REMOTE EDUCATION ACCORDING TO STUDENTS OF POLAND'S PUBLIC UNIVERSITIES OF ECONOMICS: LIMITATIONS AND EXPECTATIONS

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Purpose: The aim of this article is to discuss the results of a study on the limitations of remote education during the COVID-19 pandemic in the opinion of students of Poland's universities of economics and their expectations for this form of education in the future.

Design/methodology/approach: The article is based on a survey of 614 students at four public universities of economics in Poland.

Results: Remote teaching was considered to be of inferior quality in comparison with face-to-face instruction before the pandemic. Too much time spent at the computer was the primary reported problem. The most popular synchronous teaching method was the lecture. Students' expectations for post-pandemic distance education vary considerably and depend on the level and mode of study, but according to more than 40% of those surveyed, online classes should make up at least 50% of the total teaching load.

Research limitations/implications: Since the survey was conducted at four public universities of economics in Poland, its results cannot be generalised to all Polish universities. In the future, similar studies should be undertaken in order to assess the long-term consequences of emergency remote teaching during the COVID-19 outbreak on graduate outcomes and long-term changes in the proportion of distance education in the curricula.

Practical implications: The findings of the study can be used to inform teaching development strategies adopted by higher education institutions and to modify educational programs.

Originality/value: The article discusses the results of a unique study on the limitations of remote education and students' expectations for its long-term incorporation in the educational process at Poland's universities of economics. The findings offer valuable insights for both higher education managers and scholars.

Funding: The publication was financed from the subsidy granted to the Krakow University of Economic – Project no 046/GAP/2022/POT.

Keywords: higher education, remote education, emergency remote teaching, education policy, didactic management, education quality evaluation.

Category of paper: research paper.

1. Introduction

Coronavirus disease 2019 (COVID-19), caused by a new virus strain known as SARS-CoV-2, affected many countries on all the inhabited continents and due to its high incidence was declared a global pandemic (Chahrour et al., 2020) by the World Health Organisation on 12 March 2020 (WHO, 2020). As of 12 March 2020, the Regulation of Poland's Minister of Science and Higher Education of 11 March 2020 on the temporary restriction of the operation of certain entities of the higher education and science system in connection with the prevention, counteraction, and eradication of COVID-19 (Ministry of Science and Higher Education, 2020), introduced the option to deliver classes in higher education institutions using remote learning methods and techniques. Public universities of economics in Poland immediately responded to the emergency. In the days that followed, their authorities issued pertinent regulations and guidelines for delivering classes, holding examinations, and graduating online.

The aim of this article is to discuss the results of a study on the limitations of remote teaching encountered by students of Poland's universities of economics during the COVID-19 pandemic and their expectations for this form of education in the future.

2. Evaluation of remote education in the COVID-19 setting in the light of international research

Remote teaching can be divided into synchronous and asynchronous. The former takes place in real time and requires participants to use appropriate technology (Wierzbik-Strońska, Ostopolets, 2021), whereas in the latter, students access materials at their own pace and at different times (Witkowski, 2011). Common forms of remote education include problem-based activities (e.g. problem solving using a discussion board), curriculum-based ones (e.g. online courses), practical ones (e.g. assignments to be completed emailed by the teacher), edutainment (e.g. showing a film), expository methods (e.g. an informative lecture), and activation (e.g. teaching games or discussions) (Grzybowska, 2020). Based on a study of 30,383 students from 62 countries, Aristovnik et al. (2020) found that remote education in crisis situations was usually delivered using synchronous techniques and tools, as reported by nearly 60% of survey participants. Asynchronous techniques and tools, such as posting presentations (15.2%), accessing videos (11.6%), communicating via forums and chat rooms (9.1%), and audio recordings (4.7%) were substantially less prevalent. Synchronous online activities and, for asynchronous technologies, accessing presentations were rated as the most satisfying at the research sample level.

Individual motivation, classroom interaction, course structure, and the teachers' skills and competence are the most important aspects influencing students' reception of remote classes. (Baber, 2020). However, according to a study conducted by Meletiou-Mavrotheris et al. (2022) among 1,051 Cypriot students, the number of factors that may affect the perception of remote classes and, as a result, the teaching quality ratings, is more comprehensive and includes: 1) technology access and accessibility issues; 2) speed/quality of the broadband internet connection; 3) increased workload/work-life balance; 4) lack of digital skills/unpreparedness for at-distance learning; 5) limited teacher-student and student-student interaction; 6) limited engagement, participation and motivation; 7) lack of hands-on and practical training; 8) instructors' lack of familiarity with online learning; 9) field of study; 10) students' technology background and self-rated preparedness for emergency remote learning; 11) level of study; and 12) access and accessibility of technology. Each of the above factors and their various configurations affect the quality of remote teaching and, consequently, may translate into its positive or negative perception.

The quality of remote education implemented from 2020 onwards in response to the epidemic crisis has been the subject of numerous international studies. Overall, the data indicate that both students and academics consider in-person instruction to be considerably superior to its remote counterpart. It should be mentioned that all studies on online education during the pandemic actually refer to emergency remote teaching (ERT; cf. Hodges et al., 2020). ERT is a branch of remote or distance teaching (Bozkurt et al., 2020; Hodges et al., 2020), and its characteristic feature is that it occurs in an unplanned manner (Bond et al., 2021). Remote education implemented by Poland's universities of economics in the pandemic setting, which is the focus of the empirical research discussed in this article, is also classified as emergency remote teaching (ERT).

Tinjić and Halilić (2020), in order to investigate the impact of the sudden transition from face-to-face to remote teaching on educational outcomes, compared the final grades obtained by students from the Swedish Jönköping International Business School during the 2018/2019 and 2019/2020 academic years. They found that the outcomes of students participating in the former were significantly higher than those achieved once remote teaching had been introduced. In a study conducted on a sample of 289 students at the Worcester Polytechnic Institute in the United States, Boggiano et al. (2020) also observed a decline in the quality of remotely delivered lessons in comparison with on-site classes. As many as 83% of the surveyed students opined that the quality of remote teaching was lower than that of face-to-face instruction prior to the COVID-19 outbreak. The vast majority of the 1011-strong sample of students from the Isparta University of Applied Sciences in Turkey felt that remotely held classes were significantly less effective and satisfying than face-to-face ones (Ebru et al., 2020). Aguilera-Hermida (2020) showed that the implementation of remote education resulted in a decline in the quality of instruction for a sample of 270 students at Penn State Harrisburg in the United States. Remote teaching was also judged to be more work-intensive, significantly more

tiresome, and more cumbersome in terms of maintaining contact with academics than on-site education.

Cranfield et al. (2021) noted that a factor that affects the ratings of remote education is the nature and scale of support provided to students by the state or their home university. This conclusion emerged from a survey of students from three universities in Hungary, Wales, and South Africa. Before the COVID-19 pandemic, most South African students had access to a computer with internet connection only on campus. Once remote classes began, the university purchased laptops and limited data packages for students requiring assistance; moreover, mobile phone operators in South Africa provided students with free access to university websites.

Research indicates that the way synchronous and asynchronous teaching tools and methodologies are configured has an impact on the perception of remote education as a whole. An interesting conclusion comes from a survey conducted in the first term following the COVID-19 outbreak on a sample of 3056 students and 396 lecturers from Goethe University Frankfurt in an effort to obtain their opinions on remote education. It turns out that compared with students taking classes based on asynchronous learning techniques and tools, those who participated in classes primarily using synchronous learning methods and tools reported more opportunities for feedback and interactions with peers. Moreover, during the term when instruction was provided remotely, students using synchronous learning methods and tools received more psychological support and felt a greater sense of satisfaction with their classes compared with students taught mainly in the asynchronous mode (Fabriz et al., 2021). This demonstrates that students' perceptions of the quality of remote instruction are influenced by the choice and extent to which different teaching methods are used.

Let us now focus on the limitations of remote education that emerged during the pandemic. Based on a study of 604 students at the Politehnica University of Timişoara, Gherheş et al. (2021) concluded that the main disadvantage of remote education is the absence of interaction, particularly the lack of opportunities to socialize with peers. On the other hand, one of the most significant psychological challenges that students reported when learning remotely was the difficulty in maintaining concentration during online sessions. According to Le (2021), many teachers struggle to keep students interested. The main causes of poor concentration are students' lack of interest in the course contents and syllabus design.

Low digital skills and soft skills, such as self-reliance and self-organisation, also hinder participation in remote education, yet these are essential if its full potential is to be realised (Meletiou-Mavrotheris et al., 2022).

It appears that students who prefer the traditional teaching model have greater problems adapting to remote learning (Aguilera-Hermida, 2020). Ignaciuk and Gutowski (2022), in a study conducted on 489 students at the University of Gdansk, showed that only 17% of the sample reported active engagement during class time. In a similar study, a survey of 152 students at Peter the Great St. Petersburg Polytechnic University identified students'

problems with concentration and inability to focus during online sessions. Shortening synchronous online sessions from 90 to 60 minutes was offered as one recommended solution to this problem (Rubtsova et al., 2023). Le and Truong (2021) report that students prefer face-to-face teaching, i.e. in the classroom and with a teacher present, over remote teaching. Their findings are based on a survey of 255 students from Ho Chi Minh City University in Vietnam.

Despite all of the disadvantages and criticisms levelled at remote learning, when used properly, it can be a valuable supplementary teaching tool. For instance, Meulenbroeks (2020) emphasizes the importance of hybrid teaching and believes it to be the most effective type of instruction. Since according to Cranfield et al. (2021) younger students find it more difficult to adjust to remote instruction, the authors recommend that they be taught exclusively in a face-to-face setting. These researchers also claim that hybrid education is more suitable for senior students, who are better adapted to this mode of teaching.

Remote education has great potential, particularly on courses tailored to specific categories of students, such as individuals in full-time employment who cannot attend on-site classes or those unable to study away from their place of residence. However, remote education cannot be regarded as a long-term solution for all types of courses. For example, engineering degrees require direct interaction between students and instructors to ensure adequate transfer of knowledge and practical skills (Gherheş et al., 2021).

A review of the literature shows that the issues of limitations of remote teaching encountered by students of Poland's universities of economics during the COVID-19 pandemic and their expectations for this form of education in the future. For this reason, we consider these issues to be original and a research gap that deserves in-depth research and analysis.

3. Research methodology

The aim of the study was to identify the limitations of remote education encountered by students at Poland's universities of economics during the COVID-19 pandemic and their expectations from this form of education for the future. The study draws on the experiences of students participating in remote classes over two terms – from March to June 2020 (summer term of the 2019/20 academic year) and from October 2020 to February 2021 (winter term of the 2020/21 academic year). The survey was conducted from March to June 2021 among the students of four universities of economics – in Katowice, Krakow, Poznan, and Wroclaw.

The aim of the study was operationalised into four research questions, which also determined its focus, namely:

1) What was the quality of remote teaching delivered from October 2020 to February 2021 in comparison with traditional teaching before the COVID-19 outbreak?

2) What issues hindered remote teaching in the crisis situation?

3) What do students expect from remote education?

4) What changes should be made to improve the quality of remote education?

To answer these research questions, a questionnaire was designed, which included an introductory demographics section that identified the respondents' form, type, and year of study, as well as two identical groups of specific questions that addressed different aspects of remote education at universities during the summer term of the 2019/20 academic year and the winter term of the 2020/21 academic year.

With the permission of university authorities, the questionnaire was made available on their websites and circulated to students via social media platforms. Prior to submitting the official questionnaire, a pilot was done on 10 Kraków University of Economics students to check for accuracy and comprehension. In response to feedback from pilot participants, minor changes were made to the survey.

The research sample included 614 full-time and part-time students who took online courses during both periods of interest. Specifically, the survey was conducted among second- and third-year full-time and part-time first cycle (bachelor's and engineering) students and second- and third-year full-time and part-time uniform master's students, as well as first- and second-year full-time and part-time second cycle (master's) students and fourth- and fifth-year full-time and part-time uniform master's students. The breakdown of the research sample is shown in Table 1.

Table 1.
Breakdown of the research sample

	Full-time	Part-time	Total
Students in the 2nd and 3rd year of bachelor's and engineer's degree programmes and the 2nd and 3rd year of uniform master's degree programmes.	286	89	375
Students in the 1st and 2nd year of second-cycle (master's) studies and 4th and 5th year of uniform master's studies	160	79	239
Total	446	168	614

Source: own study.

For the sake of clarity, the following acronyms are used to refer to each of the groups in the study sample:

•   1FT – second- and third-year students of full-time first-cycle programmes (bachelor's and engineering) and second- and third-year students of full-time uniform master's programmes;

•   1PT – second- and third-year students of part-time first-cycle programmes (bachelor's and engineering) and second- and third-year students of part-time uniform master's programmes;

- 2FT – first- and second-year students of full-time second-cycle programmes (master's) and fourth- and fifth -year students of full-time uniform master's programmes;
- 2PT – first- and second-year students of part -time second-cycle programmes (master's) and fourth- and fifth-year students of part-time uniform master's programmes.

As requested by the authorities of some of the universities included in the survey, the breakdown of the research sample and the survey results are presented in a generalised manner, without indicating the disparities between individual institutions with regard to the issues addressed.

4. Research results and discussion

The study's results are organized by research topic and addressed in the following order: (1) The quality of remote teaching in a crisis situation compared with traditional on-site teaching; (2) Limitations of remote education; (3) Expectations of remote education; and (4) Suggested changes to remote education.

Research question 1: What was the quality of remote teaching delivered from October 2020 to February 2021 in comparison with traditional teaching before the COVID-19 outbreak?

The first part of the study sought to collect students' perceptions of the quality of teaching between October 2020 and February 2021 compared with the period before the COVID-19 outbreak. The period October 2020 – February 2021 is the second term of emergency remote teaching, during which universities had already taken a number of measures to address the organisational and technological issues encountered in March–June 2020, or the first term of compulsory remote teaching following the outbreak of the pandemic. The results of the survey are shown in Table 2.

Table 2.
Quality of education in October 2020 – February 2021 compared with the period before the COVID-19 outbreak (percentages of responses given; n = 614)

Quality comparison	1FT	1PT	2FT	2PT	Total
Much lower quality	19.9	11.2	15.6	22.8	17.9
Lower quality	30.1	36.0	31.9	25.3	30.8
Comparable quality	30.8	31.4	30.6	32.9	31.1
Higher quality	15.0	18.0	14.4	10.1	14.7
Much higher quality	4.2	3.4	7.5	8.9	5.5

Source: own study.

The data show that despite the implementation of numerous improvements in remote teaching introduced by Poland's economics universities in the 2020/2021 winter term compared with the 2019/2020 summer term, the quality of education did not match its pre-pandemic

levels. In fact, as many as 48.7% of the surveyed students said that the quality of remote teaching in the second term in question was lower than in typical on-site education. This figure comprises 30.8% of students who found the quality of remote teaching to be lower than its on-site counterpart and 17.9% of students who considered it to be much lower. Full-time first-cycle (1FT) students expressed the most dissatisfaction with remote teaching, with 50% of them having unfavourable opinions about its quality. Thirteen percent of the students who took part in the survey felt that remote classes offered during the 2020-2021 winter term were on par with those delivered prior to the pandemic. On the other hand, only 20.2% of respondents thought that the quality of remote teaching during the October 2020 – February 2021 term was either higher or much higher than that provided prior to April 2020.

Research question 2: What issues hindered remote teaching in the crisis situation?

The second issue was to identify the problems with remote education encountered by students at Poland's universities of economics during the COVID-19 pandemic. Students were asked to select up to five out of 16 responses, which were based on the literature review, suggestions from the pilot participants, and personal experience of the researchers. The results of this part of the survey are shown in Table 3.

Table 3.
Issues encountered in remote education (percentages of responses given; n = 614; multiple choice)

Issue	1FT	1PT	2FT	2PT	Total
Unstable or slow internet connection during class	59.1	55.1	47.5	43.0	53.4
Technical problems with remote teaching applications	24.5	24.7	28.1	11.4	23.8
Lack of direct contact with the tutor and other course participants	46.5	43.8	46.9	46.8	46.3
Lack of suitable conditions at home (e.g. presence of other household members)	34.3	30.3	35.0	40.5	34.7
Excessive amount of material to be covered	24.1	29.2	28.1	20.3	25.4
Inappropriate choice of online teaching methods and/or tools by tutors	14.7	20.2	18.1	17.7	16.8
Lack of tutor involvement	11.9	19.1	11.9	20.3	14.0
Too much time spent in front of the computer screen	60.5	55.1	62.5	62.0	60.4
Difficulty in concentration due to wanting to do other activities during class	43.7	27.0	40.0	32.9	38.9
Difficulty in finding appropriate self-study materials	16.8	12.4	10.6	5.1	13.0
Difficulty in consultations with tutors	0.3	3.4	2.5	3.8	1.8
Difficulty in asking questions during class	5.6	3.4	5.6	10.1	5.9
Feelings of burnout and fatigue after a long period of remote teaching	44.8	30.3	37.5	32.9	39.3
Insufficient time to complete examination tasks	37.4	37.1	41.3	36.7	38.3
Lack of opportunity to review answers after the examination or receive feedback	15.7	18.0	18.8	16.5	16.9
Too strict rules imposed during examinations	25.2	23.6	18.8	16.5	22.1

Source: own study.

According to 60.4% of students participating in the survey, the most onerous issue affecting the perception of classes delivered remotely was the excessive amount of time spent at the computer. Other significant problems identified by students included: unstable or slow internet connection during class (53.4%); lack of direct contact with the tutor and other course

participants (46.3%); a sense of burnout and fatigue after a prolonged period of remote learning (39.3%); difficulty in concentration due to a desire to do other things during class (38.9%); too little time to sit examinations (38.3%); and lack of suitable conditions at home (e.g. presence of other household members; 34.7%).

It is worth noting that difficulties in concentration due to the desire to do other things during class were reported far more frequently by full-time students (1FT and 2FT) than by part-time ones (1PT and 2PT), who, in turn, were more likely than the former to mention their tutors' lack of commitment. In contrast, first-cycle students (1PT and 1FT) were more prone than second-cycle students (2PT and 2FT) to complain about excessively strict examination rules and internet connection problems. Full-time students (1FT and 2FT) expressed symptoms of burnout and exhaustion more frequently after prolonged periods of remote learning. The latter opinion appears entirely justified, since full-time students are required to attend more classes than part-time ones, who have a greater obligation to study independently.

It is also worth noting that a relatively small proportion of the surveyed students reported difficulties in consulting their tutors (1.8%); difficulties in asking questions during class (5.9%); problems in finding appropriate self-study materials (13.0%), and a lack of involvement on the part of tutors (14%).

Research question 3: What do students expect from remote education?

The third topic studied involved students' expectations from remote education features such as synchronous vs. asynchronous teaching techniques and tools, as well as different types of remote tutorials. To make it easier for respondents to specify their preferences, they were given the opportunity to choose a maximum of three options.

Expected synchronous teaching methods

Table 4 shows the results of the part of the survey devoted to the expectations of students regarding synchronous teaching methods applied in remote teaching.

Table 4.
Expected synchronous teaching methods (percentages of answers given; n = 614; multiple choice)

Method	1FT	1PT	2FT	2PT	Total
Case study analysis	36.4	41.6	41.9	46.8	39.9
Discussion	46.5	55.1	46.9	49.4	48.2
Educational film	19.9	14.6	16.9	15.2	17.8
Group work	49.0	48.3	50.6	43.0	48.5
Lecture	75.2	78.7	77.5	81.0	77.0
Presentation of group projects	22.4	16.9	24.4	20.3	21.8
Teaching games	19.9	18.0	15.6	27.8	19.5

Source: own study.

By far the most popular synchronous teaching method among students is the lecture. As many as 77.0% of the survey participants agreed that it should be used again in the future should the need for remote teaching arise again. It proved to be particularly attractive for part-

time second-cycle (2PT) students. The benefits of group work are acknowledged by 48.5% of the respondents, with full-time students (FT), particularly second-cycle students (2FT), showing slightly more interest in this method than part-time ones (1PT and 2PT). The third most popular synchronous teaching method is discussion, which was slightly more popular with part-time students (PT), particularly first-cycle students (1PT), than with full-time ones (FT). According to 39.9% of survey participants, case studies are also considered to be a successful synchronous teaching method, with the provision that first-cycle full-time students (1FT; 36.4%) find it less satisfactory than second-cycle part-time ones (2PT; 46.8%). The least popular synchronous teaching methods are educational films, instructional games, and group project presentations, which are helpful according to 17.8%, 19.5%, and 21.8% of respondents, respectively.

Expected synchronous teaching tools

Table 5 summarizes the survey results on students' expectations about the synchronous teaching tools used in remote teaching.

Table 5.
Expected synchronous teaching tools (percentages of answers given; n = 614; multiple choice)

Tool	1FT	1PT	2FT	2PT	Total
Blackboard Collaborate	2.1	0.0	2.5	1.3	1.8
Cisco WebEx	1.4	1.1	0.0	5.1	1.5
Discord	14.3	21.3	8.8	5.1	12.7
Facebook Messenger	2.4	0.0	1.3	5.1	2.1
Google Meet (Classroom)	15.4	19.1	18.1	11.4	16.1
Microsoft Skype	3.1	3.4	3.1	1.3	2.9
Microsoft Teams	82.2	68.5	85.6	75.9	80.3
Zoom	72.7	68.5	67.5	68.4	70.2

Source: own study.

Microsoft Teams and Zoom are the most popular synchronous teaching tools. As many as 80.3% and 70.2% of the students surveyed said they expect these two software packages to be used in remote instruction. Full-time students (1FT and 2FT) regard Microsoft Teams to be marginally more user-friendly than part-time students (PT), although Zoom is more popular among first-cycle students (1FT and 1PT) than second-cycle ones (2FT and 2PT). Students expressed a lot less interest in using Google Meet and Discord with only 16.1% and 12.7% of respondents anticipating to use them in the future, respectively. Discord is substantially more popular among first-cycle students (1FT and 1PT) than second-cycle ones (2FT and 2PT). In each case, no more than 3% of survey respondents said that they expected to use platforms like Microsoft Skype, Cisco WebEx, or Blackboard Collaborate for remote teaching in the future.

Expected asynchronous teaching methods and tools

Table 6 shows the survey results on students' expectations about the asynchronous teaching methods and tools used in remote teaching.

Table 6.

Expected asynchronous teaching methods and tools (percentages of responses given; n = 614; multiple choice)

Methods and tools	1FT	1PT	2FT	2PT	Total
Assignments posted online by tutors – completed projects, papers, presentations, etc. uploaded by students	33.2	36.0	40.6	36.7	36.0
Group work (e.g. joint projects, compiling glossaries and databases of terms)	39.5	38.2	30.6	32.9	36.2
Online courses developed using e-learning platforms	69.2	69.7	64.4	65.8	67.6
Online forum discussions	11.5	6.7	7.5	8.9	9.4
Sharing materials	9.8	5.6	12.5	17.7	10.9
Quizzes	42.0	50.6	37.5	41.8	42.0
Accessing recorded lectures and/or multimedia presentations	54.2	57.3	57.5	59.5	56.2
Use of internet-based resources (YouTube videos and others; total)	17.1	7.9	18.1	16.5	16.0

Source: own study.

Online courses created using e-learning platforms and accessing pre-recorded lectures and/or multimedia presentations are students' preferred asynchronous teaching methods and tools. These should be utilized in remotely delivered classes, according to 67.6% and 56.2% of the respondents. The next most popular group includes quizzes, group work, and assignments posted by tutors, which are found useful by 42.0%, 36.2% and 36% of the students surveyed, respectively. Remarkably, first-cycle students (1FT and 1PT) show more interest in group work under remote instruction than do second-cycle students (2FT and 2PT). Internet-based resources, sharing materials, and online forum discussions are the least favoured asynchronous teaching techniques and tools. Of the students surveyed, 16.0%, 10.9%, and 9.4% expect them to be used in remote teaching.

Expected methods of remote communication during tutorials

The results of the survey on the methods of remote communication during tutorials expected by students are presented in Table 7.

Table 7.

Expected methods of remote communication during tutorials (percentages of answers given; n = 614; multiple choice)

Remote communication method	1FT	1PT	2FT	2PT	Total
Synchronous tool (e.g. Zoom) at times designated by the tutor	90.9	80.9	85.0	91.1	87.9
Social media (e.g. Facebook)	7.0	9.0	6.9	5.1	7.0
University's e-learning platform	45.8	49.4	35.6	39.2	42.8
Email	92.7	88.8	88.1	91.1	90.7
Telephone at times designated by the tutor	11.5	19.1	15.0	17.7	14.3

Source: own study.

Email and synchronous tools at times specified by the tutor are by far the most popular methods of remote communication during tutorials, chosen by 90.7% and 87.9% of students, respectively. Remote tutorials using the university's e-learning platform are preferred by 42.8% of all the respondents and are slightly more popular with first-cycle students (1FT and 1PT) than with second-cycle ones (2FT and 2PT). Telephone communication and social media contact are the least favoured (chosen by 14.3% and 7.0% of students, respectively). Part-time (1PT and 2PT) students appreciate phone communication at times designated by the tutor more than full-time (1FT and 2FT) students.

Research question 4: What changes should be made to improve the quality of remote education?

The fourth issue of interest involved the modifications that should be implemented to improve the quality of remote teaching and students' preferred participation in remotely held classes in the post-pandemic setting.

Expected changes in remote education

A total of 296 responses were collected from 205 survey participants (n = 205) to the open-ended question on expected changes in remote education. The responses were classified into 21 categories based on similarity analysis, as shown in Table 8.

Table 8.
Expected changes in remote education (percentages of responses given; n = 205)

Response category	1FT	1PT	2FT	2PT	Total
Discontinue remote classes immediately after the pandemic	12.4	6.7	14.5	9.7	11.7
Extend the allotted time for online examinations	20.2	26.7	7.3	16.1	17.1
Change the examination method – abandon test-based examinations	4.5	3.3	5.5	6.5	4.9
Shorten online classes	4.5	0.0	0.0	3.2	2.4
Introduce longer breaks between classes	7.9	16.7	0.0	0.0	5.9
Move away from lectures as the predominant form of teaching	12.4	10.0	9.1	3.2	9.8
Reduce the number of onerous assignments and the amount of content to be covered	9.0	20.0	12.7	3.2	10.7
Improve the methodological skills of teachers in online education	7.9	13.3	3.6	6.5	7.3
Improve the technical skills of teachers	3.4	3.3	0.0	0.0	2.0
Introduce interactive and engaging teaching methods	18.0	23.3	16.4	25.8	19.5
Increase the involvement of teachers during class	4.5	20.0	1.8	22.6	8.8
Improve communication between students and teachers	4.5	0.0	7.3	3.2	4.4
Enable recording of classes	4.5	6.7	9.1	9.7	6.8
Introduce the obligation to turn on the camera	4.5	0.0	0.0	0.0	2.0
Abolish the obligation to turn on the camera	4.5	6.7	1.8	3.2	3.9
No change (teaching quality is sufficient)	6.7	0.0	7.3	6.5	5.9
Teachers should be more understanding of their students	4.5	0.0	1.8	0.0	2.4
Share all materials	2.2	6.7	0.0	0.0	2.0
Invest in educational software	1.1	0.0	7.3	6.5	3.4
Replace group work with individual assignments	0.0	0.0	5.5	9.7	2.9
Other	7.9	13.3	7.3	22.6	10.7

Source: own study.

The most common wish is for more interactive and engaging teaching methods, expressed by 19.5% of respondents and more often by part-time than full-time students. A somewhat smaller percentage (17.1%) stated that there is a need to lengthen the time allotted for online examinations; first-cycle students (1FT and 1PT) expressed this expectation significantly more frequently than second-cycle ones (2FT and 2PT). According to 11.7% of respondents, universities should discontinue remote instruction immediately after the end of the pandemic. The need to reduce the number of onerous assignments, cut down on excess content, and move away from lectures was indicated by 10.7 and 9.8%, respectively.

Second-cycle students (2FT and 2PT) signal a greater need to invest in teacher support software and reduce group work in favour of individual assignments than first-cycle ones (1FT and 1PT). However, first-cycle students (1FT and 1PT) are far more inclined to demand that teachers' methodological and technical skills in online instruction be improved. It is also worth noting that part-time students (1PT and 2PT) significantly more frequently than full-time ones (1FT and 2FT) want teachers to be more involved in class.

Expected proportion of online classes in total teaching time

The last factor to be studied was the expectations of students about the proportion of remotely delivered to in-person classes on courses offered after the pandemic. Table 9 summarizes the survey results on this topic.

Table 9.
Expected proportion of online classes in total course time (percentages of responses given; n = 614)

Proportion of remote teaching	1FT	1PT	2FT	2PT	Total
Up to 10%	16.4	14.6	11.3	10.1	14.0
10–19%	13.7	5.6	8.8	10.1	10.7
20–29%	14.4	11.2	12.5	8.9	12.7
30–49%	19.9	24.7	25.0	22.8	22.3
50–79%	20.6	22.5	23.7	21.5	21.9
Over 80%	15.0	21.4	18.7	26.6	18.4

Source: own study.

Despite the criticism of the quality of remote teaching, students generally express positive opinions about classes delivered after the pandemic using online teaching methods and resources. Differences in this regard are related to the preferred proportion of online classes in the educational programs offered by Poland's universities of economics. The distribution of responses, however, does not provide a clear answer on this issue. A little more than 40% of those surveyed feel that distance instruction should account for at least 50% of the total teaching time, whereas 59.7% disagree with this view. Only 14.0% of students believe that online classes should not exceed 10% of the total course time. According to 10.7% of respondents, the ideal percentage of online classes would be 10-19%, while 12.7% expect 20-29% of all classes to be conducted online. According to the largest group of respondents (22.3%), 30-49% of classes should be taught remotely. Lastly, a much higher proportion of online education – more than

80% – is supported by 18.4% of respondents. In comparison with part-time students (1PT and 2PT), full-time ones (1FT and 2FT) report the least preference for the widespread use of distance teaching.

5. Conclusions and recommendations

The most important findings from the study, organised by research question, are presented below.

1. Despite numerous improvements in remote teaching, the quality of education at the surveyed universities of economics in Poland was considered lower in the 2020/2021 winter term in comparison with the time before the outbreak of the pandemic. During the study period, nearly half of the respondents said that in-person instruction was superior to online instruction. Only a little more than 20% of those surveyed believe that teaching quality has actually improved during this period.

2. The major downside of remote teaching, according to students, is spending too much time at the computer. Over 60% of all respondents agreed with this statement. There were slightly fewer reports of internet connection problems during class (53.4%) as well as the lack of direct contact with the teacher and other course participants (46.3%). It should be noted that such issues are inherent in online education and are not difficult to resolve. Other significant disadvantages of remote education include: insufficient time to complete examinations online (38.3% of responses), excessive amount of material to cover (25.4%), technical problems with remote learning applications (23.8%), strict rules applied during exams (22.1%), as well as the inability to review the answers after the exam or obtain feedback (16.9%). The above problems can be addressed by universities, among other things, by implementing appropriate online teaching procedures and training-up academic staff.

3. By far, the most preferred method of synchronous teaching is the lecture, which was chosen by 77% of all students participating in the survey, followed by group work and discussion (approx. 48% of responses in each case). According to nearly 80% of students, the MS Teams platform should be used for synchronous classes. On the other hand, the most popular asynchronous teaching methods and tools are online courses developed using e-learning platforms (67.6% of respondents) and accessing pre-recorded lectures and/or multimedia presentations (56.2%). Students most commonly expect tutorials by e-mail (90.7%) and communication via synchronous tools at times specified by the teacher (87.9%).

4. More than 40% of the surveyed students think that after the pandemic, online teaching should account for at least 50% of the total course time. However, as many as 14% of them would prefer the percentage to be less than 10%. Students believe that longer online exams and the introduction of interactive, engaging online teaching techniques are essential for raising the standard of instruction. First-cycle students anticipate less content being covered, longer breaks between sessions, more time for exams, and a shift from traditional lectures. Second-cycle students, on the other hand, emphasize the need of investing in teacher support software and reducing group work in favour of individual assignments. Part-time students are more likely to favour continuing classes remotely.

Despite its many drawbacks, remote education has enormous potential. According to the research findings discussed in this paper, students at Poland's public universities of economics prefer on-site classes, because they believe they help them achieve better learning outcomes; they are, nevertheless, receptive to a variety of distance teaching alternatives that supplement traditional face-to-face instruction.

The research also demonstrates opportunities for improvement in the teaching process. Their input identifies that teaching methods and materials should be tailored to the requirements of the specialty, as well as reflect the degree (first-cycle vs. second-cycle), and the mode of study (full-time vs. part-time).

The findings of the study can be used to inform teaching development strategies adopted by higher education institutions and to modify educational programs. The findings may also be valuable for university e-learning centers responsible for developing educational technologies and strengthening the technical and methodological competencies of academic teachers involved in distance education.

Since the survey was conducted at four public universities of economics in Poland, its results cannot be generalised to all Polish universities. In the future, similar studies should be undertaken in order to assess the long-term consequences of emergency remote teaching during the COVID-19 outbreak on graduate outcomes and long-term changes in the proportion of distance education in the curricula.

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