

## CHANGES IN REMOTE EDUCATION INTRODUCED BY POLISH UNIVERSITIES OF ECONOMICS AS A RESULT OF THE COVID-19 PANDEMIC

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**Purpose:** To determine how remote education at Polish universities of economics changed between the first and second term of classes held during the pandemic (March-June 2020 vs. October 2020-February 2021).

**Design/methodology/approach:** The paper is based on a survey of organisational changes implemented by four Polish universities of economics (in Katowice, Kraków, Poznań, and Wrocław) as a result of the Covid-19 outbreak.

**Findings:** It was found that in the winter term 2020/21, the timeliness of educational activities noticeably improved and synchronous methods were employed more frequently, whereas email was the preferred mode of communication for tutorials in both terms.

**Social implications:** The universities surveyed were able to respond to the crisis within a reasonably short time and continued to provide education throughout the pandemic. The findings imply that the interruption of face-to-face instruction should have little effect on their students' employment prospects after graduation.

**Originality/value:** The case study looks in depth at the process of organisational change forced by external circumstances at four organisations. It also illustrates the direction and magnitude of adjustments made by the selected HEIs as perceived by their students. To date, no comparable research on the subject has been published in the literature.

**Funding:** The publication was financed from the subsidy granted to the Cracow University of Economic – Project nr 046/GAP/2022/POT.

**Keywords:** emergency remote teaching, higher education, organizational change, Covid-19 crisis.

**Category of the paper:** Research paper, case study.

## 1. Introduction

The new coronavirus strain SARS-CoV-2, which causes COVID-19 disease, affected all the inhabited continents and was recognised as a global pandemic due to its severe morbidity and mortality (Chahrour et al., 2020). The pandemic was officially declared by the World Health Organisation on 12 March 2020 (WHO, 2020). Following this decision, 107 countries implemented measures to limit social contact, including the closure of educational facilities. In 29 countries, educational institutions had already been preventively closed a week earlier (Mahmood, 2020). According to UNESCO, on 1 April 2020, educational institutions were already shut in 193 countries, where a total of 91% of the world's pupils and students were educated (Zbarachewicz, 2020).

As of 12 March 2020, the possibility of providing classes in higher education institutions using remote teaching methods and techniques was introduced pursuant to the Minister of Science and Higher Education's Regulation of 11 March 2020 on the temporary suspension of the functioning of certain units of the higher education and science system in connection with the prevention, counteraction, and combating of COVID-19 (Ministry of Science and Higher Education, 2020). Poland's public universities of economics immediately responded to the crisis situation. In the days that followed, their authorities issued appropriate regulations and guidelines on taking classes, tests, and diploma examinations in a remote setting.

The purpose of this article is to discuss the findings of a study on the changes in remote education introduced by the Polish universities of economics in the second term of classes delivered under pandemic conditions, spanning the period from October 2020 to February 2021 (i.e. the winter term of the 2020/21 academic year) in comparison with remote education provided in the first term of classes delivered during the pandemic, spanning the period from March to June 2020 (the summer term of the academic year 2019/20).

## 2. Literature Review

### 2.1. Definition, methods, and tools of remote education

Remote education, distance learning, e-learning, distance teaching or e-education all refer to the delivery of teaching activities using a computer network and computers in a setting that involves temporal and/or spatial distance (Winiarczyk, Warzocha, 2021). Remote education, including remote teaching and learning, has been the subject of research for decades (Hodges et al., 2020). The potential of remote education was recognised long before the outbreak of the recent pandemic. In 2013, the European University Association (EUA) conducted a study on

the use of distance learning by European universities. The survey covered 249 universities, including 10 Polish educational institutions, of which 2 were universities of economics. The study found that virtually every one of them used distance learning methods (Gaebel et al., 2014). Eighty-one per cent of the universities surveyed offered online courses, 39% had online degree programmes, 91% provided hybrid classes, 55% had blended degree programmes, whereas 40% collaborated with other institutions to offer combined online courses (Gaebel et al., 2014). A repeat survey, conducted by the Association in 2018, found that universities were placing increasing importance on remote learning; 93% of universities surveyed recognised remote education methods and 87% used them in their educational processes (Gaebel, Zhang, 2018).

A turning point in remote education occurred in March 2020. With the announcement of the COVID-19 pandemic, remote learning gained prominence and researchers from around the world began to explore a wide range of issues related to teaching and learning during the global epidemic (Bond et al., 2021). Because of the constraints imposed on the educational process, it became imperative to abandon traditional methods and techniques in favour of online instruction. However, the phrase that best applies to the array of instruction methods employed during pandemic conditions is Emergency Remote Teaching, not remote teaching (ERT; cf. Hodges et al., 2020). Emergency teaching is a branch of remote distance learning (Bozkurt et al., 2020; Hodges et al., 2020), and its distinguishing feature is that it occurs in an unplanned manner (Bond et al., 2021). The strategies that most universities implemented at the onset of the pandemic were crisis teaching strategies (Bozkurt et al., 2020; Hodges et al., 2020).

The quality of distant education is generally high, as it results from meticulous design and planning (Hodges et al., 2020). Emergency procedures, on the other hand, are temporary in nature as they are prepared for crisis situations. They involve the use of fully remote teaching solutions in the learning process, which, however, once the emergency situation has subsided, are replaced again by traditional procedures appropriate to natural learning environments. The primary goal of teaching under crisis conditions is therefore not to recreate the natural educational ecosystem, but to temporarily ensure its continuity (Hodges et al., 2020). According to Gruszczyńska (2020), teaching under crisis conditions has little in common with a technologically planned and methodologically supported process.

Both in the planned and structured process of remote learning and teaching in a time of crisis, the same educational methods and tools are used. These include, among others, presentations (e.g. informative lecture), demonstrations (e.g. film), problem-based methods (e.g. problem solving on an online forum or document sharing), activating methods (e.g. teaching games or discussions), practical methods (the teacher sending diagrams or tasks to be performed), or programmatic methods (organising online courses) (Grzybowska, 2020).

However, these methods and techniques must be adapted to group preferences and take into account every student's capacity for participation.

There are two types of remote education: synchronous (two-way videoconferencing) and asynchronous (learning networks) (Wierzbik-Strońska, Ostopolets, 2021).

Synchronous teaching takes place in real time, usually follows a fixed timetable, and requires participants to use appropriate technology (Wierzbik-Strońska, Ostopolets, 2021; Witkowski, 2011). The advantages of this kind of instruction are the opportunity to ask questions of the teacher directly during the class and for the teacher to adapt the class session to the needs of the students. The disadvantage is the necessity to attend class on the date set by the instructor (Čelić, Dedeić, 2021). Examples of tools used in synchronous teaching include Google Meet and Cisco Webex.

Asynchronous instruction does not presume real-time communication. Learning in this model occurs at multiple locations and times, or at different times and locations (Witkowski, 2011). Asynchronous instruction, which takes advantage of specialised platforms, email, and discussion forums, allows learners and teachers to interact even when they are not all online at the same time. This is a key feature of this flexible learning model. Many people take online courses precisely because of their asynchronous nature, which allows them to combine education with work, family and other commitments. Asynchronous instruction allows learners to log into the online learning environment at any time and download documents or send messages to other learners (Wierzbik-Strońska, Ostopolets, 2021). The advantages of asynchronous learning are the ability to replay the recorded session, to learn as one's own time allows (at any time) and the possibility for everyone to ask questions (during synchronous learning at a specific time this is not always possible). However, this model also has disadvantages, as it creates a sense of distance from the subject and the instructor and requires the ability to learn independently (Čelić, Dedeić, 2021). Tools supporting asynchronous learning include Google Classroom and Padlet (Libasin et al., 2021).

## **2.2. Changes in teaching methods in higher education institutions in response to COVID-19**

As a result of the COVID-19 pandemic, decisions to close schools and colleges have resulted in a shift from residential to remote learning. In practice, these are not unusual circumstances. The 2005 storm seriously damaged 27 schools and universities along the Gulf Coast, as well as several more in Texas. As a result of this disaster, the Alfred Sloan Foundation supported a partnership of 153 schools and universities to take prompt action, which included the creation of over 1300 classes that allowed students to continue their studies online (Murphy, 2020). Similar steps were taken in the aftermath of the New Orleans floods and the Christchurch earthquake (Domagała-Zyśk, 2020). The key difference, however, is that these disasters were regional, while the pandemic, which started in March 2020 is global in reach.

In the United States, more than 1300 universities across all 50 states cancelled or only offered remote courses during the 2020 spring semester (Smalley, 2020). According to data gathered by the European University Association and published in a study titled *Digitally enhanced learning*, 95% of European institutions have fully integrated online learning as of April/May 2020, whereas 4% had done so to a lesser extent (EUA, 2020b; IAU, 2020). Although European universities had the resources to introduce remote education, they were in many respects insufficient and the universities themselves were unprepared for the sudden increase in their use (Gaebel et al., 2021). In the aftermath of the pandemic, 70% of universities in Europe planned to increase their digital capacity, 87% to implement new teaching methods and 66% to develop online libraries, even though such services had already been offered by 90% of the institutions surveyed (EUA, 2020b; Gaebel et al., 2021). A study by the International Association of Universities (IAU) demonstrates that nearly 66% of universities worldwide world have replaced classroom teaching with remote instruction. Although universities responded flexibly to the epidemic crisis, many were not fully prepared to shift to remote teaching (IAU, 2020).

Interesting data are also provided by the results of a survey of teaching tools used in universities in response to the pandemic, conducted on a sample of 30,383 students from 61 countries, including 45% from the European Union (Aristovnik et al., 2020). The findings show that the most popular type of online instruction was classes taught using synchronous tools (59.4%). Asynchronous tools such as uploading presentations (15.2%), videos (11.6%), communicating via forums and chat rooms (9.1%), and audio recordings (4.7%) were less popular. Across the entire research sample, synchronous online activities were considered the most satisfactory by students and, as regards asynchronous tools, uploading presentations.

The adopted crisis teaching models varied by university size, the courses offered, and the management models. Large units generally found it more difficult to implement system-wide solutions. In decentralised HEIs, individualised remedies were employed more often, varying between faculties and even departments. However, in programmes requiring laboratory classes, practical experience and external cooperation, remote learning proved to be more problematic (EUA, 2020a).

The restrictions in force made it mandatory for academics to implement remote instruction (Gewin, 2020). Although this form of education has numerous advantages, it also has several disadvantages of which the most significant are the lack of direct contact between students and the teacher, insufficient student interaction, and low commitment to learning (Sito et al., 2018). These disadvantages of distance education raise legitimate concerns about the quality of instruction provided in this mode. According to Topol (2020), classes delivered remotely are, by definition, less effective than those delivered traditionally in the classroom. Concerns are also raised about the reasonable risk of a negative impact of the epidemic on students' academic

performance, fulfilment of their educational plans, participation in the labour market, and ability to achieve their intended professional goals (Aucejo et al., 2020). The authors of the report *Irish National Digital Experience Survey* (INDEX) also draw attention to the possibility that emergency modifications to the teaching strategies may have a negative effect on the quality of education. In their view, before March 2020, 70% of academics in Ireland and 74% in the UK had never taught in an online environment before (EUA, 2020a). In this context, the key question becomes: What remote methods and tools allow teaching to be delivered without compromising the level of education? The COVID-19 pandemic showed that a universal answer to this question does not exist (Bozkurt et al., 2020).

### **2.3. Changes to teaching methods in Polish higher education in response to the pandemic crisis**

Pursuant to the said Regulation of the Minister of Science and Higher Education of 11 March 2020 (MNiSW, 2020), higher education institutions in Poland were obliged to modify their mode of instruction. It took some time for universities to adapt to the restrictions, specifically, to use appropriate electronic tools and systems, as well as develop and implement new ones (Kolańska-Morawska, Brzozowska, 2021).

The Minister of Science and Higher Education did not provide specific requirements for the platforms to be used in remote education. Decisions in this regard were left to university authorities, which, drawing on their experience, adopted specific solutions at their own discretion (Zbarachewicz, 2020). In the first weeks, a wide range of technology solutions were tried and tested. For example, the University of Mining and Metallurgy in Kraków used the UPEL platform, based on Moodle and featuring the Virtual Class plug-in from Click Meeting and the Microsoft Teams system (Topol, 2020). The University of Białystok relied on the Blackboard online learning platform integrated with the USOS system, as well as the Moodle platform, Blackboard Collaborate, and Zoom (Topol, 2020). At the University of Warsaw, on the other hand, classes were taught using Google Meet, Google Classroom, and the UW Kampus Platform based on the Moodle system (Topol, 2020).

The first wave of the pandemic demonstrated that universities which had previously focused on developing distance learning methodologies were in a privileged position regardless of the applied technology (Wojcik, 2022). One such instance is the Jagiellonian University, where 12.4% of all classes during the 2018/19 academic year were delivered via a distance learning platform (Topol, 2020).

Nonetheless, a significant proportion of Polish higher education institutions, even several months after the restrictions were announced, were still unprepared to fully implement their activities in the new online reality. In September 2020, a survey of public and non-public university authorities was conducted, which was reported in *How will COVID-19 affect higher education in the academic year 2020/21?* Its findings show that around 33% of university

representatives declared that their institution was not fully ready for the new academic year (i.e. the winter term of 2020/21). Smaller and private HEIs, with somewhat better prepared teaching staff in this respect, found it easier to switch to remote instruction (Effects Centre, 2020).

Despite these challenges, the COVID-19 outbreak has surely expedited the process of the higher education system entering a new stage of development, potentially leading to a new generation of distant learning offered by universities. Indeed, this epidemic has ushered in a digital revolution in the academic world (Strielkowski, 2020). There are many indications that university education is unlikely to return to the same form as before the pandemic, and that newly emerging technological solutions will enable remote learning and be successfully used in practice (Każmierczak, Sworowska, 2021).

### 3. Research methodology

The aim of the study was to determine how remote education at Polish universities of economics changed between the first term of classes held during the pandemic, which ran from March to June 2020 (the summer term of the 2019/20 academic year) and the second term, which covered the period from October 2020 to February 2021 (the winter term of the 2020/21 academic year). The aim of the study was operationalised into the following four research questions:

1. Did the teaching activities conducted in both terms of remote education take place as scheduled?
2. Did the synchronous learning methods and tools used during the second term of remotely delivered classes change compared with first term?
3. Did the asynchronous learning methods and tools used during the second term of remotely delivered classes change compared with the first term?
4. Did academic staff conduct tutorials differently in the second term of remotely taught classes than in the first term?

The study was conducted from March to June 2021 among the students of four Polish universities of economics in Katowice, Kraków, Poznań and Wrocław.

To answer the research questions, a survey questionnaire was developed, 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 survey 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 Krakow University of Economics students to check accuracy and comprehension. Minor changes were made in response to input from the pilot participants.

The research sample consisted of 614 full-time and part-time students who participated in courses taking place in both terms 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 presented in Table 1.

**Table 1.**  
*Breakdown of a research sample*

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

Source: own study.

For the sake of clarity, the following acronyms are used to refer to individual 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 HEIs included in the survey, the breakdown of the research sample and survey findings are presented in general terms, i.e. without highlighting differences between individual HEIs across the studied issues. The results of the research concerning individual terms are presented as the summer term 2019/20 and the winter term 2020/21 (abbreviated as ST 19/20 and WT 20/21, respectively).



## 4. The study results

The study's conclusions will be reported in the order in which the individual research questions were asked, namely: (1) compliance of the implementation of teaching activities with the timetable; (2) synchronous teaching methods and tools; (3) asynchronous teaching methods and tools; and (4) forms of tutorials.

### 4.1. Compliance with the timetable

One of the first challenges faced by Polish universities of economics in response to the COVID-19 epidemic that began in Poland in March 2020, apart from the widespread implementation of remote education tools, was to ensure the timeliness of the teaching process. The yardstick we adopted to illustrate the effectiveness of the university's efforts in this respect is the percentage of remotely delivered classes that were held as scheduled. Data illustrating the timeliness of the delivery of remote teaching at the universities surveyed in the summer term 2019/20 and the winter term 2020/21 are presented in Table 2.

**Table 2.**

*Percentage of remote instruction delivered as scheduled in the summer term 2019/20 and winter term 2020/21 (n = 614)*

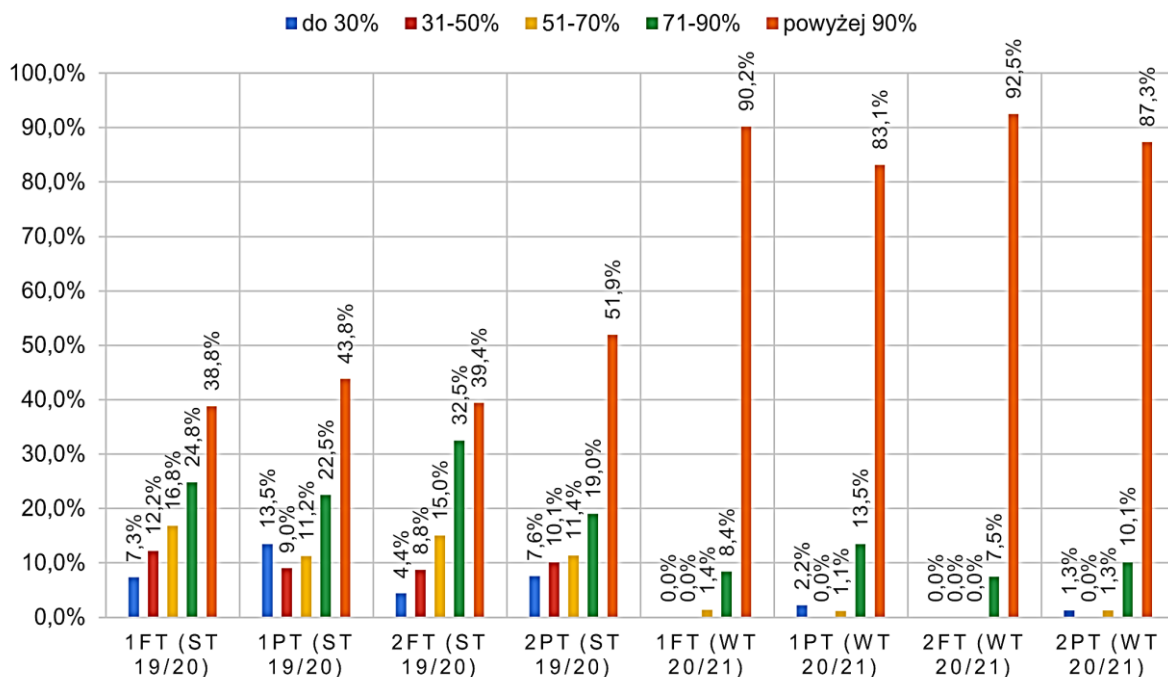
	< 30%	30-50%	51-70%	71-90%	> 90%
Summer term 2019/20	7.5%	10.6%	14.8%	25.7%	41.4%
Winter term 2020/21	0.5%	0%	1%	9.1%	89.4%

Source: own study.

Ensuring the timeliness of remote instruction by the surveyed universities in the summer term 2019/20 was moderately successful. Only 41.4% of the respondents said that at least 90% of teaching activities took place as scheduled, and a further 40.5% (25.7%+14.8%) estimated that between 51% and 90% of teaching activities were completed within the scheduled times. According to 10.6% of the students surveyed, 31–50% of classes were delivered according to timetable, and according to 7.5% of the respondents, no more than 30% of the total classes were delivered on time.

In the following winter term 2020/21, the timeliness of teaching significantly improved. The answer that more than 90% of teaching classes were conducted according to timetable during this period was selected by 89.4% of the students surveyed. According to 10.1% (9.1%+1%) of students, between 51% and 90% of classes were held on time, and only 0.5% of students considered that no more than 30% of classes were completed according to the timetable.

In contrast, the universities were unable to provide the same level of timeliness across all programme kinds and delivery formats. Figure 1 shows the discrepancies that have been found in this regard.



**Figure 1.** Percentage of remote classes delivered as scheduled in the summer term 2019/20 and winter term 2020/21 by form and type of programme. Own study.

In the summer term 2019/20, most classes held as scheduled, i.e. above 90%, was reported by part-time students, namely 43.8% of 1PT and 51.9% of 2PT. The same response was given by 38.8% of 1FT and 39.4% of 2FT students. The proportion of responses from part-time students to the question on the lowest (i.e. no more than 30%) percentage of teaching activities completed as scheduled was also higher. 1PT students reported 13.5%, 2PT – 7.6%, whereas 1FT – 7.3% and 2FT – 4.4%.

In the winter term 2020/21, the proportion of classes taught as scheduled markedly improved. The highest compliance with the timetable (i.e. more than 90%) was declared by 90.2% of 1FT, 92.5% of 2FT, 83.1% of 1PT and 87.3% of 2PT. On the other hand, only 1.4% of 1FT students, none of 2FT, 3.3% of 1PT and 2.6% of 2PT students said that the proportion of teaching occurring in a timely manner did not exceed 70%. In the winter term 2020/21, the proportion of classes taught as scheduled in full-time programmes was therefore slightly higher than in part-time programmes.

#### 4.2. Synchronous teaching methods and tools

The second aspect of the teaching process to be surveyed was the use of synchronous methods and tools duringi classes.

Table 3 summarises the overall findings on the use of synchronous tools, which allow instructors and students to engage in classes in real time via an online meeting platform.

**Table 3.***Percentage of classes delivered using remote synchronous tools (n = 614)*

	< 30%	30-50%	51-70%	71-90%	> 90%
Summer term 2019/20	15.1%	13.7%	17.3%	17.3%	36.6%
Winter term 2020/21	1.1%	0.3%	2.1%	9.4%	87%

Source: own study.

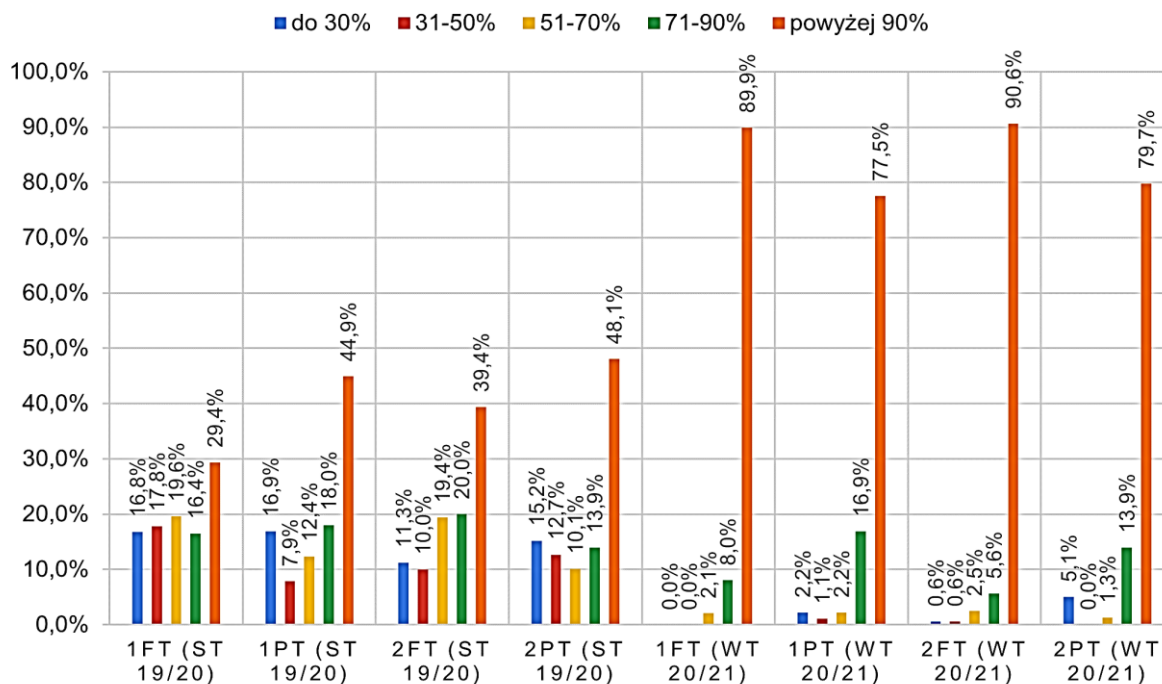
Throughout the summer term 2019/20, 36.6% of the total number of students surveyed reported using synchronous teaching tools during at least 90% of teaching sessions. These instruments were employed in 79–90% of educational activities, according to another 17.3%. The same proportion of students reported that tools enabling real-time remote education were employed in 50–70% of educational activities. In comparison, fewer than 29% (15.1%+13.7%) of respondents stated that they used synchronous technologies in at least 50% of their classes.

In the winter term 2020/21, however, synchronous online teaching methods were used in more than 90% of all classes by 87% of students and during 70–90% of classes by 9.4% of the survey participants. Only 1.4% (1.1% + 0.3%) of the respondents stated that these tools were used at most during 50% of the total teaching activities that took place during the term under consideration.

The study shows that while in the first term of classes held at the four Polish universities of economics during the COVID-19 pandemic, approximately 54% (36.6% + 17.3%) of students stated that they had participated in at least 71% of classes organised via online meeting platforms in real time, in the second term, the proportion increased to more than 96% (87% + 9.4%).

Let us now take note the differences in participation in remote synchronous activities among the various groups of students surveyed (Figure 2).

In the summer term 2019/20, there was a greater variation in the use of synchronous tools in part-time programmes. In 1PT, 62.9% (44.9% + 18%) of students declared that they attended at least 71% of classes using the online meeting platform and 44.9% of students attended more than 90% of classes, while in 2PT programmes, the respective figures were 62.0% (48.1% + 13.9%) and 48.1%. In contrast, 24.8% (16.9% + 7.9%) of 1PT students confirmed their participation in at most 50% of classes conducted using synchronous tools and 16.9% in at most 30% of classes. Among 2PT students, the figures were 27.9% (15.2% + 12.7%) and 15.2% respectively.



**Figure 2.** Percentage of classes delivered using synchronous tools across the groups of students surveyed. Own study.

In the case of 1FT students, only 45.8% (29.4% + 16.4%) attended at least 71% of classes in the same term using the online meeting platforms and 29.4% attended more than 90% of classes. Among 2FT students, the respective figures were 59.4% (39.4% + 20%) and 39.4%. On the other hand, in the case of 1FT students, the figures of interest were 59.4% (39.4% + 20%) and 39.4%. Among 1FT students, 34.6% (16.8% + 19.6%) reported participation in at most 50% of classes conducted using synchronous tools and 16.8% in at most 30% of such classes. In 2FT, this was declared by 21.3% (11.3% + 10%) and 11.3% of students, respectively. The conclusion to be drawn from these statistics is that more classes were cancelled or were only conducted using asynchronous tools during the summer term 2019/20, which is more noticeable in the findings for full-time students than for part-time students.

In the winter term 2020/21, the use of synchronous tools in the teaching process increased in every student group surveyed, with the highest noted for full-time courses. Participation in at least 71% of classes conducted using synchronous tools was declared by 97.9% (89.9% + 8%) of 1FT students, and in more than 90% of classes by 89.9% of this group of students. 2FT students reported participation in synchronous activities at 96.3% (90.6% + 5.6%) and 90.6% respectively. Participation in at least 71% of classes taken using the online meeting platform among 1PT and 2 PT students was 94.4% (77.5 + 16.9%) and 93.6% (79.7% + 13.9%), whereas above 90% of classes was 77.5% and 79.7%, respectively. The lowest response rate to the question on participation in at most 50% of classes conducted with the use of synchronous tools was noted in the group of 1FT (no responses) and 2FT students (1.2%), while the highest among 2PT (5.1%) and 1PT students (3.3%).

The next research topic concerned the types of synchronous tools utilised for teaching at economics universities in both terms (table 4).

**Table 4.**

*Types of synchronous tools used in the teaching process (percentage of answers given; n = 614)*

	Never		Rarely		Sometimes		Often		Very often	
	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21
Blackboard Collaborate	96.7	98.0	1.6	0.7	0.8	0.5	0.3	0.5	0.5	0.3
Cisco WebEx	98.4	99.7	0.5	0.3	0.8	0.0	0.2	0.0	0.2	0.0
Discord	95.0	98.5	2.3	1.0	2.3	0.5	0.5	0.0	0.0	0.0
Facebook Messenger	92.5	95.9	3.6	2.4	2.1	1.1	1.5	0.2	0.3	0.3
Google Meet (Classroom)	94.3	97.4	2.6	0.8	1.8	0.8	0.7	0.0	0.7	1.0
Microsoft Teams	37.3	46.4	7.8	2.1	6.0	2.0	10.3	1.3	38.6	48.2
Microsoft Skype	84.7	98.2	9.0	1.1	5.2	0.5	0.8	0.2	0.3	0.0
Zoom	25.1	42.2	11.7	4.2	15.1	2.3	15.0	1.1	33.1	50.2
Other	71.5	90.1	8.0	4.9	10.7	2.4	5.2	0.8	4.6	1.8

Source: own study.

In the summer term 2019/20, the most popular synchronous teaching tools used by the Polish universities of economics surveyed were Zoom and Microsoft Teams. Microsoft Teams was used very often or often in the teaching process according to 48.9% of all students in the research sample. The very frequent or frequent use of the Zoom platform was indicated by 48.1% of the total student sample. Academic teachers were far less likely to use Microsoft Skype, Facebook Messenger, Discord, Google Meet (Classroom), Blackboard Collaborate, Cisco WebEx or others. The response rate for very frequent or frequent use of these platforms was highest for Facebook Messenger (1.8%) and did not exceed 1.1% for the other tools.

The survey results indicate that the universities of economics chose the remote learning platforms that were appropriate or preferable for the teaching process during the winter term 2020/21. During this time, Microsoft Teams and Zoom, which were used very often or often by 49.5% and 51.3% of the students questioned, respectively, consolidated their position as the top tools. Simultaneously, the proportion of respondents who said they had never or rarely utilised synchronous tools, increased. While in the summer term 2019/20 it was declared that Microsoft Teams and Zoom were not or were rarely used by 45.1% and 36.8% of the students respectively, for the winter term 2020/21 the percentage of responses to these questions increased to 48.5% (Microsoft Teams) and 46.4% (Zoom). Furthermore, in the winter term 2020/21, the proportion of other tools used in synchronous learning declined; the percentage of responses concerning their very frequent or frequent use did not exceed 1% for any of them. It is thus clear that Zoom and Microsoft Teams dominated the market for synchronous learning platforms at the studied universities during the first year of enforced remote learning (March 2020-February 2021).

The teaching techniques utilised in synchronous online classes are an important aspect of remotely delivered education. The teaching approaches in this study were chosen after conducting a literature review (taking into account the methodologies described in the theoretical section of this paper), teaching practice, interviews with students and instructors, and a preliminary pilot study. Table 5 summarises the relevant findings.

**Table 5.**

*Teaching techniques used in synchronous online classes delivered in the summer term 2019/20 and the winter term 2020/21 (percentage of responses given; n = 614)*

Technique	Never		Rarely		Sometimes		Often		Very often	
	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21
<b>Lecture (total)</b>	<b>1.5</b>	<b>0</b>	<b>4.9</b>	<b>0.2</b>	<b>11.1</b>	<b>1.0</b>	<b>25.6</b>	<b>11.4</b>	<b>57.0</b>	<b>87.5</b>
1FT	2.1	0	3.5	0	13.6	1.0	28.0	12.6	52.8	86.4
1PT	2.2	0	3.4	0	12.4	1.1	32.6	14.6	49.4	84.3
2FT	0.6	0	6.9	0	6.3	1.3	21.3	7.5	65.0	91.3
2PT	0	0	7.6	1.3	10.1	0	17.7	11.4	64.6	87.3
<b>Discussion (total)</b>	<b>16.0</b>	<b>5.2</b>	<b>29.6</b>	<b>16.9</b>	<b>26.2</b>	<b>27.7</b>	<b>16.0</b>	<b>27.9</b>	<b>12.2</b>	<b>22.3</b>
1FT	16.8	3.8	32.9	16.8	26.6	27.6	15.0	30.4	8.7	21.3
1PT	14.6	2.2	20.2	19.1	31.5	32.6	15.7	23.6	18.0	22.5
2FT	16.3	9.4	30.0	11.3	25.0	30.6	15.6	26.3	13.1	22.5
2PT	13.9	5.1	27.8	26.6	21.5	16.5	20.3	26.6	16.5	25.3
<b>Educational film (total)</b>	<b>47.9</b>	<b>36.3</b>	<b>26.2</b>	<b>30.8</b>	<b>18.2</b>	<b>23.5</b>	<b>4.2</b>	<b>5.4</b>	<b>3.4</b>	<b>4.1</b>
1FT	48.6	35.0	24.8	30.1	18.5	25.2	4.9	5.9	3.1	3.8
1PT	38.2	32.6	36.0	31.5	18.0	29.2	4.5	4.5	3.4	2.2
2FT	53.8	40.0	22.5	32.5	16.9	18.8	3.1	4.4	3.8	4.4
2PT	44.3	38.0	27.8	29.1	20.3	20.3	3.8	6.3	3.8	6.3
<b>Group work (total)</b>	<b>12.1</b>	<b>2.0</b>	<b>17.6</b>	<b>6.8</b>	<b>23.3</b>	<b>22.3</b>	<b>23.6</b>	<b>34.9</b>	<b>23.5</b>	<b>34.0</b>
1FT	11.5	1.0	20.3	4.9	28.0	25.2	20.3	35.3	19.9	33.6
1PT	13.5	5.6	12.4	6.7	21.3	21.3	32.6	37.1	20.2	29.2
2FT	12.5	1.3	16.9	8.8	21.9	22.5	21.9	32.5	26.9	35.0
2PT	11.4	2.5	15.2	10.1	11.4	12.7	29.1	35.4	32.9	39.2
<b>Case study analyses (total)</b>	<b>34.2</b>	<b>21.8</b>	<b>22.0</b>	<b>23.5</b>	<b>22.0</b>	<b>26.7</b>	<b>14.3</b>	<b>17.6</b>	<b>7.5</b>	<b>10.4</b>
1FT	38.8	20.3	24.5	24.1	17.5	27.3	12.9	17.8	6.3	10.5
1PT	38.2	36.0	22.5	18.0	21.3	24.7	14.6	18.0	3.4	3.4
2FT	30.6	23.8	15.0	21.9	29.4	27.5	14.4	15.0	10.6	11.9
2PT	20.3	7.6	26.6	30.4	24.1	25.3	19.0	21.5	10.1	15.2
<b>Teaching games (total)</b>	<b>70.2</b>	<b>65.0</b>	<b>19.2</b>	<b>20.0</b>	<b>7.3</b>	<b>9.4</b>	<b>1.1</b>	<b>3.3</b>	<b>2.1</b>	<b>2.3</b>
1FT	71.3	57.7	19.9	26.2	6.6	10.5	1.4	3.5	0.7	2.1
1PT	67.4	70.8	24.7	18.0	4.5	10.1	2.2	1.1	1.1	0
2FT	71.9	73.8	15.0	9.4	8.8	9.4	0	4.4	4.4	3.1
2PT	65.8	67.1	19.0	21.5	10.1	5.1	1.3	2.5	3.8	3.8
<b>Presentation of group projects (total)</b>	<b>18.9</b>	<b>6.0</b>	<b>16.3</b>	<b>13.2</b>	<b>25.7</b>	<b>25.7</b>	<b>20.8</b>	<b>29.5</b>	<b>18.2</b>	<b>25.6</b>
1FT	20.3	6.6	18.5	12.6	28.7	29.4	17.1	28.0	15.4	23.4
1PT	21.3	14.6	18.0	14.6	20.2	21.3	23.6	31.5	16.9	18.0
2FT	16.9	2.5	13.8	10.0	24.4	24.4	21.9	32.5	23.1	30.6
2PT	15.2	1.3	11.4	20.3	24.1	20.3	29.1	26.6	20.3	31.6

Source: own study.

In the summer term 2019/20, by far the most widely used synchronous teaching technique was the lecture, according to 82.6% of all the students surveyed. The various course types and programmes did not significantly differ from one another in this regard. The second most frequently used synchronous teaching technique in that term was group work. Its very frequent or frequent use was reported by 47.1% of the total number of students participating in the study, with 2PT students using it the most frequently (very often + often) (62%), whereas the least frequent by 1FT students (40,2%). A slightly less popular technique was the presentation of group projects prepared in advance, reported by 39% of the total number of students surveyed, including 49.4% of 2PT and 45% of 2FT students. This was offered the least frequently to 1FT students – only 32.5% of respondents in this group declared that it had been used very often or often. Discussions and case study analyses were used very often or often during classes attended by 28.2% and 21.8% of the total respondents, respectively. In contrast, 7.6% and 3.3% of respondents, respectively, reported using educational films and teaching games very often or often.

The lecture had already become the most widely used synchronous teaching technique in the winter term 2020/21 (very often + often according to 98.9% of the total number of students surveyed). There was also a significant increase in the proportion of students who said they had participated in group work (68.9% of all respondents), group project presentations (55.1%), discussions (50.2%), and case study analysis (28%) very often or often during the classes held remotely that term. On the other hand, there was a small increase in the proportion of students who reported using synchronous teaching tools such as educational films (9.5% of the research sample) and teaching games (5.6%) on a regular or very regular basis. The educational film, on the other hand, turned into an important teaching tool used during classes with 2PTs: 12.6% of this group of students received instruction in this way as part of their coursework.

#### 4.3. Asynchronous teaching methods and tools

The third aspect of the teaching process examined was the use of remote asynchronous teaching methods and tools during classes.

**Table 6** Table 6 summarises the findings on the use of asynchronous tools.

**Table 6.**

*Percentage of classes delivered using asynchronous tools (n = 614)*

	< 30%	30-50%	51-70%	71-90%	> 90%
Summer term 2019/20	48.7%	21.5%	14.3%	10.1%	5.4%
Winter term 2020/21	79.2%	7.5%	2.4%	4.6%	6.4%

Source: own study.

Asynchronous tools were used apart from synchronous ones during the summer term 2019/20. Only 5.4% of the total number of students polled said that they had used synchronous learning tools during at least 90% of the teaching activities. According to a further 10.1%, these instruments were employed in 71.90% of the educational activities that term. Asynchronous tools were used for 51–70% of the classes held according to 14.3% of respondents. Thus, 70.2% (48.7% + 21.5%) indicated that asynchronous tools were utilised throughout at least 50% of the teaching sessions, with 48.7% of the research group indicating that they were used during fewer than 30% of the sessions.

The surveyed Polish universities of economics applied asynchronous tools in remote education to a limited extent in the winter term 2020/21. Although these tools were used during at least 90% of class time according to 6.4% of respondents, i.e. slightly more than in the previous term, their utilisation only during no more than 30% of sessions was reported by as many as 79.2% of the survey participants. The percentage of students who declared that asynchronous tools had been used by their instructors throughout 30-90% of teaching time in the winter term 2020/21 was also much lower than in the summer semester 2019/20.

The teaching techniques employed in asynchronous online classes are yet another component of remote education that was researched.

Table 7 shows the study's findings in this regard.

**Table 7.**

*Teaching techniques used during asynchronous online classes delivered in the summer term 2019/20 and the winter term 2020/21 (percentage of responses given; n = 614)*

Technique	Never		Rarely		Sometimes		Often		Very often	
	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21
<b>Online courses developed using e-learning platforms (total)</b>	<b>22.6</b>	<b>25.9</b>	<b>11.2</b>	<b>14.7</b>	<b>17.3</b>	<b>14.0</b>	<b>18.9</b>	<b>14.0</b>	<b>30.0</b>	<b>31.9</b>
1FT	18.9	22.7	10.5	14.0	15.4	12.6	18.9	12.6	36.4	36.0
1PT	19.1	18.0	12.4	20.2	18.0	18.0	28.1	18.0	22.5	29.2
2FT	28.8	35.6	11.9	13.1	18.8	13.8	15.6	13.8	25.0	26.3
2PT	27.8	26.6	11.4	13.9	20.3	15.2	15.2	15.2	25.3	31.6
<b>Description of assignment posted by tutor – completed project, paper, presentation, etc. uploaded by students (total)</b>	<b>4.6</b>	<b>12.7</b>	<b>13.7</b>	<b>16.4</b>	<b>27.9</b>	<b>27.5</b>	<b>27.2</b>	<b>27.5</b>	<b>26.7</b>	<b>18.7</b>
1FT	3.5	14.3	12.6	14.7	26.6	26.2	29.7	26.2	27.6	19.9
1PT	9.0	10.1	14.6	20.2	30.3	28.1	23.6	28.1	22.5	21.3
2FT	4.4	13.8	13.1	15.0	28.1	28.8	28.1	28.8	26.3	15.0
2PT	3.8	7.6	17.7	21.5	29.1	29.1	20.3	29.1	29.1	19.0
<b>Uploading recorded lectures or multimedia presentations (total)</b>	<b>14.3</b>	<b>27.9</b>	<b>25.2</b>	<b>24.9</b>	<b>27.4</b>	<b>22.1</b>	<b>18.1</b>	<b>22.1</b>	<b>15.0</b>	<b>12.4</b>
1FT	12.9	29.4	26.2	25.5	25.5	21.3	19.9	21.3	15.4	12.2
1PT	12.4	22.5	23.6	28.1	31.5	19.1	15.7	19.1	16.9	16.9
2FT	16.3	31.9	21.3	21.3	28.1	23.1	19.4	23.1	15.0	9.4
2PT	17.7	20.3	31.6	26.6	27.8	26.6	11.4	26.6	11.4	13.9



Cont. table 7.

<b>Group work – e.g. joint projects, compiling glossaries and databases of terms (total)</b>	<b>16.6</b>	<b>13.4</b>	<b>18.9</b>	<b>15.1</b>	<b>25.6</b>	<b>26.4</b>	<b>19.2</b>	<b>26.4</b>	<b>19.7</b>	<b>23.3</b>
1FT	14.7	13.3	21.7	14.7	26.9	29.0	18.5	29.0	18.2	21.3
1PT	18.0	15.7	20.2	18.0	25.8	22.5	22.5	22.5	13.5	25.8
2FT	18.8	14.4	14.4	12.5	25.6	26.3	20.6	26.3	20.6	22.5
2PT	17.7	8.9	16.5	19.0	20.3	21.5	15.2	21.5	30.4	29.1
<b>Use of materials available on the internet e.g.: YouTube videos (total)</b>	<b>35.7</b>	<b>41.0</b>	<b>29.2</b>	<b>28.7</b>	<b>21.5</b>	<b>20.2</b>	<b>9.3</b>	<b>20.2</b>	<b>4.4</b>	<b>4.4</b>
1FT	29.7	34.3	31.8	30.8	21.7	24.5	12.9	24.5	3.8	4.2
1PT	43.8	47.2	25.8	29.2	23.6	19.1	2.2	19.1	4.5	3.4
2FT	40.0	49.4	25.6	24.4	21.9	16.3	8.1	16.3	4.4	4.4
2PT	39.2	41.8	30.4	29.1	17.7	13.9	6.3	13.9	6.3	6.3
<b>Quizzes (total)</b>	<b>16.4</b>	<b>21.5</b>	<b>19.2</b>	<b>16.8</b>	<b>21.7</b>	<b>21.7</b>	<b>24.3</b>	<b>21.7</b>	<b>18.4</b>	<b>19.7</b>
1FT	13.6	17.5	14.0	16.8	23.8	24.8	28.3	24.8	20.3	19.2
1PT	22.5	30.3	21.3	13.5	16.9	13.5	22.5	13.5	16.9	20.2
2FT	17.5	23.1	23.1	18.8	21.3	20.6	21.3	20.6	16.9	18.8
2PT	17.7	22.8	27.8	16.5	20.3	21.5	17.7	21.5	16.5	22.8
<b>Online forum discussions (total)</b>	<b>40.1</b>	<b>42.5</b>	<b>29.2</b>	<b>20.2</b>	<b>17.6</b>	<b>21.3</b>	<b>8.0</b>	<b>21.3</b>	<b>5.2</b>	<b>6.4</b>
1FT	35.3	37.4	34.3	24.8	19.2	25.5	7.7	25.5	3.5	4.2
1PT	36.0	52.8	29.2	13.5	22.5	16.9	7.9	16.9	4.5	5.6
2FT	48.1	46.3	23.8	18.8	13.8	15.6	6.3	15.6	8.1	10.0
2PT	45.6	41.8	21.5	13.9	13.9	22.8	12.	22.8	6.3	7.6
<b>Sharing materials (total)</b>	<b>40.6</b>	<b>45.6</b>	<b>25.9</b>	<b>21.8</b>	<b>17.4</b>	<b>15.3</b>	<b>9.6</b>	<b>15.3</b>	<b>6.5</b>	<b>8.1</b>
1FT	37.1	41.6	26.6	28.0	22.4	15.4	8.4	15.4	5.6	7.3
1PT	46.1	51.7	27.0	14.6	18.0	15.7	5.6	15.7	3.4	4.5
2FT	45.6	51.3	23.1	16.9	11.3	15.0	11.9	15.0	8.1	7.5
2PT	36.7	41.8	27.8	17.7	11.4	15.2	13.9	15.2	10.1	16.5

Source: own study.

During the summer term 2019/20, the most commonly used asynchronous teaching technique required students to upload projects (papers, presentations, etc.) based on assignments posted by the teacher. According to 53.9% of all the participating students, it was done very often or often. Online courses developed using e-learning platforms were the second most commonly used technique. According to the findings of this study, undergraduate students were exposed to this type of teaching substantially more frequently than postgraduate ones. Of the total number of students participating in the study, 48.9% stated that they had used this technique very often or often. Slightly less popular asynchronous online teaching tools included tests (quizzes), group work, and uploading recorded lectures or multimedia presentations. These were used very often or often used according to 42.7%, 38.9%, and 33.1% of the students surveyed, respectively. Group work was used more frequently in second- than in first-cycle programmes. Asynchronous teaching tools such as sharing documents, materials available on the internet, and online forum discussions were employed much less frequently during the term in question. These were used very often or often according to 16.1%, 13.7%, and 13.2% of the survey participants, respectively. Online forum discussions and sharing materials were used more often with second-cycle students than with first-cycle ones.

Apart from the general decline in the popularity of asynchronous remote teaching methods in the universities studied during the winter term 2020/21, the structure of their use also slightly changed. Group work, assignments provided by the teacher, and uploading finished projects (papers, presentations, etc.) by students were the most often utilised methods at the time, as were online courses developed using e-learning platforms. These strategies were exploited very often or often by 49.7%, 46.2%, and 45.9% of respondents, respectively. Quizzes (41.4%) remained stable between terms. Other less frequently used methods included: 1. uploading recorded lectures or multimedia presentations – 34.5%; 2. online forum discussions – 27.7%; 3. use of materials available on the internet – 24.6%; and 4. sharing materials – 23.4% of study participants.

#### 4.4. Forms of tutorials

The fourth aspect of education examined at Polish universities of economics during the COVID-19 pandemic was the forms of remote individual tutorials. The findings are presented in Table 8.

**Table 8.**

*Forms of remote individual tutorials in the summer term 2019/20 and winter term 2020/21 (percentage of responses given; n = 614)*

Form of tutorial	Never		Rarely		Sometimes		Often		Very often	
	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21	ST 19/20	WT 20/21
<b>Email contact (total)</b>	<b>0</b>	<b>0.2</b>	<b>3.4</b>	<b>2.4</b>	<b>9.0</b>	<b>6.8</b>	<b>30.5</b>	<b>19.1</b>	<b>57.2</b>	<b>71.5</b>
1FT	0	0	3.5	2.1	7.7	8.4	35.0	21.3	53.8	68.2
1PT	0	0	4.5	5.6	18.0	9.0	33.7	15.7	43.8	69.7
2FT	0	0.6	2.5	1.3	4.4	3.1	23.1	15.6	70.0	79.4
2PT	0	0	3.8	2.5	12.7	6.3	25.3	21.5	58.2	69.6
<b>Telephone contact at times indicated by the teacher (total)</b>	<b>56.0</b>	<b>56.5</b>	<b>27.2</b>	<b>24.6</b>	<b>11.4</b>	<b>12.4</b>	<b>3.4</b>	<b>4.1</b>	<b>2.0</b>	<b>2.4</b>
1FT	57.3	59.8	30.1	25.9	10.5	9.4	1.7	3.8	0.3	1.0
1PT	47.2	50.6	32.6	24.7	14.6	16.9	3.4	5.6	2.2	2.2
2FT	61.3	59.4	20.0	20.6	10.0	13.1	6.3	3.1	2.5	3.8
2PT	50.6	45.6	25.3	27.8	13.9	16.5	3.8	5.1	6.3	5.1
<b>Contact using synchronous tools (e.g. Zoom) at times indicated by the teacher (total)</b>	<b>9.9</b>	<b>6.7</b>	<b>14.0</b>	<b>4.7</b>	<b>19.4</b>	<b>11.7</b>	<b>23.8</b>	<b>22.8</b>	<b>32.9</b>	<b>54.1</b>
1FT	9.1	6.3	15.0	3.8	18.5	8.7	26.6	24.5	30.8	56.6
1PT	6.7	9.0	21.3	4.5	20.2	19.1	25.8	24.7	25.8	42.7
2FT	11.9	6.3	10.0	8.1	18.1	7.5	20.0	19.4	40.0	58.8
2PT	12.7	6.3	10.1	1.3	24.1	22.8	19.0	21.5	34.2	48.1
<b>Contact via the university's e-learning platform (e.g. Moodle) (total)</b>	<b>17.6</b>	<b>22.1</b>	<b>16.6</b>	<b>17.3</b>	<b>18.6</b>	<b>16.8</b>	<b>27.2</b>	<b>21.2</b>	<b>20.0</b>	<b>22.6</b>
1FT	14.7	20.6	17.5	16.1	18.5	17.5	29.7	23.8	19.6	22.0
1PT	15.7	16.9	23.6	20.2	24.7	24.7	20.2	15.7	15.7	22.5
2FT	21.9	26.3	11.9	20.0	16.3	13.1	29.4	21.9	20.6	18.8
2PT	21.5	25.3	15.2	12.7	16.5	12.7	21.5	16.5	25.3	32.9

Cont. table 8.

<b>Contact via social media (e.g. Facebook) (total)</b>	<b>82.1</b>	<b>87.3</b>	<b>12.9</b>	<b>9.6</b>	<b>3.3</b>	<b>2.4</b>	<b>1.3</b>	<b>0.3</b>	<b>0.5</b>	<b>0.3</b>
1FT	82.9	86.4	12.6	10.8	3.1	2.4	1.0	0	0.3	0.3
1PT	91.0	92.1	6.7	5.6	2.2	2.2	0	0	0	0
2FT	80.0	90.0	15.0	8.8	3.8	0.6	1.3	0.6	0	0
2PT	73.4	79.7	16.5	11.4	3.8	6.3	3.8	1.3	2.5	1.3

Source: own study.

In the summer term 2019/20, the primary form of tutorial was email contact, which was used very often or often according to 87.7% of all respondents. The next most popular one involved contact using synchronous tools (online platforms) at times indicated by the teacher, and contact via the university's e-learning platform (e.g. Moodle). These were used very often or often by 56.7% and 47.2% of the surveyed students, respectively. Telephone communication at times specified by the teacher and contact via social media were declared as very frequent or frequent by 5.4% and 1.8% of respondents, respectively.

In the winter term 2020/21, there were no notable changes in the ways in which students consulted their tutors. The only difference involved increased popularity of synchronous tools (online platforms) at times indicated by the teacher, which was used very often or often according to 76.9% of respondents, an increase of 20.2% on the previous term. Also noteworthy is the high frequency of use of telephone contacts at instructor-designated times by 2PT students, especially in comparison with 1FT students.

## 5. Conclusions and summary

The following are the key findings from the analysis of the changes to remote education arrangements at four Polish universities of economics in the second term of classes taught during the COVID-19 pandemic (the winter term 2020/21) as compared with the first one (the summer term of 2019/20).

1. The timeliness of teaching during the winter term 2020/21 considerably improved. Whereas only 41% of survey participants stated that more than 90% of teaching activities were carried out as scheduled before the pandemic in the summer term 2019/20, over 90% of surveyed students declared the same for the winter term 2020/21. More classes were held as scheduled for part-time students during the summer term 2019/20, and for full-time students during the winter term 2020/21. Despite significant progress, the timeliness of teaching at the surveyed universities has yet to return to pre-pandemic levels.

2. The universities used more synchronous teaching methods and tools during the winter term 2020/21 than they did during the summer term 2019/20, Zoom and MS Teams being the most popular communication platforms in both parts of the survey. The main synchronous teaching techniques used in both terms were lectures, group work, and in-class presentations. They were employed much more frequently in the winter term 2020/2021, as was open discussion. Synchronous tools were used more frequently in part-time programmes in the summer term 2019/20 than in full-time programmes in the winter term 2020/21. The gradual transition from asynchronous to synchronous teaching was the result of decisions made, the time required to implement organised solutions in synchronous teaching, and improved university staff preparation for the use of asynchronous tools in an emergency situation.
3. In the winter term 2020/21 relative to the summer term 2019/20, the universities surveyed used asynchronous teaching techniques less frequently as a result of the systematic implementation of synchronous distance learning standards. In the summer term 2019/20, asynchronous teaching methods most frequently involved uploading assignments by teachers/uploading completed projects by students, and online courses prepared using e-learning platforms. The variety of asynchronous teaching methods increased throughout the second term of crisis teaching deployment. Along with the methods used in the summer term 2019/2020, group assignments and quizzes were increasingly popular. In the summer term 2019/20, asynchronous teaching was used with a higher proportion of first-year than second-year students; as a result, the former were less likely to interact directly with academic staff.
4. Email contact was the predominant mode of remote tutorials in both periods studied, and full-time students relied on it more often than part-time students. The use of synchronous tools for this purpose expanded dramatically during the first year of the COVID-19 pandemic; there was, however, no discernible growth in the popularity of university e-learning systems for remote tutorials. Full-time students were more likely than part-time students to use email to contact their tutors in both terms.

Last but not least, the adjustments made to the process of education at the universities of economics surveyed in the winter term 2020/21 relative to the summer term 2019/20 show that these institutions succeeded in their efforts to adapt to crisis conditions. Synchronous teaching became the main model for remote and subsequently distance instruction, whereas asynchronous methods and tools complemented the basic model. However, email contact, which has remained the main form of remote tutorial, is not sufficient for this purpose and is being gradually superseded by synchronous techniques. Furthermore, throughout the first year of deployment, the variety of distance learning methods and instruments markedly increased, demonstrating a purposeful adaptation of academics and students to teaching and learning in a remote setting.

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