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Miłosz
Wawrzyniec
Romaniuk



Joanna
Łukasiewicz-
Wieleba

Challenges of administering university examinations remotely during the COVID-19 pandemic

Abstract

The article presents the results of a research questionnaire conducted among students and lecturers after the first, and repeated after the second, exam session during the pandemic crisis as this was the first time the examinations were conducted by distance education at The Maria Grzegorzewska University (Warsaw, Poland). Lecturers see the advantages of remote examination in the technological possibilities of conducting examinations (automation in checking and assessing the tests and archiving the results), time savings (immediate availability of results, flexibility of examination dates), and organizational improvements. Students indicate the comfort of writing the exam in a friendly environment, which reduces stress, and appreciate the possibility of obtaining results quickly and the need to spend less time on the exam itself. In the case of disadvantages of remote exams, lecturers indicate a lack of control over the independence and integrity of students, and students complain about the stringent time constraints, distractors and stress, as well as the level of the exam (both higher and lower compared to the level of traditional exams) and the adequacy of the grades obtained. Both groups consider technical problems that arise during the exam to be severe. Twenty percent of students admit to using unauthorized assistance during tests and exams. Academic teachers try to reduce the dependence of students by choosing an appropriate form of the exam (problem tasks, oral exams, open-ended questions, test variants), using special strategies (comparing students' work, control questions, looking for parts of final papers on the Internet), and using technical solutions (requirement of turning on the camera, checking the metadata of files, the need to document work). The search for an effective and appropriate method of verification of learning outcomes is ongoing.

Keywords: crisis remote education, remote examinations, COVID-19, e-learning, higher education

Introduction

The SARS-CoV-2 coronavirus pandemic has forced the introduction of emergency remote education among many colleges and universities throughout the world (Romaniuk & Łukasiewicz-Wieleba, 2020c). On the basis of the applicable legal solutions¹, despite the systemic weaknesses (Kobylarek, 2020), universities in Poland developed principles of conducting classes, and organized technical support and training for lecturers (Romaniuk & Łukasiewicz-Wieleba, 2020a). Academic teachers adapted the classes to the remote mode of conduct (Romaniuk et al., 2020), using many modern

Miłosz Wawrzyniec Romaniuk, The Maria Grzegorzewska University, <https://orcid.org/0000-0002-1009-8940>
Joanna Łukasiewicz-Wieleba, The Maria Grzegorzewska University, <https://orcid.org/0000-0003-2215-1208>

¹ Until the pandemic, the implementation of online classes and exams was regulated by the Regulation of the Minister of Science and Higher Education of September 25, 2007, on the conditions that must be met for teaching higher education classes to be conducted with the use of distance learning methods and techniques. This act stipulated that the university must ensure ongoing monitoring of progress, verification of knowledge and skills, including in the form of examinations, in a manner that is consistent with the education standards for the given field of study. At the same time, tests and examinations should take place at the university's premises. The Act of July 20, 2018, Law on Higher Education and Science, Art. 76a (amended by the Act of 19 June 2020 on interest subsidies for bank loans granted to entrepreneurs affected by COVID-19 and on simplified proceedings for approval of an arrangement in connection with the occurrence of COVID-19), allows for tests and examinations, including diploma exams, using electronic means of communication.

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solutions (Czerski, 2020) and applications (Pokrzycka, 2021). Students faced a maturity test in the form of independent learning and systematic work (Romaniuk & Łukasiewicz-Wieleba, 2020b). Crisis remote education, despite its introduction shortly after the outbreak of the pandemic and putting teachers and students in a completely new role (Wyrwa et al., 2020), was sufficiently refined and was based on previous e-learning experiences (Romaniuk, 2015b) and knowledge about the level of IT competences of students, adequate to participate in this form of learning (Romaniuk, 2015a).

The experience of the first semester of distance learning allowed for the development and implementation of recommendations and actions that increased the quality of classes and the level of education in the next semester (Romaniuk & Łukasiewicz-Wieleba, 2020c), among others thanks to the evaluation of online classes (Dobińska & Okolska, 2020). Many solutions that had a positive impact on the remote education process (Para, 2021), student activation (Rybalko et al., 2020), and the sense of community (Dougherty & Shinozaki Dougherty, 2020) were successfully implemented. At this point, we have two semesters of distance learning behind us. It also means a lot of experience related to checking the achieved learning outcomes, i.e. the knowledge, skills and social competences of students. While various forms of exams conducted in the traditional way are imperfect and there has been a discussion for years about the superiority of one method of checking knowledge over another, remote examination on such a scale is something completely unprecedented (Kraśniewski, 2020).

During the research conducted so far, both lecturers (Romaniuk & Łukasiewicz-Wieleba, 2020a) and students (Romaniuk & Łukasiewicz-Wieleba, 2020b) have drawn attention to the problem of examining and passing the exams. The former were looking for an optimal way to check what the students understood from the classes, while the latter were afraid of unprecedented methods of controlling the resources of their knowledge and skills (Eltayeb et al., 2020). The problem of checking the learning outcomes concerns midterms, subject examinations at the end of the semester and diploma examinations at each university.

Remote examination at universities

Remote examination via the Internet is a multifaceted problem in which there are three very important categories of situations and behavior – the examiner, the exam and the examinee. The category related to the examiner includes the willingness to reliably test knowledge and skills, and the need to prepare an accurate exam on a specific material, provide understandable instructions on solving tasks, and give grades. The examination category includes the method of conducting the examination (e.g. simultaneously, in a specific time window, in the form of a project to be done), the method of checking knowledge (e.g. single or multiple-choice test, open-ended questions, oral

examination), checking the identity of the examinee and checking the independence and fairness of the exam process. The examinee category includes preparation for the remote exam, meeting the conditions for taking the exam, taking the exam, and receiving the results. Additional difficulties arise in the case of the necessity to conduct practical examinations.

When analyzing the possibilities that are associated with conducting online exams, several strategies are adopted. The first is to conduct the exams in the same way as in the stationary mode; it is a faithful reproduction of the examination procedure with the use of online tools. Another involves the use of online proctoring technology, in which the examiners while monitoring the course of the exam, stop it when they detect and identify student fraud. For this purpose, webcams and special software are used, thanks to which images from cameras and the computer desktop, sound or characters typed on the keyboard are collected. Their advanced versions, which allow for some automatism and the possibility of eliminating student dishonesty, have high technical requirements, especially a high-speed Internet connection, without which students cannot take the exam. These systems have been criticized for collecting a lot of data, including images of students. Moreover, this method of examination increases the level of stress in the examinees. The third strategy is to write exams that include permission to use books or other materials (open book exams), which in combination with, for example, the camera turned on or checking the work for plagiarism, gives good results and does not burden the system. The fourth strategy relates to rescheduling exams, i.e. postponing them until a more favorable epidemiological situation occurs, which is particularly important in the case of exams using, for example, specialized hardware or software. Recent strategies refer to changing the grading system or even canceling exams in a given six-month period (Puchkov et al., 2020).

Until recently, the level of digital dishonesty was lower than that of the analog one (Friedman et al., 2016), although other researchers indicated higher scores during unsupervised testing of students (Carsairs & Myors, 2009). Therefore, various methods of controlling the examination process are postulated. For example, checking the identity of the examinee can be done by logging in with a unique login and password, taking the exam synchronously with the camera turned on and after presenting the student ID, and even by using biometric authorization. A decade ago, introducing the necessary online examination control procedures was proposed, which included the requirement to take the exam as a whole group at one time; the ability to log into the exam only in a specific time window; randomizing the order of questions and answers; having to answer questions one by one, without going back to previous questions; limiting the time limit of completing exams; the possibility of logging in to the exam only once; the use of software that prevents the copying of examination content; and

changing a minimum 1/3 of questions for each exam date (Cluskey et al., 2011). Some propose the introduction of a continuous assessment of student progress, which may in some cases even lead to dropping the final exam while maintaining a flexible and inclusive approach to students (García-Péñalvo et al., 2021). Others propose cheating detection systems during remote examination using eye-tracking (Bawarith et al., 2017) or analyzing student behavior (Balderas & Caballero-Hernández, 2020). No way of examining, whether online or live, is completely immune to cheating (Tuah & Naing, 2021), so it is a constant battle between examiners and examinees.

Remote exams are more stressful for some students, due to the fear of possible technical problems, the limitation of time to write the exam and the method of navigating through tasks, but also the fear of whether the exam will cover the material from the classes and whether something unexpected will happen at home while writing the exam (Elsalem et al., 2020). Even open book exams raise doubts among students who, on the one hand, can legally search for information in books, notes and presentations during the exam, and on the other hand, do not know whether the examination questions will be extremely detailed and require not only basic knowledge but also break through the enormity of information in a short time (Jervis & Brown, 2020). Research indicates that there are no significant differences in the results obtained in open book exams compared to traditional exams, during which additional materials cannot be used (Brightwell et al., 2004). More recent analyses even suggest the use of a blended approach that includes both types of examinations (OBEs – open book examinations, CBEs – closed book examinations) (Durning et al., 2016), or prefer OBE as a solution that promotes critical thinking, is more engaging, requires structured thinking, is stimulating for work, reduces student stress, and develops cognition (Johanns et al., 2017). A significant increase in the number of searches for specific terms in Google correlating with the date and subject of the exam in a specific subject may, depending on whether the exam is OBE or CBE, indicate cheating or an attempt to provide better answers (Bilen & Matros, 2021). The latest data show that students who were not supervised during the exam obtained more than 11% higher results than students who were supervised. The effect was greater with live personal surveillance than with on-line monitoring of students (Vazquez et al., 2021). OBEs can be a viable alternative to CBEs if the questions properly assess the integration and synthesis of knowledge rather than recall it (Sam et al., 2020). Students rate OBEs as having a positive impact on their learning quality, which may lead to greater learning engagement and a deeper understanding of the content, rather than simply memorizing it (Johnston & O'Farrell, 2020). OBEs may allow for a better assessment of the understanding of the topic (Mohanna & Patel, 2016). To reduce the cognitive load of students taking the exam, all you need is solid instruction on the technical

layer of the exam and appropriate IT competences, as well as easily accessible and responsive technical support (Cramp et al., 2019). An additional advantage of remote exams, according to students, is the ability to get results immediately (Tilak et al., 2020).

Remote examination at The Maria Grzegorzewska University

The Maria Grzegorzewska University has developed guidelines for teachers and students relating to the examination process. Teachers can choose the form of the examination in such a way that they can adequately assess the learning outcomes. They can choose the form of oral or written exams, using the MS Teams and Forms applications. The tasks of teachers who want to use technical solutions during exams include: determining the method of access to the exam, its duration, the method of publishing the results, and informing students about the technical assumptions of the exam so that they can prepare for it. During the exam, the teacher should remind the examinees to keep an eye on the time so that they can submit the test before the system locks them out. Teachers are also expected to be available during the exam either on MS Teams or through the University e-mail to respond to difficult situations. The teachers also decide how to inform the students about the results (*Guidelines for academic teachers..., 2020*). It is worth noting that The Maria Grzegorzewska University IT and Media Department provides assistance to teachers, including helping to check the number and time of logging into the MS Teams or MS Forms application of individual students.

In the guidelines for students, attention is paid to the proper preparation of a computer or device with Internet access for the exam. The key is the ability to provide answers, including by selecting or entering text. It is recommended to limit the open applications only to those necessary for the exam, synchronize the device with Internet time, log in with an academic account, control the time allocated for responses in the case of time-limited tests in order to be able to send answers in advance, and keep the lecturer informed about technical problems (*Procedure for students..., 2020*).

Training materials and extended instructions for exams, including diploma exams, were placed in the Repository of auxiliary materials for The Maria Grzegorzewska University employees, available on the Internet.

Methodological assumptions

The conducted research concerned the experiences of students and academic teachers related to the preparation, process, and passing of remote examinations. The study aimed to compare the opinions on remote examinations from the perspective of the examiners and examinees. The subject of the research was the statements of students and lecturers

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regarding remote examinations. The legitimacy of the research is dictated by the lack of previous analyses of the raised issues.

The research used the diagnostic survey method. The research was carried out twice: first (1) in June and July 2020, after the end of the first semester of remote education, and again (2) in February 2021 – after the end of the next semester. Different questionnaires for students and lecturers were prepared for each study, but some of them had the same questions. The questionnaires consisted of closed and open-ended questions. Responses were collected using Google Forms. The presented results are part of a larger study because as a whole they had a more general-purpose related to investigating many aspects of the functioning of distance education in The Maria Grzegorzewska University. This article presents an analysis of respondents' statements related only to questions associated with online exams. The categorization of the data obtained in the open questions was carried out by two experts in line with the competent judges method.

Sample description

Two groups of students and two groups of lecturers from The Maria Grzegorzewska University took part in the survey. The first groups of lecturers and students participated in the study at the end of the 2019/2020 summer semester and consisted of 65 lecturers and 515 students. The second part of the study carried out at the end of the 2020/2021 winter semester and involved 77 lecturers and 496 students. In the first study, there were indications regarding different perspectives on the issue of remote knowledge assessment – this research provided the impetus to explore the topic further. The second study allowed us to capture the change, broaden the spectrum of searches and deepen our knowledge of the topic.

Findings

In the first study (1), lecturers were asked about the methods of checking the assumed learning outcomes. The respondents declared that in order to check the learning outcomes, they most often use homework (50 people, 76.9%), final assignments (45 people, 69.2%), an online written exam (27 people, 41.5%), and an online oral exam (14 people, 21.5%). At the same time, in the open question about the disadvantages of remote education, there were statements about the inability to reliably verify students' knowledge, and lack of independence of their work.

In turn, in the first study (1) among students, in the open question related to the advantages of remote education, there were single declarations about the possibility of taking online exams and the variety of forms of testing introduced by teachers. At the same time, however, in an open question about the disadvantages of this type of education, 45 people expressed critical comments about the exams. Also, 19 respondents (3.69%) stated that the conditions for

passing exams were unclear, 16 people (3.11%) indicated a high level of stress related to uncertainty during the exam (e.g. possibility of connection failure, too short time), 9 people (1.75%) considered the conditions for passing and examinations less favorable, and one person indicated difficulties related to credibility. In turn, in the open question about difficulties related to distance education, 21 students (4.08%) also referred to the verification of knowledge and skills. In this subset, 9 people (1.75%) considered that the examinations in this form do not check the actually acquired knowledge; 6 people (1.17%) said that the organization of exams is not transparent, and they are not credible, 3 people (0.58%) said that the organization was bad. Some of the students referred to the answer key during the tests (which was not understandable for them), the lack of appreciation of independence (so students felt "encouraged" to cheat during exams), and maladjustment to people with dyslexia. These critical statements of students are illustrated by the words "for me, it will not be a credible assessment of my substantive knowledge, but only a test of the efficiency of my equipment and IT competences, and an assessment of the quality of the Internet connection." The above information became an incentive to expand the topic related to the examination in the next semester.

The second study (2) explored the issues related to the remote examination. It is worth noting that although the questions were formulated generally (What do you think are the biggest advantages/disadvantages of examining and passing subjects remotely?), the answers focused mainly on the form of test exams, using the possibilities of MS Forms. Only a few respondents commented on other online examination options available to lecturers, such as oral exams or examining through an individual or group project.

And so, in an open question, the respondents (lecturers and students) were asked to mention the advantages of remote examination. The responses were categorized and are presented in Table 1.

For the surveyed lecturers, the most important advantages of online exams relate to:

- technological possibilities of conducting exams (54.55%), such as automation in checking and assessing tests, archiving results, organizing tasks in MS Teams, available MS Forms possibilities;
- time management (32.47%): achieving quick results, flexible examination dates and better time management;
- organizational improvements (32.47%): easier checking of papers, mobility, no need to print papers, better presentation of results, no need to book an exam room, better monitoring of students' work, greater comfort of conducting the exam;
- greater comfort (7.79%): no need to come to the university, less stress for students, comfortable exam conduct;
- level of the exam (6.49%): its transparency, objectivity of grades.

Table 1*Advantages of remote examination in the opinion of lecturers and students*

Response category	Lecturers		Students	
	N = 77	Percent	N = 496	Percent
use of technological solutions	42	54.55%	28	5.65%
time issues	25	32.47%	93	18.75%
organizational improvements	21	27.27%	11	2.22%
no advantages	14	18.18%	44	8.87%
greater comfort	6	7.79%	419	84.48%
exam level	5	6.49%	49	9.88%
no answer	3	3.90%	13	2.62%
no opinion	1	1.30%	19	3.83%
no differences between remote and traditional examinations	1	1.30%	7	1.41%
other	1	1.30%	3	0.60%
form of the exam	–	–	37	7.46%

Source: authors' own work.

The above categories are illustrated by the lecturers' statements: "Students do not have to wait for hours outside the classroom for an individual oral exam, they and I save time"; "Everything happens automatically in the case of tests, there is a summary of the points scored. Written works are stored on the computer. You don't have to stuff your documents into a small number of tiny cabinets"; "It is easier to perform both test and essay papers, it is easier to present and discuss the results."

The distribution of response categories among students is different. They consider the most important:

- comfort (84.48%): associated with being at home and writing an exam in a friendly environment, which reduces the stress usually associated with such events, better concentration, no need to travel, including no concern for delays in commuting to the university, greater peace of mind, no exposure to the "lecturer's eyesight" during the exam, no stress from other students, mobility, safety during illness, greater freedom, no pressure, more rest, the possibility of less workload for less important subjects;
- time management (18.75%): more time to prepare, faster exam results, more convenient dates, shorter duration, time savings;
- exam level (9.88%): easier exams and better grades, use of study scripts, notes and teaching aids, possibility to cheat;
- change of the forms of examining (7.46%): more favorable and accessible for students, replacement of oral exams with written assignments and projects, the possibility of passing the exam in the preferred form of a test, clarity of instructions;
- technological solutions (5.65%): the ability to work on a computer, easy way to work in MS Forms, students' works are easier to check for

lecturers, easier correction of errors, contact with the lecturer in case of problems, ability to turn off the camera or to record lectures;

- organizational improvements (2.22%): better organization, efficiency in conducting exams, no waste of paper, inability to rewrite work from other people, easier way of returning finished work, use of open book exams.

Examples of statements illustrating the above categories are as follows: "We have more time to prepare final papers due to the time saved on commuting. It is easier to arrange an exam date that is convenient for everyone because you do not have to book rooms at the university"; "We are not exposed to the lecturer's eyesight, which increases the stress level, which makes us forget a lot of material during the exam"; "Teachers often propose different activities to be exempted from the exam or change the form of exam. Instead of examinations or tests, papers to be prepared are often proposed, individually or in groups, on the basis of which grades are given."

A much higher percentage of lecturers (18.18%) than students (8.87%) do not see the advantages of online examination.

An open-ended question related to the disadvantages of online exams was developed in a similar way. The responses of the respondents were categorized and are shown in Table 2.

In this respect, there is a greater discrepancy between the categories perceived by lecturers and students. For lecturers, the most important disadvantages are:

- lack of control over the exams (77.92%), i.e. no control over the independence and honesty of students and the course of the exam itself;
- technical problems (14.29%): limitations resulting from the available technical solutions, including technical problems in general, logging

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Table 2

Disadvantages of remote examination in the opinion of lecturers and students

Response category	Lecturers		Students	
	N = 77	Percent	N = 496	Percent
no control	60	77.92%	—	—
technical problems	11	14.29%	320	64.52%
other	7	9.09%	—	—
no answer	1	1.30%	15	3.02%
no difference	1	1.30%	1	0.20%
time	—	—	177	35.69%
difficulties	—	—	127	25.60%
level of exams	—	—	99	19.96%
lecturer's attitude	—	—	58	11.69%
no defects	—	—	33	6.65%
hard to say	—	—	7	1.41%

Source: authors' own work.

- in from accounts outside the university domain, cheating through software plugins, lack of good hardware and support, the need to prepare various versions of exams and limitations in creating tests by MS Forms, the need to archive works, differences in access to the network, hardware and software;
- others (9.09%), which include such elements as difficulty of checking knowledge, reproduction, ineffectiveness in group work, little time for oral exams, no personal contact, no objectivity, focusing students on the ability to solve tests.

Examples of teachers' statements about the disadvantages of online exams are as follows: "Awareness that some students cheat and get a higher score than they deserve"; "Inability to control the course of the exam (students cooperate, download answers from various sources, manipulate the lecturer by referring to technical problems)"; "Most of the exams (for lectures) are tests, and this is not the best way to verify the learning outcomes – most often it only verifies knowledge"; "I have the feeling that I am participating in an arms race – who will outsmart whom? I feel bad in this race. At the same time, I know that the cheating impediments that MS Forms propose are nonexistent, so I am in a losing position in this race."

For students, the most severe are:

- technical problems (64.52%): concerns about these issues, limitations of the Internet connection, hardware and software that are beyond the respondents' control, the need to be online during the exam, including having the camera turned on, not being able to view the exam, difficulties with verification of knowledge during such exams, "no mercy" in counting points by the computer and difficulty in passing the exam over the phone;

- time constraints related to completing and sending tasks within the time limit set by the teacher (35.69%);
- various difficulties, distractions and stress accompanying exams (25.60%), which include: a significant number of distractions, no separation between home and university, the need for (slower) typing using the keyboard, lack of skill in passing such exams, less motivation to learn (because you can cheat), lack of personal contact during the oral exam, feeling of constant surveillance, taking the exam time of focus by other students by interrupting the silence and asking questions, chaos during the exam, organizational difficulties, long waiting period for the oral exam, lack of equal opportunities, eye strain, lack of material repetition before the exam;

- level of exams (19.96%) – both lower and higher levels (respondents' answers are polarized) than during the traditional exams; the arguments discussed here are cheating, the injustice of grades, the inadequacy of the test form, fewer opportunities to pass oral exams, domination of memory-based exams, the mismatch between questions and the form of remote exams, greater number of written works, limited variety of questions and places for answers, lack of knowledge of the graduates in the future;
- attitude of lecturers (11.69%), which include: no direct contact, which in case of problems would allow for explaining difficulties, unfounded accusations, unclear or variable evaluation systems, low IT competences, lack of understanding, lack of feedback, lack of commitment, testing information that was not discussed during classes, long waiting time for exam results, treating students as objects, misleading students, untimely results, failure to take into account students' activity in the final assessment.

Examples of students' statements that illustrate problems related to their perception of online exams are as follows: "there is a possibility of the internet connection breaking and there is a risk that we will be logged out of the exam or that the answers will not be registered or will not be sent to the lecturer"; "Unfortunately, most lecturers believe that each student does not act honestly when writing an exam"; "The student learns alone or is taught by other students; the lecturer's task is to test knowledge and watch over, not to teach".

Systems for conducting written or test-based examinations that make it impossible to send work when the time has passed. Sometimes they cause great

stress for students because technical problems often cause delays. In the traditional form, it is not possible for the work to simply disappear, in the remote form it is very easy. The grades may also not accurately represent the knowledge of students, as some use additional aids when passing.

Among the lecturers, there are no people who do not see any disadvantages of this method of examination, while in the group of students 6.65% say that there are no disadvantages.

Subsequently, the students were asked whether they used unauthorized aids during tests and exams. This fact was only partially confirmed (95 people, 19.2%). The vast majority of students (401 people, 80.8%) declared that they approached the midterms and examinations honestly.

However, in the opinion of academic teachers, the lack of independence during exams is a significant problem. Therefore, many take special steps to limit or prevent students from resorting to unauthorized assistance. To this open question, 8 people (1.39%) answered that they did not check the independence of students, 7 (9.09%) that there was no such possibility, 3 did not answer, and one said that they did the same as in the case of stationary exams. On the other hand, the most important activities contributing to reducing the lack of independence of students during online examinations include:

- choosing an appropriate form of the exam (51; 66.23%), e.g. using problematic and reflective tasks, referring to one's own experience, oral exams, open questions, various test variants;
- using special strategies (19; 24.68%), such as: copying text fragments and searching for them on the Internet, comparing students' works, control questions addressed to students;
- application of technical solutions (17; 22.08%), incl. the requirement to turn on cameras and microphones, checking the editing time of the file and data about the author, the requirement to document, etc.

Some reflections on the online examination can also be found in the additional statements of lecturers and students that appeared in the last question of the survey, relating to other comments that the respondents wanted to share with the researchers. Among them, there were, among others, teachers' demands to return to stationary examination, but with the use of modern media, or suggestions of using more diverse software than from the Microsoft package, while leaving the implementation of subjects in remote mode. On the other hand, students pointed out that the lecturers' efforts preventing them from cheating, in particular limiting the time to answer and send the test, have the opposite effect, as they force them to quickly find the correct answer, not allowing reflection on the question. Students also proposed their own solutions related to examinations, e.g. they suggested using more independent projects instead of examinations, they appealed for more forbearance

from the lecturers, in particular extending the duration of examinations, but they also expected lecturers to take more effective measures to reduce cheating by other students.

Conclusion

The research showed a lack of clarity in the assessment of the examination process and its results by academic teachers and APS students.

It became evident that lecturers eagerly used the technological possibilities offered by online tests, perhaps not fully aware of how laborious it would be and to what extent this form would be adequate for checking the learning outcomes assumed in the subjects. Technical capabilities, such as time constraints for individual questions or the entire test, have become the dominant means of preventing cheating by students. Thus, the exam turned into a race between teachers and students, based on their technical efficiency. Teachers' actions even provoke students to use unauthorized help while passing exams, as students fear that they will not be able to answer questions on their own within the set time limit. The lack of previous experience in preparing and conducting online exams did not prepare the lecturers for the multitude of challenges they face, and the training conducted at The Maria Grzegorzewska University focused mainly on the availability of technical solutions within the selected MS Teams platform. The problem of student independence is important not only for The Maria Grzegorzewska University teachers. Each university has a group of lecturers who believe that remote examinations do not allow the verification of students' independence, and thus also the achieved learning outcomes. This is especially true as the very situation of the remote exam prompts students to cheat, because not only do they feel that they are not effectively supervised, they are also encouraged by their colleagues to use technological solutions to help each other. Hence, online exams generate more cheating opportunities than traditional exams, while forcing teachers to be creative in preparing exams and preventing cheating during them (Wahid & Farooq, 2020).

At the university under study, only one person declared using the open book exams strategy, in which questions are formulated in such a way that the student demonstrates the achievement of the assumed learning outcomes using various sources. This strategy is recognized as one of the most important in online examination (Puchkov et al., 2020). This finding confirms the lack of substantive preparation of teachers for this method of checking the learning outcomes. In the undertaken strategies, some lecturers try to select such methods and questions that refer to the knowledge processed by students, making them think and analyze, and not recreate. Such actions did not generate critical comments from students. However, such special strategies as conducting oral examinations consume more of the teachers' time.

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Faced with the advantages of new technologies and the encouragement of the university technical team, the lecturers succumbed to the pressure to choose quick and simple solutions, which for many subjects proved to be inaccurate.

In turn, the students' statements are polarized – there is both a group that believes that exams are now more difficult, and other group that thinks exams are easier – but this method of verifying knowledge is considered a disadvantage in both cases. In addition, they emphasize that online exams or tests are associated with a certain unpredictability in the efficiency of the Internet connection, hardware or software operation. It is the technical factors that give rise to the most concerns and reservations. At the same time, however, research shows that during nearly a year of remote education, only a small group of students made an effort to improve the quality of their Internet connections or equipment (Romanik & Łukasiewicz-Wieleba, 2021b), which may indicate that they feel that both remote education and the related online exams are only temporary. At the same time, the Ombudsman, examining the university requirements related to the implementation of remote examinations, notes that the technical conditions expected by universities (including cameras, microphones, headphones, and access to broadband Internet) do not take into account students who cannot afford such solutions, which may limit their right to education (Rzecznik Praw Obywatelskich, 2020). In this situation, it is worth considering hybrid solutions that would allow the implementation of the subject online and impose on teachers, especially those teaching non-lecture subjects, the obligation to take exams in the traditional way. This solution, although it would deprive students of the comfort of working in the privacy of their home and the lack of the necessity to travel, would prevent any technical problems and related stress.

The presented research, although limited to one institution, shows the complexity of the problem and demands not only further analyses in the field of assessment of the examination methods used at universities, but also has a practical dimension, related to the search for effective and appropriate methods for the remote learning process to verify the effects of education.

The most important recommendations that emerge from research on the online examination process during a pandemic include:

- training courses conducted by university didactic and technical teams in the field of technical and methodological solutions for conducting examinations;
- training courses tailored to learning using the available online knowledge verification strategies;
- testing unique solutions, exchanging experiences and sharing creative ideas for formulating questions and tasks in teams of teachers conducting similar subjects;

- encouraging lecturers to develop examination solutions based on the open book strategy;
- testing and implementing technical solutions related to the protection of personal data, recording exams, preventing dishonesty of students, and enhancing the transparency of exams;
- creating an atmosphere of fairness in the university and building an online work culture, in particular, mutual trust of students and lecturers toward each other, guidelines on standards related to taking exams (i.e. clothing, environment during the online exam, honesty toward oneself and others);
- introducing the possibility of conducting online classes and stationary exams for selected subjects;
- verifying, detailing and updating the procedures and examination process, based on experience and legal acts concerning remote examinations;
- adjusting the form and time of exams to the specifics of the students;
- considering an online proctoring service such as ProctorExam, ProctorU or PRUEFSTER.

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Mirosz Wawrzyniec Romaniuk is a doctor of pedagogical sciences, assistant professor at the Department of Methodology and Pedagogy of Creativity at The Maria Grzegorzewska University. He is interested in sail training in theory and in practice. He conducts scientific research and takes part in seagoing voyages of the School under Sails with young people as the head of the school and the watch officer. He is interested in new technologies and their use in teaching and learning.

Joanna Łukasiewicz-Wieleba is a post-doc, professor at The Maria Grzegorzewska University. For years, she has been dealing with the issues of gifted education and the development of predispositions with the use of IT tools. She is an external expert of the Education Office of the City of Warsaw for gifted students, and carries out educational and research projects, including those related to modern technologies in education.

WE RECOMMEND

Resilient Teaching Through Times of Crisis and Change, a course offered by Michigan Online

The screenshot shows the Michigan Online website. At the top, there's a navigation bar with the Michigan Online logo, an 'EXPLORE' dropdown, a search bar, 'LOG IN', and 'SIGN UP'. Below the navigation is a large banner for the course. The banner features a yellow icon of a person on a computer screen, the course title 'Resilient Teaching Through Times of Crisis and Change', and two access buttons: 'NON U-M ACCESS' and 'M FREE ACCESS'. To the right of the banner, there's a description section with the heading 'Description'. It explains that resilient teaching is about adapting to fluctuating conditions and disruptions. Below this is a 'Rating' section showing 4.5 stars based on 15 ratings, and a 'Subject' section listing 'EDUCATION'. At the bottom of the banner, there's a link to 'View Course Details'.

Resilient teaching is the ability to facilitate learning experiences that are designed to be adaptable to fluctuating conditions and disruptions. This teaching ability can be seen as an outcome of a design approach that attends to the relationship between learning goals and activities, and the environments they are situated in. Resilient teaching approaches take into account how a dynamic learning context may require new forms of interactions between teachers, students, content, and tools. Additionally, they necessitate the capacity to rethink the design of learning experiences based on a nuanced understanding of context.

The course is designed with higher education faculty, lecturers, and graduate student instructors in mind, but may also be applicable to educators in a wide variety of instructional environments. The

course is aimed at participants who may be asked to rethink how they teach in the immediate or near future due to the ever-changing circumstances of the current COVID-19 pandemic. While the creation of this course is motivated by the current crisis, its authors expect it will remain relevant to instructors who are faced with disruptions and change to their teaching for any number of reasons and must quickly adapt their course designs.

More information about the course at: <https://bit.ly/36I1ebT>