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Staying on Guard for Teaching Excellence: Managing In-Person Education at Polish HEIs During COVID-19

ABSTRACT

Remote teaching became one of the key topics in educational research due to the COVID-19 pandemic. Our article looks at the other side of the story, i.e., in-person education during the pandemic. This aspect of teaching excellence has been overlooked because it seemed to be thoroughly studied. However, COVID-19 has profoundly changed in-person teaching. In our study, we focus on the Polish medical and technical universities as the studies they offer include solid practical components (labs or clinical classes). Our article examines how in-person classes were administered and organised during three consecutive semesters, starting in the Spring of 2020, when teaching at Polish HEIs was mostly conducted remotely. We build our analysis on internal legal acts issued by rectors and interviews with university staff who oversaw the teaching process. The legal documents describe the procedures related to in-person teaching or front-line teaching in person. The interviews complement this image by providing the rationale behind the regulations, their reception by the students and the faculty, or the backstage of in-person teaching. The LogFrame was applied to provide a conceptual framework to understand how universities could continue providing their services.

Keywords:

higher education, medical universities, COVID-19, technical universities, Poland, in-person teaching

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The COVID-19 pandemic has globally challenged the educational landscape. Within a week or so, schools and universities had to change the mode of education to maintain social distance and provide students and teachers with as much safety as possible. In Poland, in-person classes in all types of schools were suspended on March 12, 2020, and have been subsequently conducted remotely until October 2021.

Unsurprisingly, remote teaching and learning became one of the key topics in educational research as it has offered new experiences and challenges for faculty members and students traditionally working and studying within their university premises. Remote teaching has been therefore studied from a multitude of angles and perspectives, including educational and examination strategies (Bao, 2020; George, 2020), digitalisation (Nuere & de Miguel, 2020; Górak-Sosnowska et al., 2022; Kukuła, 2022), or student mental health (Kaparounaki et al., 2020; Wang & Zhao, 2020). Our article looks at the other side of the story, i.e., how in-person education has been administered and implemented during the pandemic. This aspect of teaching has been overlooked because it seemed to be already well-known and thoroughly studied³. Thus, the article aims to analyse how in-person education has been administered and managed at selected Polish HEIs in the emergency caused by COVID-19.

We argue that COVID-19 has profoundly changed in-person teaching at HEIs, especially when remote teaching dominated. The change refers not to the expected learning outcomes, as they should stay intact, but to how in-person teaching has been administered and organised (Górak-Sosnowska & Tomaszewska, 2022). In our study, we focus on medical and technical universities. Out of all the other HEIs, these two types offer studies with a substantial practical component necessary to learn the future profession, such as labs or clinical classes. While it was feasible to move lectures or seminars online, practical classes could have severely affected the learning outcomes, thus teaching excellence. While a student can listen to a lecture online or work with other students in a virtual room, s/he will not be able to acquire the practical skills required to operate advanced research equipment or perform endoscopy.

Focusing on in-person teaching during COVID-19 makes this article exploratory as hardly any studies were dedicated to this topic. In-person teaching has been

3 To our knowledge in Poland only a handful of researchers studied how universities managed in-person teaching during the pandemic. The results of the national project that deals with university management during COVID-19 (UNICOV: Akademia w trakcie pandemii. Doświadczenia i organizacja pracy na polskich uczelniach” by the Conference of Rectors of Academic Schools in Poland) have not been published yet. The monograph edited by K. Górak-Sosnowska and L. Tomaszewska (2022) covers university management during COVID-19 from the perspective of administrative staff.

extensively covered in research prior-COVID-19, while in the COVID-19 era, the focus has shifted to teaching remotely. This article's exploratory nature limits the possibility of constructing detailed research questions. That is why we decided to use grounded theory to guide our research (despite precautions and unsolved issues in the grounded theory – Cutcliffe, 2000). The principles of grounded theory allow for comprehending collected data in a unique and unprecedented way, as well as constructing theories that are 'grounded' in the data themselves (Charmaz, 2006). Following Charmaz (2006, p. 9), we believe that grounded theory makes the study of action central and allows interpretative and abstract understanding of data.

In order to fully understand the scope of changes in administering in-person education, we use the project management approach. It allows studying processes aimed at achieving project goals. Maintaining teaching excellence (i.e., keeping up high-quality education despite the pandemic) and safety (caused by the pandemic) fits within the scope of project management. At the same time, this project's scope is strictly related to education (teaching). Thus, the article offers an interdisciplinary perspective by combining two sub-disciplines of social sciences: management and education.

In the following parts of the article, we elaborate on the context of how teaching has been legally and institutionally regulated while in emergency mode. Then we present our data and the analytical framework in detail – namely, the Logical Framework Approach used in project management. In the subsequent parts of the article, we analyse how medical and technical HEIs have managed in-person teaching during COVID-19.

SETTING THE FRAMEWORK

Remote teaching has dominated at Polish HEIs for three consecutive semesters, starting in the summer semester of 2020. All in-person classes have been suspended until further notice. That requirement was changed in May 2020 as relevant ministries introduced the possibility of conducting selected classes in person. Medical universities could conduct in-person courses if remote teaching was impossible or for students during their final year (Ordinance of the Minister of Health 2020: §1.3). Technical universities were allowed to teach in-person classes for students in the final year (Ordinance of the Minister of Science and Higher Education, 2020a: §1.3.2). Moreover, since mid-October 2020, technical universities have also been allowed to conduct in-person classes for subjects that could not be taught remotely (Ordinance of the Minister of Science and Higher Education, 2020b: §1.1.2).

Starting from the winter semester of 2021, pressure has been exerted to maintain in-person teaching in Polish HEIs, and it has been the dominant teaching mode across the higher education sector, as the restriction on university activities had been lifted with the 2021/2022 academic year (Ordinance of the Minister of Education and Science 2021). Earlier, only a handful of Polish HEIs had used this opportunity and reintroduced classes taught in person. It had been especially challenging during the summer semester of 2020 as the pandemic had been unexpected. The following three semesters of experimenting and balancing between remote and in-person teaching provided valuable experience in how to manage and implement teaching selected classes in person.

Medical and technical universities were the forerunners in reintroducing in-person teaching. As early as the summer of 2020, some had decided to conduct instruction in person in selected necessary classes. Although the challenges of organising classes in person were similar for medical and technical universities, they differed in the nature of in-contact training and access to vaccination.

Medical universities run teaching hospitals, allowing students to interact with patients and learn through observation of the medical staff. COVID-19 has severely limited these opportunities. Not only could the students be exposed to the virus at university medical facilities, but they could also expose the patients to the risk of infection. The same applied to the faculty members who often combined teaching and working at medical facilities. In the case of technical universities, the in-contact training was different. Students only need to use advanced research equipment to know how to operate it.

Regarding vaccination, acting in the frontline of the pandemic made medical staff and students the first professional group to be vaccinated against COVID-19. Medical university staff and students were the first to be vaccinated per the Ordinance of the Council of Ministers of 14.01.2021 (OJ 2021, item 91). This provision was later expanded to include the administrative staff at medical universities. Thus, since the beginning of the 2020/2021 summer semester, students and staff at medical universities were vaccinated (unless they decided not to, as vaccination was not mandatory), and that limited the risk of infection. The situation in technical universities has been more complicated (Mielczarek-Taica, 2022). The faculty was granted access to vaccination at the same time as general education in the spring of 2021. Students and administrative staff could get vaccinated only by the end of the summer semester 2020/2021 with the general population, according to their age group.

DATA AND METHODOLOGY

COVID-19 has severely transformed education (Dwivedi, 2020) and impacted university management (Wang et al., 2020). Universities worldwide had to switch to a remote teaching mode, while those who decided to conduct classes in person had to introduce strict safety measures. Our paper looks at how in-person classes were administered and organised during the three semesters, starting in the spring of 2020 and ending with the summer semester of 2021. We consider them as a continuous learning process by the university authorities. On the one hand, university leadership was reacting to the external circumstances related to the epidemiological situation in their region; on the other, the authorities had to remain focused on their students' learning outcomes. We build our analysis on two types of data: internal legal acts issued by rectors of medical and technical universities and interviews with university staff who oversaw the teaching process.

There are currently nine medical and eighteen technical universities in Poland. They are all public entities. Technical universities are supervised by the Ministry of Education and Science, like most other HEIs in Poland, while the Ministry of Health supervises medical universities. Internal legal regulations issued by the universities belong to the system of unified public records and are published within the Bulletin of Public Information (Pol. *Biuletyn Informacji Publicznej* – BIP). This way, we could access the internal legal regulations of eight medical and fifteen technical universities (the remaining ones restrict access to their regulations by storing them in their intranet) and select 91 regulations on the organisation of the teaching process in person issued by their rectors. Those regulations allowed us to conduct an overview of how the teaching process has been organised at those universities and how it was narrated and administered.

Although the regulations contained information if there are any classes requiring in-person teaching, they did not specify the faculty or study programme. To understand the rationale behind the regulations' design, we conducted nine semi-structured individual interviews with middle and upper university management from four medical and four technical universities⁴. We approached the interviewees through a professional association of administrative personnel responsible for managing education (*Forum Dziekanatów*). Members of the association have been able to identify which faculties at their universities conducted

4 These are: AGH University of Science and Technology in Kraków, Gdańsk University of Technology, Medical University in Łódź, Pomeranian Medical University in Szczecin, Medical University of Warsaw, University of Bielsko-Biala, Warsaw University of Technology, West Pomeranian University of Technology in Szczecin,

classes in person. Our sample included both faculty members and administrative staff: four heads of administrative units responsible for the organisation of teaching and five deans (one dean and four vice-deans responsible for student affairs). In the article, we decided to code the respondents by serial number (1–9), type of university (M for medical and T for technical) and function (F for faculty, A for administrative). Our respondents preferred to remain anonymous as they shared with us the details behind the scenes about managing the didactical process at their HEIs.

We coded the legal acts and interviews in two separate coding systems using MAXQDA, a computer-assisted qualitative data and text analysis software. The codification process consisted of several phases (Saldaña, 2015). Since the legal acts have a similar construction, including the title, issuer, issuing date, topic, legal basis, content, and signature, we developed a coding system for these rudimentary parts in the first phase. In the second coding phase, we split the documents into two groups according to the type of university. We independently encoded the content of around half of the documents by close reading. After that, we compared our coding systems, which allowed us to refine the initial codes to create a tentative set of coding categories. Some codes were specific for a particular type of university (e.g., clinical instruction as a type of course that exists only at medical universities), but many others covered similar issues. After agreeing on the common code system in the final iteration, we exchanged our databases for the last check. In the case of safety measures, we additionally performed a two-step quantitative content analysis with MAXDictio.

The interviews were transcribed and paraphrased into summary sentences to develop a coding system. This time we coded the interviews independently and refined and revised the coding system through iterating revisions to produce a finalised codebook. As the interviews were semi-structured, we could group the codes around the key themes: why did the university leadership decide to restore in-person teaching?; who and based on what criteria selected classes that were conducted in person?; what safety measures were taken?; what was faculty and student response to in-person classes?; what were the lessons learnt from the whole process?

Both data sources provide different information on organising in-person teaching during the pandemic at medical and technical universities in Poland. Following the principles of inductive content analysis (Kyngäs, 2020), we grouped data into concepts and themes to answer our research question. The legal documents described the procedures related to the type of courses, safety precautions, and persons responsible for implementing in-person teaching, i.e., the front line of

teaching in person. The interviews complemented this image by providing insights into the rationale behind these regulations and how they were received by both the students and the faculty members, i.e., the backstage of in-person teaching.

In order to provide a conceptual framework for understanding how universities could continue providing their services, we decided to apply the Logical Framework Approach (LogFrame). It is a project management tool used for planning project activities, outputs, purposes, and strategic objectives (goals) into a matrix specified according to the narrative, indicators, sources/means of their verification, and assumptions. The project management approach is seldom applied in higher education. Yet, it can contribute to the effective and efficient delivery of education services (Austin et al., 2013). In our case, it can help us understand the multiple challenges that medical and technical universities face.

The article aims to analyse management strategies implemented by Polish medical and technical HEIs as an emergency response to the pandemic. Instead of focusing on remote teaching – as the new emerging type of studies – we decided to analyse how in-person classes were administered and conducted. We believe that administering in-person classes during the pandemic is innovative, as organising these classes demands extra precautions and safety measures. In the following parts of the article, we analyse (a) how medical and technical HEIs selected courses that were offered in the in-person mode, (b) how safety measures were implemented and secured, and (c) how faculty members and students have received it. Tackling implementing in-person classes during the pandemic from multiple perspectives and angles allows us to draw conclusions on the effective management of this type of classes by selected Polish HEIs.

COVID-19 AS THE ‘KILLER ASSUMPTION’

Like other services, education is operationally managed, which means that all the activities necessary to deliver a product or service are covered, including collecting and transforming inputs and delivering outputs (Waters, 2001, p. 32). The COVID-19 pandemic has severely limited the operational activities of the universities. It has materialised as a ‘killer assumption’ for classes that needed to be conducted in person.

The concept of a killer assumption was introduced in the Logical Framework Approach. In the LogFrame approach, assumptions represent external factors, which are out of control. The killer assumption makes the project impossible to implement. Sartorius (1996, p. 54) identified five management alternatives if

a killer assumption occurs. One can continue implementing the project according to the plan (1), change the project design (2), add a new project to mitigate the impact of the killer assumption (3), abandon the project (4), or monitor the killer assumption during project implementation (5).

In the case of classes taught in person, most of these alternative management scenarios have been implemented by Polish medical and technical universities, except for the fourth. Abandoning the project would mean universities cease teaching students (4). All other scenarios listed by Sartorius (1996) were implemented by Polish medical and technical HEIs during the pandemic.

In the first semester of the pandemic, most universities had switched to online teaching, i.e., continued implementation of educational services according to the plan, but remotely (thus continued implementing the project according to the plan (1)). However, teachers and university authorities soon discovered that delivering practical classes remotely does not translate into achieving learning outcomes and has not been as effective as in person. As one of our respondents (1MA) had admitted, the quality of education has completely collapsed while the students were “knocked out of their study rhythm” (3MF). It has not been only the case of Polish HEIs. The same has been noticed by Steger et al. (2020), who observed that students who conducted laboratory experiments in person had higher scores in the final exam than students who had learned only in simulated labs. That is why the rectors of most of the Polish technical and medical universities decided to reintroduce in-person teaching for selected classes despite the pandemic. Those decisions brought in the other three management scenarios (Sartorius, 1996).

The following sections present how the killer assumption has been mitigated, monitored, and received among faculty members and students by referring to the three remaining scenarios discussed by Sartorius (1996):

- The first section discusses classes selection and in-person teaching during the pandemic (i.e., changing the project design – 2).
- The second one covers the safety measures introduced by the universities to mitigate the risk of infection (adding a new project to limit the impact of killer assumption – 3).
- The final section assesses how the teachers and students have received the step taken to manage the killer assumption (i.e., monitoring the killer assumption in terms of how it has been perceived, not the quality of educational services – 5).

THE NEED TO MEET: DELIVERING PRACTICAL CLASSES

Compared to other disciplines, medical and technical studies have been the most affected by remote teaching, as reported in several case study reports on teaching medical and technical sciences during the pandemic. For instance, Ross et al. (2020) stress the need to design advanced plans to proceed with dissection in anatomy education in the COVID-19 era, as simulations and online instruction do not provide the same learning outcomes as studying human bodies. Fong et al. (2020) indicate that surgery residents need to be reassimilated into training programmes to limit the possible negative impact on their surgical skills. It is despite the advances in simulation-based surgery (Plancher et al., 2020). Similarly, science and technical education have also undergone significant modifications (Fogg & Maki, 2021).

Polish technical and medical universities faced similar challenges as universities elsewhere, as it was impossible to achieve all the learning outcomes by remote learning. Thus, as soon as possible, they have decided to implement a hybrid learning mode with some courses taught in person and some remotely. Among all the medical and technical universities, only a handful opted for either full in-person teaching mode (one medical and two technical) or full remote mode (two medical and three technical) as the dominant teaching mode.

Designing a hybrid teaching plan was a logistical and strategic challenge, as choices had to be made about which courses should be conducted in person out of all courses conducted at the university when the pandemic started. According to the internal university regulations, the selection proceeded either according to the type of class or by the recommendation of the person responsible. Moreover, the organisation of courses had to be adjusted to the current epidemic situation. While in some universities, the study plan has been set with days divided between remote teaching and in-class teaching, in other universities, it has been modified according to the local epidemic situation. “The study plan was alive”, as one of our respondents (2TA) observed, and students had to check every day before going to the university whether there had been any changes in the schedule.

Regardless of the dominant mode, all the universities specified exemptions from general regulations by identifying classes and conditions that qualified for teaching in person. Moreover, all the universities used the disjoined governance model to make the process more effective and accurate. While disjoined governance might suggest that neither a whole picture was taken into consideration nor a comprehensive strategy was adopted (Mallon, 2004, p. 62), this has not been the case for technical and medical universities. The decisions were made mainly on

the faculty level by the dean at the request of the course coordinator or the lecturer. Only seldom the decisions as to which classes should be conducted in person had been made by the rector or vice-rector, but even then, they were proceeded by the dean's request.

The classes selected to be conducted in person developed practical skills that cannot be achieved through remote teaching. In medical universities, these were exercises or tutorials (9), clinical classes (7), and to a lesser extent – seminars (5; sometimes conducted remotely). Courses that were taught remotely included lectures and electives. Part of the practical classes at four medical universities had been conducted remotely to minimise the infection risk. At technical universities, classes conducted in person included project seminars (17), labs requiring the use of advanced specialised equipment (11), and classes that required conditions resembling work environments (6). The selection of courses for in-person learning refers to the National Qualification Framework by focusing on the skills and competencies students ought to achieve rather than the class type.

In some cases, the teaching mode selection depended on the year of studies. In those cases, students about to graduate or who have just started their academic journey were prioritised. Students in their final year of study had classes in person at six universities (three medical and three technical). Similarly, first-year students at two technical universities benefitted from some in-person courses. Practical courses are usually planned for the final years of study after the students have completed the core courses and choose to specialise in a specific field. It was essential to provide students who were about to graduate with practical classes before leaving the university, as, in some cases, they were required to complete a professional apprenticeship to graduate. This kind of professional practice could also hardly be performed online. For the first-year students, the rationale for conducting in-person classes was to get to know each other in person and familiarise themselves with the technical equipment critical for their professional endeavours beyond graduation.

The different organisation of classes depending on the year of study reflects the results of research on student needs in the COVID-19 era. According to a survey conducted by Guadix et al. (2020) among medicine students enrolled in neurosurgery residency applications, student concerns depend on the year of study and their advancement in the study programme. First-year students were primarily concerned about conferences and networking opportunities; second-year students considered the board exams and clinical experience most affected by the pandemic. In contrast, the third-year students cared the most about their internship opportunities.

SAFETY MEASURES

Universities had to consider the quality of education on the one hand and the risk factors related to COVID-19 on the other. Hence university leadership had to take necessary safety precautions to minimise the risk. Introducing some of the classes in person has been an ultimate necessity. HEIs globally tried to make remote learning as effective as possible. Thus, universities employed different strategies to ensure that the learning outcomes were achieved by re-designing core clinical clerkships through case conferences in remote mode, videoconferences of inpatient and outpatient encounters (Lucey & Johnston, 2020, p. 1033), webcasting, videotaped vignettes, problem-based learning tutorials and mannequin simulators (Sahi et al., 2020). In fact, in some cases, remote learning paid off, such as virtual ward rounds, thanks to which many students could participate in patient examinations and learn from a more comprehensive number of cases than in regular clinical teaching (Hagana et al., 2020). Moreover, students could learn through telemedicine appointments, as this medical service mode has become more popular during the pandemic, flipped virtual classroom model, and online practice questions (Connor et al., 2020).

Despite these efforts, under the pandemic, it was hard to hold to some of the services provided by HEIs that otherwise were taken for granted. Therefore, many Polish medical and technical universities took the risk and introduced safety precautions to get students and faculty members back to university premises. This step demanded a carefully planned communication strategy with in-person teaching presented as necessary and relatively safe. While Murphy (2020) argued that American universities presented in-person education as a threat at the beginning of the pandemic, it has not been the case for medical and technical universities in Poland. While Polish HEIs have also securitised higher education, it has only been in regard to COVID-19 and not in-person teaching.

The titles of the Rector's Decrees in our sample reflect the approach described above. Decrees presented the teaching process in neutral terms by referring to "conducting classes according to the study programme", "organisation of teaching and the academic year", "university's activity", and the like. One out of three universities had not even mentioned any security risk related to the pandemic in the title, as if they regulated their usual teaching activities. Other universities linked in their decrees the existence of the epidemic and the safety measures taken by the authorities to minimise this threat, such as "countering the spread of the virus", "preventing, counteracting and combating COVID-19", or "defining safety measures" concerning the epidemic. Only two universities made the health risk more

visible by stressing the “persistent state of the epidemic” and “state of epidemic introduced in the country”⁵ without referring to the preventive measures. One university introduced a detailed Decree on “the obligation to cover mouth and nose, remote work and conducting classes at the university”.

The university decrees regulated safety measures in different scopes and ways. Some only related to general safety measures, while others provided detailed instructions on how to behave at the university premises. A two-step quantitative content analysis allowed us to organise the safety-related words into implying general procedures (rules, regulations, requirements, security, obeying, applying) and indicating specific security measures (sanitary regime, disinfection, face mask, covering mouth and nose, social distance, presence list, temperature, washing, ventilation). Some universities dedicated to security measures only limited space with five security-related words in all documents. In comparison, others provided their students and staff with detailed security measures (up to 370 security-related words in all documents).

Communication-related to safety measures has been centred around “securing” or “ensuring” the “rules” or “security requirements”. These measures included lists of behaviours and actions that students and teachers had to follow. Most of those requirements were directed at students (54 indices at medical universities and 27 on technical ones) rather than teachers (34 at medical universities and 31 at technical universities). Except for the standard safety measures enumerated above, students were also requested to present their student ID before entering the classroom, daily wash and iron their lab coats (in the case of medical students) and submit a filled medical history form to the teacher regarding infection risk. In some cases, students were asked to sign declarations that they agreed to participate in face-to-face classes.

Medical universities had to introduce stricter security measures compared with technical universities. In contrast, the latter had more general procedures, while the medical universities generally had more safety-related policies and measures, especially at medical facilities. Since the staff of medical universities often combined teaching with medical practice, the measures had to be strict to limit the risk of spreading infection. One of our respondents (9MA) recalled a dilemma at the beginning of the pandemic, when the authorities had to decide whether teachers who work at hospitals and have contact with COVID-19 patients could conduct

5 In those two examples the phrase “state of epidemic” refers to two different situations. In the former, state of epidemic is used to describe the fact of epidemic while in the latter state of epidemic is used to describe the legal state of epidemic as introduced by the Polish government in response to the pandemic.

classes. The decision ultimately favoured allowing that staff to teach since they had taken all safety precautions, including wearing protective clothing while in hospitals.

Implementing safety measures at medical universities seemed more natural as students train to become medical personnel; therefore, safety precautions are a part of their work routine. In the case of technical universities, the application of safety measures has been much more challenging for students and teaching staff alike. In their case, safety precautions included wearing face masks while in classrooms, airing the classrooms every hour, and wearing protective gloves. Moreover, student groups had to be divided into smaller ones, which meant a higher number of classes and a higher teaching load. Those measures were crucial to keeping the risk of infection as low as possible. As one of the deans (4TF) recalls, the teaching staff considered safety precautions the most significant challenge in conducting in-person classes. Some of the faculty members were not much afraid of the risk of infection but rather sensed difficulty in coping with safety measures, e.g., having to teach four groups consecutively in a facemask and gloves. However, as soon as they started to conduct the classes in person, they stopped doubting their capacities and stood up to the challenge of teaching in person.

FACULTY RESPONSE

While the above subsections presented the regulatory framework, the following two focus on how these regulations were received by the two core groups engaged in the educational process: the students and the faculty members. The laws provided only guidelines with general or specific rules, but the implementation relied on the engagement and compliance of all academic community members. Here we build our argument primarily on data from the interviews with university middle managers or faculty authorities. As we look at the student and faculty response through their eyes and lenses, we focus on how those two groups responded to the regulations rather than how they had evaluated them.

Asked about the most significant success of managing classes in person, all our respondents mentioned the proactive attitudes of the faculty members and (slightly less often) the students. The faculty members took the task of delivering courses in person very seriously. As the national regulations established remote instruction as the standard and in-person teaching as an exception, there was no obligation to conduct classes in person. However, only a few teachers who taught practical classes were reported to be willing to hold them remotely.

The faculty members were described as “being able to make it” (6TF), “being equal to the challenge” (3MF), or “being disciplined” (4TF), and their commitment has often been appreciated. The pandemic proved that the faculty members were good team players who responded to new challenges without hesitation (3MF) and were focused on problem-solving (5MF), i.e., adjusting their teaching methods to combine the safety requirements with quality teaching. One of the deans (7TF) was particularly afraid that the older generation of professors, accustomed to traditional teaching, would not be willing to switch to remote instruction. To her surprise, they got on with Teams and PowerPoint; some were fascinated with the new technologies.

The faculty members often explained their commitment by referring to their professional ethos – as academics, they are obliged to teach their students. Moreover, the medical staff perceived teaching in class and being more exposed to the pandemic as a part of their medical routine. Once they decided to become medical doctors, they had to accept the risk of possible infection due to their profession. Moreover, many of them had practised at hospitals which at the time were overcrowded with COVID-19 patients, so they were exposed to the risk anyway. According to our respondents, faculty commitment had been outstanding, especially in the first semester of the pandemic, when the lockdown had been imposed across the country, and teaching in person was impossible. At the time, the instructors made much creative effort to remotely deliver practical classes as much as possible. It included either giving the students remotely the experience of how technical equipment works and how experiments are conducted or substituting the data the students could have collected by themselves with a ready dataset and focusing on its analysis.

Both approaches were also reported in the subject literature on teaching during the pandemic. For instance, Guarracino (2020) described how students were tasked to study protease data prepared for them instead of testing their compounds. Similarly, students from one of the technical universities in our sample were given gauge results and had to analyse them thoughtfully. Ożadowicz (2020) described how he prepared video tutorials from laboratory stands, complemented them with data collected by the teacher during the work in the lab, and then provided it to students to familiarise them with building automation technologies. Faculty members used similar innovative teaching methods in our sample. Those methods included the remote demonstration of technical equipment with the teacher in the lab demonstrating how to use it, recording experiments conducted in the lab by teaching assistants and turning them into a movie.

STUDENT RESPONSE

Students' attitude to in-person classes has been more diverse. Some welcomed in-person instruction, while others were afraid to take the risk of attending the university during the pandemic. Many of them were aware that their study programme needs to be completed at least partly in person; otherwise, they might not benefit from the learning process. In fact, at one technical university (2TA), in-person classes had been implemented at the request of the students who pressed the authorities for a hybrid model. At another technical university (4TF), students were content to have the opportunity to come to the university, even if that meant a change in their schedule and having classes from 8:30 up to 19:30 with breaks in between. Only a handful of students were reluctant to have classes in person, primarily due to personal reasons (e.g., living with grandparents who had not been vaccinated by then (7TF, 5MF)). Then the deans or course coordinators organised for them the classes remotely.

Several studies have confirmed the preference for in-person teaching among students. Organic chemistry students prefer face-to-face teaching over online education (Sunasee, 2020). Online labs were considered challenging, especially for first-year students, who had no previous lab experience and found it hard to understand the purpose of the methods presented (Kyne & Thompson, 2020). Students of a chemical biology course were able to learn from virtual assignments. Still, they were less interested in their results because they were working on data provided to them and not obtained through their experiment (Guarracino, 2020).

For the students at medical universities, the pandemic opened a window of opportunity to learn new skills first-hand and to support their communities. Several studies have confirmed this particular role of medical students in the pandemic. According to Wayne (2020), many medical students engaged in community service by working with clinicians, delivering food and medicine to senior citizens, or fund-raising. These experiences made them aware of the epidemiological situations, social determinants, and health inequalities they would not have learned otherwise. Some of the last-year medical students benefitted from the pandemic. Senior medical students could, in some cases, profit from the new learning environment as they had been twinned with junior medical officers and embedded within clinical teams due to shortages of regular medical staff (Torda, 2020).

Also, in our sample, students at medical universities – primarily, but not solely, of nursery and emergency medicine – became volunteers or healthcare companions. Some perceived it as an opportunity to try out medical clothing in an emergency, but many others believed that medical service was their duty. All

our interviewees who work at medical universities showed pride in their students and their engagement in community service. The deans of medical faculties have appreciated it by allowing students to complete their medical apprenticeship as a part of their volunteering.

Only in two cases, our interviewees reported that students preferred remote education to in-person one. The first one (1AM) referred to the examinations to be conducted at the university. A group of students opposed examination sessions in person for fear of being infected, whereas the same students participated in practical classes conducted in person. According to the interviewee, this opposition had to do with stricter class control than online exams. The second instance of unwillingness to participate in courses in person was at a technical university (4TF). Students rebelled against a course conducted in person, pointing at the risk of becoming infected. However, when the dean offered to postpone the class to the next semester, they decided to take it. According to the dean, many students worked full time, and a course conducted in person has limited their work opportunities.

LIMITATIONS

While we believe that the mixed method approach allowed us to tackle the emergency management at Polish medical and technical HEIs comprehensively and complexly, our study has two limitations. Both are related to the type of data that we used. The legal acts are regulations that are set to follow. Through the research, we could not verify how these regulations were implemented. The other limitation refers to the type of persons interviewed – we focused on HEI middle management (both academic and non-academic), thus omitting the faculty members, students or administrative staff. Both limitations indicate a possible follow-up to our research. At the same time, we believe that the type of data used in our study provided the necessary building blocks to evaluate and analyse the HEI emergency response to teaching in person during COVID-19.

CONCLUSION

In the troubled times of the COVID-19 pandemic, Polish medical and technical universities have stood up to the challenge posed by the killer assumption. Keeping in mind the quality of education, they developed emergency risk manage-

ment systems to perform selected classes in person while providing necessary health safety. These systems combined hierarchical and disjoined models of governance.

On the top-level, university leadership made strategic decisions on the dominant teaching mode and general response to the pandemic, considering the regional epidemic situation and national legal regulations. In particular, two technical universities developed a model of staged responses to the pandemic according to alert levels. The realisation of components of the study programme depended on the alert level. Similar coordinated responses have been observed in other universities (Ashokka et al., 2020). These models are transparent and easy to communicate to the academic community. Once the alert level is set, different areas of activities are regulated accordingly. Following the disjoined governance model, the faculties were given much autonomy in re-designing the study programmes and selecting the classes for in-person instruction. The teachers and deans had the necessary knowledge on what classes had to be conducted in person in order not to lose too much on the quality of teaching. The selection has been made according to the skills approach, focusing on students about to graduate.

At the same time, the pandemic created a window of opportunity to test and implement new teaching modes and pursue digitalisation. Both would have been delivered much slower under pre-pandemic circumstances before COVID-19 online teaching had been marginal due to legal, infrastructural, and administrative constraints. According to several international studies, combining traditional in-person and online teaching seems to produce better learning outcomes and is more desired by students (Jiang & Ning, 2021; Tang et al., 2020). In the winter semester of the 2021/2022 academic year, many universities returned to the previous teaching mode, i.e., full in-person instruction. However, some have decided to use the COVID-19 experiences and permanently switch to a hybrid teaching model. If this is the case, lectures are usually conducted remotely, while other classes are held in person. The hybrid mode has been continued for safety reasons and because it has delivered the expected learning outcomes. While the next semesters proved that HEIs could safely continue teaching on-site, it might be interesting to see which emergency solutions developed and implemented during the COVID-19 pandemic remained and were used as a competitive advantage by the HEIs. Due to the ongoing energy crisis in Poland and beyond, Polish HEIs might be inclined to turn back to remote or hybrid learning in winter (KRASP 2022). Therefore, the experiences gained during COVID-19 might soon be re-used and re-implemented.

In-person teaching could not have been possible if the academic community showed reluctance regardless of the reasons. At the local level, students, faculty

members and administrative staff have been able to adjust to the new reality. They have proved that they treat their job as academic teachers seriously. The students welcomed the return of the classes conducted in person. The faculty members faced challenges caused by the rapid adoption of digital technologies, innovative teaching, and – when needed – teaching courses in person, following all the necessary safety precautions. Their commitment made the efforts of the university authorities feasible. According to all our respondents, emergency in-person teaching has been implemented voluntarily. In most cases, students also welcomed the opportunity to return to in-person instruction.

According to the LogFrame, the COVID-19 pandemic has become a killer assumption for conducting in-person classes. This scenario was even more likely as most HEIs had closed their premises and switched to the online mode. The technical and medical universities stood on guard of teaching excellence and effectively and safely managed the killer assumption. They have modified the study programmes and selected crucial classes to be conducted in person. They have implemented a new project to manage the killer assumption by introducing safety measures. Moreover, they monitored the implementation of the killer assumption by being in touch with the student community and responding to their needs and anxieties, as well as organising the teaching process with faculty members. Therefore, the killer assumption has not only failed to kill in-person instruction at Polish HEIs and in schools. It has brought added value by transforming the educational system to be more resistant to the pandemic while simultaneously making it more innovative. At the same time, we believe that using a project management approach to higher education proved effective and allowed us to better frame all the activities related to maintaining high-quality education during the pandemic.

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