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Crisis Remote Education at The Maria Grzegorzewska University During Social Isolation in the Opinions of Academic Teachers

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***Abstract*—The aim of the study was to find out the experiences of academics working at The Maria Grzegorzewska University, related to crisis remote education (remote teaching and distance learning in conditions of forced social isolation caused by SARS-CoV-2 pandemic). A case study was used. The research was limited to one institution and the method of a diagnostic survey based on the questionnaire technique was used. Recommendations for further development were made, based on disclosed advantages, disadvantages, problems and opportunities connected with crisis remote education conclusions reported by academic teachers.**

***Keywords*—crisis remote education, distance teaching, distance learning, emergency e-learning, COVID-19, SARS-CoV-2**

I. Introduction

REMOTE education in the event of a sudden need to introduce adequate technological solutions is a great challenge for both institutions, individual academic teachers, and their students. The necessity to conduct education, with an extremely diverse level of teachers' IT competences, access to hardware and software, access to the Internet, and the perception of the possibilities of using the media in teaching, forced both institutions and teachers to implement remote education in a disorderly manner, without clearly set goals and without selecting adequate methods and forms.

Many teachers did not have the opportunity to work in the remote education system before, or they experienced it only from the student's side. As a result, their perceptions about the possibilities of remote education were limited. Therefore, when they suddenly had to face a choice of methods, forms, and tools of remote education, they used those that were somehow familiar to them. At the same time, they were also guided by the need to achieve the educational goals of their subjects, and to check the learning outcomes.

In recent months, The Maria Grzegorzewska University, along with other universities, experienced a new situation for the entire academic community, which forced the sudden introduction of remote education. Observing, on the one hand, the efforts of the university authorities to maintain the quality and continuity of education and to make it as least stressful as possible for students, and at the same time to meet legal requirements, on the other hand, seeing the uncertainty of academic teachers and students, authors decided to get to know the thoughts of academic teachers on this form of education carried out in such extreme conditions for all. Research on e-learning conducted by universities in Poland has already been carried out, however, this form of teaching was treated as an additional or complementary to traditional education (see [1,2,3]).

II. Models of Remote Education

Remote education is one type of distance education. It is characterized by the fact that the teacher is separated from the student, and knowledge is transmitted via electronic media [4]. Remote education, as a variety of distance education, adopts many features of the latter. Its essence is primarily the variability, which refers to the type of media mediating in the learning process, educational goals, organizational form (e.g. workshops, seminars, lectures, etc.), interactivity, covered topics, number of recipients, forms of communication (text, film, multimedia, etc.), duration, accessibility, learning model, etc. [4]. It is assumed that remote education (e-learning) uses more than 80% of the content provided online. In hybrid education (hybrid/blended) 30-79%, and in the Web-facilitated version 1-29% of the content is provided online [5].

Online models for education (Web-based models) include types such as communication, access to web resources, online courses (e-learning), online conferences (webcasts and webinars), virtual classes/schools (cyber schools) and universities, online mentoring, and coaching. Nowadays, however, it is difficult to separate them from Mobile models, based on portable devices (e.g. phones, smartphones, tablets, etc.)[4]. At the same time, these categories are fluid - you can combine or expand them, depending on your competencies, technical capabilities, or didactic goals.

The main motivations for using remote education include the inability to gather a group of people in one place and time personally; when a person learns in a place with a low level of access to traditional education; when similar results are possible to achieve through remote education compared to traditional education; when it provides access to such content, teachers/trainers or experiences that are not available in traditional teaching; when constant access to education is important (at different times, also outside the institution's working hours); when it is necessary to adjust the time and intensity of task performance to the learner's abilities [4]. An additional factor that has not been taken into account so far when recommending the use of remote education is the need to adapt to social isolation, forced by the crisis situation.

Remote education is now a recognized and popular form of supporting the teacher training process, but it is also an element of enriching forms of education for students, including those in

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pedagogical studies. Before the announcement of the pandemic, The Maria Grzegorzewska University conducted remote education courses for students, including the Occupational Safety and Health (OSH) course, elements of language education for all students, and individual courses for specific specialties. The number of such courses differs in various universities around the world and there is a noticeable upward trend in their participation in education. For example at Peking University, the number of online courses was around 100 [6]. It uses the ability to learn both in synchronous and asynchronous modes. Moreover, it is recognized that remote learning raises the level of teaching competences of lecturers - they have the opportunity to observe and learn from the workshop of other educators, and apply it in their own professional life. It is also recognized as one that fosters dialogue and cooperation with other teachers and students, as well as creating communities based on online contacts. E-learning is considered to be the most diverse, which makes it popular with people who prefer various learning styles [4]. At the same time, the most important thing is the ability to adjust the time, place, and pace of learning to the needs of the student [7].

III. Crisis remote education during social isolation at The Maria Grzegorzewska University

Due to the crisis related to the COVID-19 pandemic, educational institutions, including universities, were faced with the need to introduce remote education suddenly, which would replace the existing forms of education, in order to ensure the continuity of the teaching and learning process. This situation affected many countries around the world. This change is assessed in various categories: both as an opportunity for development and the destruction of the existing education system. Education in times of the pandemic was called "emergency eLearning" or “crisis remote education”. Plans for emergency solutions related to the sudden need to switch to remote education were developed in some countries earlier, with the spread of the H1N1 virus in 2009. Two-thirds of the surveyed institutions in the US already had contingency plans for the rapid implementation of remote education [8].

The announcement of the state of the pandemic forced the university authorities to urgently introduce solutions based on remote education, which will ensure that students achieve the assumed learning outcomes in the time set for a given semester.

University research by the International Association of Universities (IAU) shows that the spread of the SARS-CoV-2 virus has affected nearly all of the surveyed institutions. Despite the fact that universities previously had the infrastructure necessary to communicate with employees and students, some of them recognized that developing transparent rules of communication was a real challenge. Also, almost all surveyed universities indicated that the pandemic influenced the teaching and learning process: two-thirds of the surveyed institutions switched to remote education, and in the group of universities that did not do it immediately - steps were taken to be able to implement such solutions as soon as possible [9].

The specific nature of the studies was essential for the smooth transition to remote education. For example, medical, veterinary, and arts studies require access to laboratories or equipment that students do not have at home. In such faculties, education could be limited only to theoretical teaching conducted in a remote system [9].

At The Maria Grzegorzewska University, in response to the restrictions on the movement and meetings of people, new legal, organizational, and methodological solutions were introduced adequately to the situation. The rules of remote education and internships by students were regulated by subsequent orders of the Rector of The Maria Grzegorzewska University. At the same time, the technical support department developed and updated guidelines to help academic teachers to carry out their classes, conduct colloquium, and examinations, including master's and bachelor's diploma exams.

In the first two weeks of social isolation, the lecturers were obliged to independently organize the method of conducting classes with students using any form of didactic work. They could choose either synchronous or asynchronous methods. After about two weeks, the university improved the access of employees and students to the MS Teams platform. At The Maria Grzegorzewska University, employees were required to have a business e-mail account, and students - recommended to have an account in The Maria Grzegorzewska University domain. This domain, available on the Microsoft platform, allowed registered users to use MS Teams. The MS Teams application is primarily adapted to remote institution support, but not to teach. The training was carried out on the use of the application to conduct lectures, exercises, develop and check tests, work in task teams, and later - to conduct exams remotely. The technical team was also constantly available to solve problems that arose in the teaching work using this application. Each academic teacher was required to update the syllabuses of subjects with the forms and methods of remote work and with the method of passing the subject chosen by them. While Teams was the recommended tool, teachers were left free to choose how to communicate with students, deliver classes, verify learning outcomes, and conduct exams. Only the diploma exams had to be carried out in accordance with the guidelines of the Rector of The Maria Grzegorzewska University by using MS Teams application.

IV. Methods

The aim of the research was to find out about the experiences of academics working at The Maria Grzegorzewska University, related to teaching and distance learning. A research question was asked: what are the experiences of academic teachers related to crisis remote education in conditions of forced social isolation?

A case study was used - the research was limited to one institution and the method of a diagnostic survey based on the questionnaire technique was used. In order to achieve the set goal, an original questionnaire was developed for academic teachers. The questionnaires were sent to the academic teachers of The Maria Grzegorzewska University in electronic form. The research was conducted in June 2020 - this date, coinciding with the end of the semester, was chosen as the time when it is possible to make some summaries from the experiences of academic teachers and students.

The validity of the research is justified by the lack of prior

research in this area. The research also has a practical purpose, which is the evaluation of crisis remote education, which will make it possible to indicate recommendations for the further conduct of this form of academic teaching and to implement them before the start of the new semester.

The selection of people for the research was deliberate. People related to one institution were invited to fill in the questionnaire.

In the survey took part 65 people, which constitutes 17.8% of the employed. The average age of the respondents was 43.4 years (Me = 40, Mo = 40). The youngest respondent was 26 years old, and the oldest 81. Most of the respondents were women (51 people, 78.5%), and the minority were men (14 people, 21.5%). Most of the respondents had a doctoral degree (41 people, 63.1%), 14 people (21.5%) had a master's degree, and 9 people (13.8%) had a postdoctoral degree. The questionnaire was completed by one person (1.5%) with the professor's title.

V. Results

The respondents were asked to rate their IT competences on a scale from 1 to 5, and declared them on average at the level of 3.68 (Min = 1, Max = 5, Me = 4, Mo = 4, Ske = -0.5004, K = 0.716).

Half of the people (33 people, 50.8%) had no experience related to remote education before the pandemic. Every third respondent (23 people, 35.4%) participated in training or other remote activities. Every seventh respondent (10 people, 15.4%) conducted training or other activities remotely. Every thirteenth surveyed academic teacher (5 people, 7.7%) designed e-learning courses independently. Individuals declared that so far their experiences were limited to posting materials on the Moodle platform, recording videos, conversations via instant messaging, or participating in online training courses at foreign universities.

Most of the respondents (57 people, 87.7%) have a computer at home for their own use. Almost half (29 people, 44.6%) use mobile devices, and every seventh respondent (10 people, 15.4%) has a computer at home but shares it with other household members.

Most of the academics participating in the survey (42 people, 64.6%) connect to the Internet via a cable modem or optical fiber. Every third person (23 persons, 35.4%) uses wireless Internet via a mobile modem. Every fourth respondent (16 people, 24.6%) uses the Internet provided by a smartphone.

The most frequently reported technical problems appearing in the course of distance learning are problems with an Internet connection (32 people, 49.2%), hardware problems (16 people, 24.6%), software problems (12 people, 18, 5%). One-fourth of the respondents (16 people, 24.6%) did not experience any problems. Individuals report problems such as the fact that there are situations when all household members use the Internet at the same time or want to use the main computer, but "it can be somehow determined and shared", delays in data transfer, and problems with students' equipment. One teacher stated, that "the participants of the classes have problems with the Internet, breaks in data transmission which logs them off, they have problems with microphones, with devices through which they connect. I don't know if it's a software problem or a connection issue, but you have to keep students disciplined in turning off microphones and turning on their cameras".

Technical problems identified by students regarding distance education most often reported to lecturers were: difficulties with an Internet connection (52 people, 80%), computer problems related to hardware (32 people, 49.2%), and software problems (16 people, 24, 6%). Some people (7 people, 10.8%) did not experience any problems. Individuals reported overloading platforms and disconnecting, the distraction of students due to the need to help their parents which interferes with their classes, lack of camera or its poor quality, lack of access to the computer due to its use by other household members, and problems with voice. One lecturer stated, that students did not report anything, which might suggest that they are satisfied with e-mail contact.

The dominant methods of work of the surveyed academic teachers with students are virtual meetings with groups of students (59 people, 90.8%). Lecturers provide links to important content (51 people, 78.5%), provide scans, photos, and presentations of original materials (50 people, 76.9%), send instructions describing issues and tasks (50 people, 76.9%), organize individual virtual meetings (47 people, 72.3%), communicate via chat (42 people, 64.6%), share scans, photos and presentations of materials of other authors (37 people, 56.9%). Some lecturers arrange individual phone calls with students (27 people, 41.5%), assign individual work on projects (25 people, 38.5%) or group work (15 people, 23.1%), and also record lectures and make them available to students (13 people, 20%). Individuals contacted students via a Facebook group or chat in the Teams application.

The most common ways of contacting students are e-mail and chat (53 people, 81.5%). Videoconferences with a group of students were conducted by 40 people (61.5%), communication via USOS (University Student Service System) by 39 people (60%), and individual videoconferences by 37 people (56.9%). A popular way of communicating with students is also making phone calls (25 people, 38.5%). Single respondents declared that they communicate via Facebook Messenger, SMS, WhatsApp, group e-mails, or through group governors.

Lecturers use various applications in the distance teaching process. It is mainly MS Teams (60 people, 92.3%) and Zoom (21 people, 32.3%). Individuals use Google Meet, Facebook Messenger, Skype, Google Forms, Edmodo, Schoology, Slido, OneDrive, ClickMeeting, Hangouts, Padlet, and Menti.

The most popular methods of checking the achieved learning outcomes are partial assignments (50 people, 76.9%), final assignments (45 people, 69.2%), the on-line written examination (27 people, 41.5%), and an oral exam on-line (14 people, 21.5%). Individuals declare monitoring the current activity of students at on-line work and their activity in class, ordering tasks in Teams after each thematic block, ordering the implementation of projects, and writing individual comments by students in Google Forms after each lecture.

The lecturers estimate the average degree of students' involvement in remote education at 3.66 (on a scale from 1 to 5, Me = 4, Mo = 4, Ske = -0.356, K = 1.047), and the average independence of students at 3.68 (on a scale of from 1 to 5, Me = 4, Mo = 4, Ske = -0.578, K = 0.635).

Comparing the common elements of remote and traditional education, the lecturers assessed the involvement of students, activity, contact between the student and the lecturer, regularity

of work, timely performance of tasks and the quality of performed tasks, and declared whether, in their opinion, a given element is more visible in traditional education, in remote education or the same visible, regardless of the method of conducting classes. Student involvement is assessed on average (M = 3.02, Me = 3, Mo = 4, Ske = -0.713, K = -0.925), as is student activity (M = 2.92, Me = 3, Mo = 4, Ske = -0.659, K = -1.068) and contact with the lecturer (M = 3.08, Me = 3, Mo = 4, Ske = -0.743, K = -0.624), although the response distributions are platykurtic. Also systematic work (M = 3.26, Me = 3, Mo = 3, Ske = -0.787, K = 1.247), timely performance of tasks (M = 3.48, Me = 4, Mo = 4, Ske = -1 , K = 2.944), and the quality of task performance are assessed on average (M = 3.29, Me = 3, Mo = 3, Ske = -0.606, K = 1.942), but in this case the response distributions are leptokurtic.

Lecturers asked to mention the advantages of distance education most often mentioned that it is a better, more individualized, faster, and more efficient way of contacting students (10 people, 15%). For lecturers, remote teaching is a great time-saver, the ability to work from home and in comfortable conditions, the ability to easily and immediately transfer available materials, and promote work independence (9 people, 14%). Remote education allows you to attain 100% attendance and engage students in work (8 people, 12%). Lecturers also appreciate the possibility of asynchronous work and the fact that remote education and remote work increase the IT competencies of both students and their own (5 people, 8%). The advantage is no need to travel to work and the resulting time saving, convenience, and flexibility of work, as well as the ability to easily use the materials on own computer (4 people, 6%). The lecturers emphasize that apart from the safety issues during the pandemic, they do not have to be on duty at the university, which is usually not attended by anyone (3 people, 5%). Some people do not see any advantages of distance education (6 people, 9%). For individuals, distance education is a forced necessity, but also no obligation to dress appropriately or put on makeup. Financial savings for lecturers and students are also noticed, but also savings in "the natural environment, premises for the employer, less wear of buildings and infrastructure, saving of space, light, electricity, and water". Lecturers can delegate tasks to different groups at the same time and easily present additional materials outside the classroom. Greater "possibility of expression for all without direct evaluation of participants" is emphasized. E-learning is seen as optimizing the use of time. Lecturers can be available to students every day and may undertake individual tutoring which is better for them remotely. Higher timeliness of tasks is indicated, as students cannot directly influence the lecturer. Among the lecturers' statements regarding the advantages of distance education, there were also advantages such as the convenience of presenting the material and the lack of the need to connect a projector, order during classes, transparency, the ability to easily document the work, its individualization and the ability to contact each student individually.

Lecturers asked to mention the disadvantages of distance learning most often mentioned the lack of direct contact and physical presence (28 people, 43%), lack of cooperation, integration, interaction, healthy competition, absence of discussion, limited contact and anonymity (18 people, 28%) as well as passivity and low involvement of students, reluctance to use cameras, problems with controlling the actual attendance of classes (14 people, 22%). A considerable disadvantage is the technical problems and the lack of support from the university, as well as the need to devote more time to the preparation of materials, reformulation of tasks, and correspondence with students (11 people, 17%). Lecturers are concerned about the independence of students' work, because it is not possible to check it, especially during colloquiums or exams, and that not everything can be transferred remotely, as it is possible to do so in the case of active forms of classes that use space or other resources (6 people, 9%). There are noticeable disproportions in IT competencies and in access to equipment, which occur both among students and lecturers. Lecturers complain about the need to use private equipment, often inefficient or outdated, without financial or technical support from the university. A disadvantage is also lower effectiveness of education, lower motivation to work, and greater fatigue with such a process (5 people, 8%). The lecturers feel that they have no control over the students' learning process, and have no possibility to reliably verify their knowledge (4 people, 6%). Working in front of a computer is tiring and has health consequences. Some students attend classes only seemingly (3 people, 5%). Individual lecturers indicated such disadvantages of distance education as a more difficult diagnosis of students' problems and needs, lack of control of the group size, inability to establish non-formal contact with students, and the fact that non-verbal messages are not visible and it is difficult to have a lively discussion. The lecturers point to the interpersonal needs of students regarding live contacts. Students in the "first phase of isolation were unable to find themselves at all, they could not sit down and focus on their studies". Lecturers worry about the lack of contact, writing ”I don't see the students, I don't see their reactions, I don't know anything about their well-being. Communication channels narrow and become monotonous, which in turn weakens perception”. There are voices regarding the expectations from universities that lecturers will use private equipment for work and teaching, but will not receive technical support or a financial equivalent. Some students do not have access to a computer of sufficient quality to be able to participate in the distance learning process on an equal footing with others. Home conditions, both for students and faculty, are another problem, which can make it difficult or even impossible to concentrate on study and work. Lecturers complain that they cannot verify if the student's absence or inactivity is actually due to technical issues, or if the students ignore their request to turn their cameras on or repeatedly turn them off. Individuals fear that students may record them, take pictures of them, and use them later for extortion. Lecturers indicate that the boundary between work and home is blurring.

Lecturers asked to mention the difficulties related to distance education most frequently mentioned digital exclusion and inequalities in access to technology (20 people, 31%). Among the components of the exclusion, they mentioned the lack of access to the Internet and/or computer equipment, slow and/or low-quality access to the Internet, and old or inefficient computer equipment. Technical problems were also frequently

mentioned (14 people, 22%) and the related low IT competences (10 people, 15%). The difficulty is that lecturers need more time and effort to properly prepare and deliver the material. There is a repeated problem related to the need to use private computer equipment for work, which is often outdated and inadequate to the requirements, and the employees themselves are deprived of the university's support, both in terms of financial support and technical issues (8 people, 12%). The lecturers lack direct interaction with students, the possibility of conducting and participating in the discussion. They do not feel able to control it students' work is self-made (7 people, 11%). As a difficulty, the lecturers mention the lack of training in the field of distance education and program operation, as well as university and IT support (6 people, 9%). The lecturers perceive difficulties in the students' home situation (5 people, 8%), which may not allow for unhindered use of a computer connected to the Internet in a way that allows concentration and learning. Difficulties are caused by the lack of student involvement, the need for long-term work in front of the monitor, and being attached to the computer with the related health consequences, as well as problematic documenting and assessing the effects of education (4 people, 6%). The lecturers are bothered by the fact that students either do not turn on their cameras or turn them off repeatedly (3 people, 5%) and by the lack of student discipline (2 people, 3%). Individuals see difficulties in adapting teaching to the needs of people with disabilities, enabling the lecturer to deliver authentic and direct communication, lack of a place to work at home, the lack of clear working rules formulated by the employer, as well as blurring the boundary between work and home, and in possible abuses by students. Lecturers try to cope with difficulties but point out that despite attempts to activate students and changes in teaching methods, they do not have the tools that allow them to work comfortably with groups. They mention Zoom Premium as a better tool than MS Teams. They indicate the necessity to work on private equipment, incurring the costs of adjusting it to the requirements of distance learning and the costs of improving the quality of Internet connection, as well as the lack of financial and technical support of universities in this matter. Conducting classes in real-time can be problematic, because students do not appear in class, share the only computer with their siblings who also have classes at the same time, take up work during class hours, or simply do not respond to e-mails and other contact attempts. It is impossible to make contact with some students. Lecturers fear that students cheat, fake technical problems, have the opportunity to record the lecturer and take pictures of him, and then use the materials for extortion. The lecturers write about the students' lack of independent thinking and about the assignments copied entirely from the materials provided. It is more difficult to conduct classes in which interpersonal competencies are exercised. Low computer skills are visible, as well as poor knowledge of MS Teams program and mental difficulties in switching to remote education. It is difficult to maintain an equal level of teaching in a group and between groups, as students with higher IT competencies and more committed profit more, and it is more difficult to activate withdrawn students remotely. Some lecturers see difficulties in remotely explaining seemingly easy matters, about which students more often ask directly and less frequently via electronic means of communication. The difficulty for lecturers is the need to do double work when some students want to work synchronously and some asynchronously. The problem is to encourage and maintain systematic work and study. Material examples cannot be shown. The educational impact of academic education is limited. Studies are "the last moment in life when (methodically and collectively) you can learn to enter into dialogue, to argue, to respect someone else's opinion that we miss."

VI. Discussion

When analyzing the obtained results, it should be emphasized that before the introduction of crisis remote education, each academic teacher had developed materials for conducting classes in the traditional mode. The substantive and methodological assumptions of the subject, included in the subject syllabus, made available to students, were adapted to personal meetings in lectures or training rooms. Meanwhile, good remote classes also require media preparation, including access to equipment, good Internet connection, and software that will allow the provision of content adequate to the teaching goals or to activate students to take an active part in classes. As in other institutions, teachers were used to traditional teaching methods and found it difficult to accept changes - but the COVID-19 crisis forced their rapid introduction [10].

The main problems faced by the institution are the lack of experience in online teaching on such a large scale, the lack of preparation of appropriate online courses, and insufficient support of technical departments [6]. The research revealed that teachers working in The Maria Grzegorzewska University used remote education solutions only to a small extent in their previous experiences. At the same time, they assess their digital competencies as average, half of the respondents had no experience related to distance education, and only 15% conducted online classes. Equally, supply teachers at home with the equipment necessary to conduct remote classes is insufficient. Only 60% of them have a computer for their only use. Conducting online classes during the pandemic crisis caused many problems. The most expressive ones were the technical ones related to the Internet connection, software, and hardware difficulties. Students reported similar problems to the lecturers.

Regarding strengthening students' motivation to learn, it is recommended, inter alia, to divide the material into smaller parts - including shortening the duration of the lectures, giving the knowledge an appropriate and transparent for students structure, strengthening their persistence and active learning by using appropriate methods, planning online and offline learning phases for students (i.e. preparing guidelines for independent learning), using voice modulation - it is supposed to replace body language and facial expressions - which are limited in distance education [6]. According to the declarations of the surveyed teachers, the most important forms of remote work implemented during the crisis include virtual meetings with students, but also providing students with important materials through various communication channels. Individual work with students is revealed as an important form, which they also consider to be one of the most important advantages of remote

education. The learning outcomes were checked mainly through partial works, final works, and exams.

Many disadvantages are mentioned in the evaluation of remote education. At the same time, however, even if it is considered worse than the traditional one, this opinion is associated with the belief that such a solution is better than the complete suspension of education [9]. There were critical assessments of online teaching among the surveyed teachers. They rated the involvement and independence of students quite low, although at the same time in many respects they believe that remote education gives the same effects as traditional education (e.g. in terms of the regularity of students' work, timely execution of tasks, and the quality of their performance). Elements of remote work were also criticized, such as the lack of direct contact with students, which affects such elements as cooperation, competition, discussion, integration, interaction, and consequently leads to low involvement and inactivity of students during classes.

Online education is considered an important element of the economy of education - it allows to limit public funds allocated to this sphere, but also for a form of education that, introduced as universal and unique, consolidates social inequalities - as opposed to hybrid forms combining traditional and online education [11]. An element of remote education, noticed by the surveyed lecturers, is also the digital exclusion of some students and inequality in access to modern technologies.

CONCLUSION

Monitoring the effects of remote education contributed to taking specific solutions in the field of work with students in the next academic year. The Maria Grzegorzewska University, like other universities in the world, has individually implemented system of remote work solutions, based on the offer of technology companies (here: Microsoft) that create educational platforms and provide didactic tools. This is in line with the apparent tendency to modernize the existing solutions [12].

The solutions take advantage of the opportunities offered by remote education. In a short time, actions were taken to improve the digital competencies of a large group of academic teachers, many tools were tested, and the way of thinking about remote education changed - the flexibility in the approach to the teaching and learning process increased. The need to invest in technical infrastructure, including digital library resources, was noticed. These activities are in line with global trends [9]. Thus, as part of further activities related to online education, it is to meet the challenges related to its scale and teaching tailored to the individual needs of students [10].

The conducted research shows that, on the one hand, remote education offers many possibilities and facilities, but at the same time causes many difficulties, both for teachers and students. Therefore, taking into account the results of the conducted research, conclusions, and guidelines for academic teachers were formulated. It was recommended to standardize the method of implementation of remote education, indicating the MS Teams application as the primary one for conducting classes, and it was ordered that the classes should be conducted synchronously, within the inviolable time frames set by the planning department. In addition, the business e-mail with the university domain was indicated as the official channel of electronic communication, apart from meetings at MS Teams. A more comprehensible and comprehensive way of describing specific tasks, the purpose of students' work, and the criteria for its evaluation was implemented, which academic teachers were also to include in the subject syllabus. A series of MS Teams training courses for lecturers was organized, on conducting classes, organizing exams, conducting diploma seminars, conducting partial, semester, and diploma examinations, as well as training for reviewers and supervisors of diploma theses on formal rules and organization of remote diploma exams. In addition, auxiliary teaching materials for lecturers on the use of MS Teams were developed and collected in one, generally accessible place. The practice of the next semesters of remote education will show whether the introduced changes were sufficient and whether it is possible to maintain high-quality academic education during the SARS-CoV-2 coronavirus pandemic.

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