging students to express their views for the proposal. This process requires the following steps:

Publication (announcement) of lecturer's perception for the important topics of academic life, such as the educational activities in pandemic conditions and the online distance exams of the courses. The aim is to inform the students in order to motivate them into participating in the relevant discussion.

Conduct remote exam simulation, or "experiments" on courses with students' voluntary participation.

Preparation of detailed instructions for the written examination and notification of the students. Provide guidelines for student identification, access to exam topics, posting of solutions, communication to resolve questions during the exams and exam duration.

Specialization of instructions for disabled students and students with learning difficulties.

Instructions for oral examination.

Guidelines for overcoming technical problems during the examination.

Investigation of the conditions and possibilities of conducting online distance examinations. It should be approached by the following steps:

Preparation of a questionnaire for the online distance examination and notification of the students.

Students are encouraged to participate and fill the questionnaire anonymously.

Reporting the connection conditions of the students and any imposed restrictions.

Reporting their equipment and any restrictions on its use.

Documenting the peripherals used by the student at home, e.g., camera, speakers, microphones.

Capturing the use of the features provided by the two distance learning platforms by the students.

Recording the students' perception for the proper way of conducting online distance examinations in free text.

The responses of the students are organized into a data set. In table 1, we can see the attributes of the data set and how they are related to the questions of the questionnaire. The values of the attributes are filled when the students answer the questions of the questionnaire. Table 1 also presents all the questions of the questionnaire and a thorough description.

The grading of the questions (for the use of the tools of the LMS platforms) by the students is done by selecting one of the following values: Rarely, Not at all, Often, Daily, DX/DA (no answer). The students are requested to share the way that they use or think to use each tool of the platform in the future.

3 DISCUSSION OF STUDENTS' ANSWERS

In the following section we are going to discuss about the results at the most critical questions

3.1 Connectivity for students' participation in online distance exams

Based on the results, most of the students believe that they do not have a serious connection problem for attending lectures and participating in online distance examinations. An important finding is that many students "share" the use of their internet connection.

3.2 Availability of the necessary equipment and peripherals for students' participation in online distance exams

Concern those questions, the answers of the students show that students are equipped to attend courses and take exams remotely. They have exclusive use of the equipment or have the priority to use it. The problem is that a percentage of students do not have the necessary equipment (e.g., laptop, tablet) and the necessary peripherals (camera, microphone) for their identification during the online distance exams, as well as for their participation in an oral examination.

Table 1: The attributes filled by answering the questions of the questionnaire

Q_no	Attribute of the data set and related Question
Q1	ID. A unique code automatically generated when the student completes the questionnaire and submits it.
Q2	Completion time. Date and time of submission of the student's answers.
Q3	State your internet connection information
	e.g., Stable ADSL connection up to 24Mbps, Fixed VDSL connection, Fiber To The Home (FTTH), 3G/4G mobile connection, Free WiFi from neighboring network, I have access with time restrictions, I don't have internet access
Q4	How many users use your internet connection on a typical day? e.g., 1-2, 3-5, 6-10
Q5	In general, how do you rate the quality of your internet access? e.g., Fast (minimal problems using synchronous communication programs like skype/viber/MS-Teams), Not particularly fast (I can watch lectures or make video calls with average picture and sound quality)
Q6	What equipment do you use to access the internet from your home? e.g., Desktop Computer, Laptop, Tablet, Mobile phone
Q7	Are there any restrictions on using the equipment to access the internet? e.g., use the equipment exclusively, share the equipment – I have priority to use, share the equipment – I have no priority of use
Q8	What peripherals are you using with your equipment? e.g., Camera, speakers, microphone
Q9	Access to courses' material, e.g. PowerPoint notes, PDF (at the open e-class platform)
Q10	Access to lab exercises (at the open e-class platform)
Q11	Access to video lectures and other multimedia material (at the open e-class platform)
Q12	Submit answers/solutions to assigned exercises (at the open e-class platform)
Q13	Using exercise tools - Multiple choice test etc. (at the open e-class platform)
Q14	Participation in the discussion groups of the course (at the open e-class platform)
Q15	Access to course announcements (at the open e-class platform)
Q16	Participation in polls and questionnaires (at the open e-class platform)
Q17	Attending course lectures (online) (at the MS-Teams platform)
Q18	Attending lab exercises (online) (at the MS-Teams platform)
Q19	Attending practice exercises (online) (at the MS-Teams platform)
Q20	Watch video of recorded lectures and other multimedia material (offline at the MS-Teams platform)
Q21	Using the message area to resolve queries (Chat at the MS-Teams platform)
Q22	Personal communication with teachers with video calls (Calls at the MS-Teams platform)
Q23	Personal communication with other students with video calls (Calls at the MS-Teams platform)
Q24	Access to the files area (at the MS-TEAMS platform)
Q25	Participation in the tasks (Assignments at the MS-Teams platform)
Q26	Access to the Class Notebook (at the MS-TEAMS platform)
Q27	Participation in polls and questionnaires (based on GoogleForms)
Q28	Which of the following examination methods are prohibitive/deterrent for your participation in the examination? e.g., Oral examination via MS-Teams (individual or in small groups); Solving topics and posting doc/pdf answer document; Handwritten solving, scanning/photographing and posting answers
Q29	Feel free to write your thoughts about the exam.
Q30	Record the PING count in ms
Q31	Record the DOWNLOAD measurement in Mbps
Q32	Record the UPLOAD measurement in Mbps

3.3 Use of the open e-class platform from home (outside the campus)

The vast majority of students are familiar with and use the open e-class modules as course material, lab exercises, video lectures, submit answers/solutions to assigned exercises . . . Also, the majority of students are aware of the multiple-choice tests and other tools but unfortunately, these tools are not so popular between the students. Perhaps the rationale is that multiple-choice tests usually must be completed under a pressure (shortage) of time and there are negative marks in the case of wrong choices. Half of the students prefer to rarely participate or not to participate at all in the discussion groups of the course. They prefer to participate anonymously in social media groups, e.g. Facebook groups.

3.4 Use of the MS-Teams platform from home (outside the campus)

The vast majority of students are familiar with and use the "Attending course lectures (online)", "Attending lab exercises (online)" and "Attending practice exercises (online)" component at the MS-Teams platform. More students prefer to attend the online lectures and the lab exercises. Only 314 out of 1070 students use Chat at the MS-Teams platform. Only 121 students daily communicate with

Table 2: Ways of accessing the internet.

	Value of Q3 attribute	Number of students
1	Fixed ADSL connection up to 24Mbps	434
2	Fixed VDSL connection	300
3	Fixed ADSL connection as 24Mbps; 3G/4G mobile connection	90
4	Fixed VDSL connection; 3G/4G mobile connection	69
5	Fixed Fiber Optic (FTTH) connection	41
6	Free WiFi from a neighboring network	35
7	3G/4G mobile connection	18
8	Access with time restrictions	14
9	Fixed fiber optic connection (FTTH); 3G/4G mobile connection	8
10	Fixed ADSL connection as 24Mbps; Fixed VDSL connection; 3G/4G mobile connection	7

Table 3: Are there any restrictions on using the equipment to access the internet?

	Value of Q7 attribute	Number of students
1	use the equipment exclusively	677
2	share the equipment – I have priority to use	286
3	I share the equipment – I have no priority of use	90
4	I'm borrowing the equipment	17

Table 4: What peripherals are you using with your equipment?

	Value of Q8 attribute	Number of students
1	Camera	424
2	Speakers	812
3	Scanner	243
4	Printer	331
5	Digitizer	31
6	Photographic camera	81
7	None	149
8	Other	46

Table 5: Participation in polls and questionnaires (at the open e-class platform)

	Value of Q16 attribute	Number of students
1	Often	441
2	Daily	324
3	Rarely	188
4	DX/DA (no answer)	29
5	Not at all	88

teachers with video calls for question-solving. It is strange because the professors set "Question-solving Hours" for each course every week of the semester. Students have to be encouraged to communicate with the teachers. Only 311 students communicate often or daily with other students. Perhaps they prefer to communicate via other possible channels with their peers. Only 547 students daily access the Files area at the MS-Teams platform. Most of the students prefer to use the tools in the open e-class platform.613 students participate in the tasks (Assignments) at the MS-TEAMS platform. More students prefer to use the tools in the open e-class platform.

3.5 Students' participation in polls and questionnaire anonymously and their perceptions for the online distance examination methods

In this section we investigate the (anonymous) participation of students in polls and questionnaires based on GoogleForms, a separate system which is not hosted in the two blended learning platforms. No credentials for the login are used. It seems that many students (360 out of 1070) do not want to participate in polls and questionnaires. Apart from this fact, in the present study the vast majority

Table 6: Attending course lectures (online) (at the MS-Teams platform)

	Value of Q17 attribute	Number of students
1	Often	516
2	Daily	377
3	Rarely	110
4	DX/DA (no answer)	56
5	Not at all	11

Table 7: Watch video of recorded lectures and other multimedia material (offline at the MS-Teams platform)

	Value of Q20 attribute	Number of students
1	Often	419
2	Daily	362
3	Rarely	146
4	DX/DA (no answer)	121
5	Not at all	22

Table 8: Which of the following examination methods are prohibitive/deterrent for your participation in the examination?

	Value of Q28 attribute	Number of students
1	Oral exam via Teams (individual or in small groups)	583
2	Delivery of project work and oral examination	116
3	Multiple choice test (online)	97
4	Solving exams issues and posting doc/pdf answer document	198
5	None of the above examination methods	487
6	Other	172

of students was participated. Perhaps, the issue of the lectures and the examination as parts of a distance learning scheme during the pandemic is a hot matter for the students and they want to write their perceptions.

A total number of 487 out of 1070 students are ready to participate regardless the examination method. It is also an interesting conclusion that the students, although they generally do not prefer an examination with a "Multiple choice test" and also have some difficulty with an examination with the "Delivery of project work and oral examination" method, in their answers to the questionnaire, they consider them preferable examination methods than the oral exam.

3.6 Notes on the dataset and its processing. The case of the free text of answers

In the underlying dataset, the cases where the responses were to be anonymized were marked. For example, we fixed free text answers that referred to student or professor names by writing XXX or YYYY instead of a name. A database of parallel texts was created by translating the Greek free text answers into English. Word analysis of the English text of responses with and without stemming was performed. It is interesting to notice that terms such as assignments, time, multiple-choice tests, camera, oral exams, project, difficult, problem are used by the students to express their opinions, and rather their anxiety about the examination methods.

3.7 Various Measures of the quality of home connectivity

Many students filled the question concerning the quality of internet connection from their home. In the following images we can see the graphical representations of these measurements. Their study shows large disparities depending on the type of connection chosen by each student. In general, we can conclude that most students did not face major problems in using the selected platforms and they can also participate in exams remotely.

4 CONCLUSIONS AND FUTURE ACTIVITIES

This paper presents a survey of students' perception regarding their participation in distance examinations in the Department of Informatics and Computer Engineering of the University of West Attica. Answers were collected anonymously from May to June 2020 using an online survey via Google Forms. The survey was announced on the department's asynchronous LMS platform (which is based on the open e-class) and there were 1070 answers out of 1661 students enrolled in the LMS platforms of the department. The questionnaire and the data collection tool were developed to gather data on students' opinions on distance examinations, but also to record information about the internet connection, the equipment and the peripherals (camera, speakers, etc.) they use at home, their access to the LMS platforms (open e-class for asynchronous learning and MS-Teams for synchronous learning), how they attend in the distance courses (lectures, lab exercises, practice exercises),

Table 9: Some Term frequencies in the free text of the answers

Use of Stemming		Without Stemming	
Word	Frequency	Word	Frequency
Exam	254.0	Exam	189.0
Assign	184.0	Time	121.0
student	174.0	Students	119.0
examin	144.0	examination	113.0
Time	132.0	assignments	102.0
cours	118.0	Choice	92.0
project	92.0	Multiple	91.0
Test	89.0	multiple_choice	85.0
multipl_choic	86.0	Oral	69.0
camera	82.0	assignment	67.0
Oral	78.0	Camera	65.0
choic_test	51.0	Exams	65.0
difficult	51.0	Project	62.0
problem	51.0	Course	61.0
oral_exam	43.0	Courses	57.0

Figure 1: Wordcloud based on the word frequencies of the free text answers.

how they communicate with lecturers of the Faculty and the other students. The analysis of the answers showed that the students are willing to write their opinion anonymously on critical issues such as the distance examination and in addition they possess equipment (to a satisfactory degree) to participate in the distance educational procedure and they also use the existing LMS infrastructure (to a satisfactory degree). The results of our research are useful to Faculty members and students, as well as policy makers in Quality Assurance or other researchers who wish to understand students' views on distance exams. Every semester the students anonymously evaluate each course and the lecturer of the course, e.g., communicability, domain knowledge, consistency, teaching material, etc., using a standard questionnaire. In the future it is important that students will be encouraged to write their opinion and comments, at least anonymously, and in more detail for each lecture, for the educational material, and for the assignments and the projects of the course. In addition, it should be interesting for the students to have access to the perceptions of the rest students and to be able to read the comments of other students about the course. We plan to conduct similar surveys in regular basis to improve the learning activities and ensure that students will actively participate in the
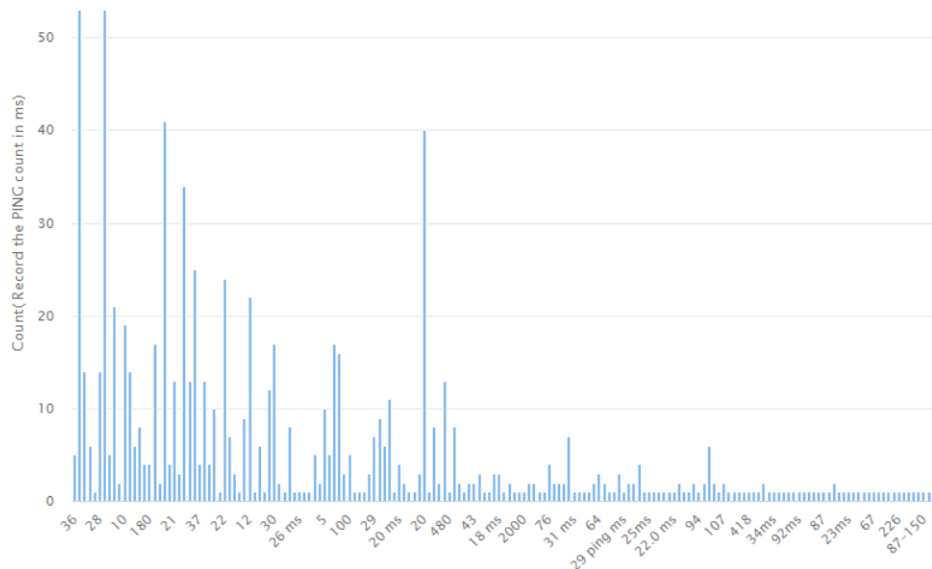
Figure 2: Record the PING count in ms

Quality Assurance procedures of the Department. We also plan to create a system and to encourage students (and new graduates) to post their proposals about new subjects for discussion/rating that are related to the academia.

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