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Distance Learning as a Means of Innovative Teaching for University Students During the COVID-19 Pandemic

(pp. 211–228)

Suggested citation: Sufa, B., Bocharova, O., & Popławska, A. (2024). Distance Learning as a Means of Innovative Teaching for University Students During the COVID-19 Pandemic. *Multidisciplinary Journal of School Education*, 13 (2(26)), 211–228.

<https://doi.org/10.35765/mjse.2024.1326/10>

Abstract

Research objectives and problems: The aim of the study was to investigate students' opinions on distance education. The following research questions were posed: 1: How effective was the communication between lecturers and students? 2: What problems did students encounter during remote education? 3: What were the advantages of remote education in the opinion of students? 4: How did students assess the overall quality of remote education?

Research methods: The study employed a questionnaire developed by the researchers to gather the views of students about distance education. The questionnaire was informed by a literature review examining student attitudes

toward remote learning. Based on the research questions, the questionnaire items were revised and compiled into a comprehensive item pool.

A brief description of the context of the presented issue: Distance education requires a reorganization of the teaching and learning process, particularly concerning the roles of both teachers and students. The purpose of this article is to contribute to pedagogical knowledge by discussing innovative approaches adopted at the Pedagogy Department of the National Education Commission University in Krakow during the COVID-19 pandemic.

Research findings and their influence on the development of pedagogical science: The widespread adoption of distance learning was initially fueled by the urgent need for adaptation measures during the pandemic. However, the demand for new teaching models is also a response to rapid societal shifts, increasing digitalization, and evolving student expectations. The integration of modern educational methods at the university level is becoming not only a necessity, but also a challenge that requires updating curricula to meet current needs and technological advancements.

Conclusions and/or recommendations: The findings indicate that students are receptive to modern forms of education, in which digital competences play an important role. This study, conducted during the COVID-19 pandemic, is not exhaustive; it merely serves as a starting point for further reflection and analysis. It would be interesting to carry out a similar follow-up study to compare student opinions from different time periods.

Keywords: distance learning, remote education, innovation, lecturer, MS Teams platform, university students

Introduction

For a long time, higher education was traditionally organized through direct, in-person interaction between lecturers and students. However, this changed dramatically when full-time teaching was suspended on March 16, 2020, due to the pandemic. The entire academic community had to rapidly transition to ensure the continuity of education through

remote learning, using information and communication technologies as a teaching medium. Within just a few days, both lecturers and students had to bridge several years of delay in the adoption of these technologies in education. Distance learning demanded new skills from both teachers and students. Unlike traditional in-person learning, distance learning relies entirely on online communication, supported by technology (Gunawan & Amaludin, 2021; Hollister, 2022). The interaction between lecturers and students became limited only to verbal messages and basically devoid of non-verbal cues such as eye contact, facial expressions, gestures, and body posture, elements that are critical to effective communication (Sufa, 2008).

The purpose of this article is to contribute to pedagogical knowledge on the implementation of innovative solutions in higher education. Specifically, it seeks to understand students' perspectives on remote learning as an educational innovation during the COVID-19 pandemic.

Innovation—An Overview of the Concept

Innovation is commonly understood as the process of generating novel ideas and translating them into practical, implementable solutions (Barak et al., 2020). The term is closely tied to concepts like change and invention and refers to any alteration based on a new idea or concept. In order for an innovation to be meaningful, it must be implemented in practice. Changes related to innovation can be occasional, planned, or systematic.

In education, innovation is inseparable from introducing changes within educational institutions, including new or significantly improved products (such as goods or educational services), educational processes, teaching methods, or new or organizational practices, whether in the workplace or in the interactions between educational institutions and their communities. Innovations of this kind may impact the entire education system or specific components (Vincent-Lancrin et al., 2019, p. 17). Teresa Bauman (2011, p. 267) notes that "the university is not a place where innovations are introduced particularly often or willingly, but

it is where young people are prepared to implement change in their future work, improving companies and perhaps even the world.”

Universities have two primary roles: conducting research and educating students. However, in the past decade, the conversation around innovation in higher education has grown considerably, largely due to the digital revolution. Digital technologies have facilitated the spread of innovation at universities. On the one hand, universities respond to a social context in which digital technology shapes societal attitudes and expectations, and on the other hand, they must take into account the students’ shifting approaches to learning. Technological advances have promoted innovations in educational delivery, including distance learning, one of the major education modes, which heavily relies on technology (Li, Wong, & Chan, 2023). Information and communication technologies have transformed all aspects of education, with distance education becoming a rapidly expanding field (Natarajan, 2005).

During the COVID-19 pandemic, distance learning became a mandatory practice, which required both students and lecturers to adapt to a new educational reality. Distance learning is defined as “an approach to teaching and learning that is based on the use of electronic media and devices as tools for improving access to training, communication, and interaction” (Sangra et al., 2012, p. 152). What had long been considered a supplement to traditional education was now recognized as the foundation of the education system. This shift demanded changes in standard educational practices, learning new behaviors, and a different approach to achieving educational goals and tasks. Distance learning leverages information technology to provide flexible education at the convenience of the student.

Reflecting on the specifics of distance learning allows for a deeper understanding of students’ attitudes towards this technology-based form of education, which represents a type of innovation. It also helps tailor educational offerings to better meet students’ needs and expectations, which can ultimately contribute to both their satisfaction and the effectiveness of their learning.

Methodology

Purpose of the Study

The aim of the research was to examine students' opinions on distance education. The following research questions were posed:

1. How effective was the communication between lecturers and students?
2. What problems did the surveyed students encounter during remote education?
3. What were the perceived advantages of remote education according to students?
4. How did students assess the overall quality of remote education?

In this diagnostic research, guided by the principle of openness, hypotheses were not formulated. Instead, research questions, data collection methods, and interpretations were precisely established (Łobocki, 2013).

Participant Group

This research was carried out among students in the pre-school and early childhood education program at the University of the National Education Commission in Krakow, who were taking classes remotely via the Teams platform. A non-random, voluntary sampling method was used for sample selection, allowing participants to voluntarily participate in the study. The online survey was anonymous. The selected student population (230) received a link on the Teams university platform directing them to the research tool hosted on Google Forms. No email addresses or identifying information were collected. The final sample group consisted of 180 students who completed the questionnaire in full. All participants were female, and they included students from the first (23.3%), second (38.9%), third (26.7%), fourth (23.3%), and fifth (14.5%) years of study. Participants were enrolled in both full-time (76.6%) and part-time (23.3%) programs. The research was conducted from January to May 2021.

Data Collection Method

A questionnaire developed by the researchers was used to determine the views of students on distance education. To create the questionnaire, a literature review was first conducted to investigate student perspectives on distance learning. Existing survey items on this topic were then reformatted in line with our research questions and an item pool was created. This draft questionnaire was reviewed by experts to ensure its content validity, and several statements were revised following their recommendations. The finalized survey, consisting of 34 questions, was administered to 230 students. It was divided into two sections: the first section contained 4 closed-ended questions on student demographics, and the second section comprised 30 questions (both closed- and open-ended) aimed at understanding students' views on distance education.

Data Analysis

In this study, we have tried to present students' perceptions of distance education through descriptive analysis. After data collection from the research sample, the data were analyzed using quantitative methods, specifically the Pearson Product-Moment Correlation.

Results

1: Communication between lecturers and students

According to surveyed students, lecturers preferred synchronous communication and utilized reliable hardware and software to ensure quality interactions, primarily using Microsoft Teams (99.4%) and university email (98.9%).

Respondents noted that lecturers provided materials in various formats, including multimedia presentations (92.8%) and digital or text-based materials (66.6%). Most students rated these materials as high quality (77.8%), interesting and relevant to the subject matter (58.3%), and presented in a clear and organized manner (46.7%). Most students

reported revisiting these materials several times to better understand the topic, though some provided negative feedback on the materials.

Distance learning also encourages independent information-gathering and problem-solving. Beyond ready-made content, lecturers prepared materials that required students to think independently and take initiative (e.g., recorded videos—41.1%; self-completed projects—73.3%). The variety of technological tools, such as learning platforms, email, and video conferencing software, has equipped students with digital skills that are essential in today's world. Access to a variety of online resources allows students to reread and review difficult content, which can enhance their comprehension.

Distance learning extends beyond technology; it also involves the ability to communicate effectively at a distance and to work as a team in virtual settings. When assessing lecturers' communication skills, most students indicated that instructors skillfully conveyed knowledge and experiences, with about one-third responding "yes" and nearly two-thirds selecting "rather yes." Additionally, the majority rated the lecturers' engagement level during the classes as very high (13.3%) or high (67.2%).

Distance education can be implemented not only in a vertical (top-down) structure, where communication flows from lecturer to learner, but also in a horizontal structure that actively promotes student-to-student communication. In the perception of the respondents, instructors put emphasis primarily on group work (collaborative work in teams of several students—95%), and individual work (70.6%), while collective (whole-class) activities were less common (26.7%).

In describing the emotional atmosphere of the classes, participants largely confirmed that lecturers strived to create a positive environment, with nearly three-quarters (71.7%) selecting "rather yes," and one-quarter "yes." In addition, most students did not experience any problems in communicating with instructors, with responses of "rather not" (67.8%) and "no" (12.2%) that indicate a lack of communication difficulties. About one-fifth of students, however, declared that they were experiencing some issues.

2: Challenges in remote education

Like any educational format, distance learning has its limitations. Respondents pointed to a number of difficulties that they encountered during remote learning. A significant percentage (71.1%) complained of physical discomfort, including eye strain, muscle pain, and back pain, while many also struggled with concentration (64.4%). Additionally, a considerable portion of students (60%) felt affected by the absence of direct social contact. About half of the respondents mentioned the monotony of classes and an excessive study load, along with feelings of exhaustion and stress. Roughly 30% of respondents reported discouragement and difficulty absorbing information. Many also noted fatigue from prolonged screen time and mental exhaustion. Some respondents faced a number of difficult situations and felt a lack of understanding from their lecturers regarding their experiences.

3: Advantages of remote education

Distance learning, as a key component of modern education, offers many benefits, such as accessibility, flexibility, the possibility to adjust learning pace individually, and access to a variety of tools, devices, and educational techniques. In evaluating remote education during the pandemic, the surveyed students highlighted safety as a primary advantage, with the majority (79.4%) noting time savings and financial savings (73.9%), as well as the ability to learn in different locations (67.8%) using devices like computers, laptops, and even mobile phones. In addition, about half of the respondents rated the following aspects of remote communication highly: access to diverse materials, the ability to learn at your own pace, convenience, the ability to balance study with work, and improved time management. One-third of respondents also noted reduced stress related to learning.

4: Evaluation of communication between lecturers and students and evaluation of the quality of remote education

Through qualitative and quantitative analysis of the collected empirical data, it was possible to examine the interdependence of various

factors with students' assessments of the quality of distance education. Pearson's chi-squared test of independence was applied, and Pearson's r-correlation coefficient was calculated. It was assumed that variables associated with material, social, and operational aspects of remote communication would influence students' assessments of the overall quality of remote education. These assessments were then compared with the following variables:

- Opinions on the lecturers' use of equipment and software for effective communication with students: A positive correlation was identified, with a moderate Pearson's r correlation coefficient ($r=0.310$); ($\chi^2=19.533$; $df=3$; $p<0.001$);
- Opinions on lecturers' efficiency in using e-learning tools: The correlation was positively directed, with a moderate Pearson's r correlation coefficient ($r=0.452$); ($\chi^2=51.618$; $df=9$; $p<0.001$);
- Opinions on lecturers' ability to share their knowledge and experience with students: A statistically significant, moderately positive relationship was found ($r=0.421$); ($\chi^2=61.874$; $df=6$; $p<0.001$);
- Opinions on lecturers' clarity in formulating requirements: A statistically significant, moderately positive correlation was observed ($r=0.333$); ($\chi^2=80.737$; $df=9$; $p<0.001$);
- Assessment of lecturers' level of involvement during classes: A statistically significant positive correlation was found, with a moderate Pearson's r coefficient ($r=0.389$); ($\chi^2=32.847$; $df=6$; $p<0.001$);
- Opinions on lecturers' ability to engage students: The analysis revealed a statistically significant, moderately positive correlation ($r=0.407$); ($\chi^2=54.313$; $df=9$; $p<0.001$);
- Opinions on lecturers' efforts to create a positive atmosphere and supportive emotional climate in class: A statistically significant, positively directed correlation was observed, with a moderate Pearson's r coefficient ($r=0.355$); ($\chi^2=33.409$; $df=6$; $p<0.001$);
- Opinions on the presence of communication issues with lecturers: A statistically significant negative correlation was found (indicating that more frequent problems in communication correlate with

a poorer rating of distance education quality), with a weak Pearson's r coefficient ($r=-0.198$); ($\chi^2=28.339$; $df=9$; $p<0.001$).

Discussion

The implementation of new tools and technologies during online learning, necessitated by the constraints of the COVID-19 pandemic, posed challenges for both lecturers and students. Lecturers had to modify their teaching methods, create new learning resources, and adjust class guidelines, while students needed to adapt to a new learning environment. This shift required not only technical changes but also a transformation in the perceptions, attitudes, and skills of both parties.

An analysis of students' opinions on distance learning provided valuable information about the educational landscape today. Students generally held a positive attitude towards online learning. This finding was also confirmed in a study conducted among students at three major Polish universities (Kocot & Kwasek, 2023), which found that online learning tools effectively supported communication, were familiar and acceptable to students, and positively influenced the effectiveness of the teaching process.

The students we surveyed rated their technological skills in using new technologies, teaching equipment and software positively, and their overall perception of distance education was similarly favorable. These findings align with other studies on students' views of remote learning during the pandemic, such as research by Brzózka et al. (2021), Gurbisz (2021), Heród et al. (2021), Jawor-Joniewicz (2023), and Kwasek et al. (2023). These studies show that the majority of students had a favorable view of distance learning. Overall, the research findings suggest that, in the opinion of the surveyed students, remote education is closely tied to communication effectiveness in class, and its advantages clearly outweigh any drawbacks. Students, working in groups preferred by lecturers rather than individually, were able to communicate, collaborate, and share knowledge and experiences with one another.

Nearly half of respondents reported that communication occurred within a positive atmosphere. The analysis shows a moderate positive relationship between students' assessment of educational quality and their view of lecturers' efforts to create a favorable emotional climate. In contrast, a weak negative relationship was found between the assessment of educational quality and the occurrence of problems in communication with lecturers. This indicates that frequent communication issues are associated with lower evaluations of remote education quality.

These findings suggest that effective communication between lecturers and students significantly impacts the perceived quality of remote education. However, examining additional variables could further clarify these relationships and their implications. The qualitative and quantitative analysis of the collected empirical material also revealed the interdependence of certain variables with respondents' overall evaluation of distance education. Factors related to material, social, and implementation aspects of distance communication influenced students' perceptions of remote learning quality, although these associations were moderate, which suggests that while there are some links between the variables, they are not as strong as the relationship between communication quality and the overall evaluation of distance learning.

Research conducted among Italian lower secondary school students indicates that a positive classroom climate and strong teacher-student relationships promote better learning outcomes and help students manage emotions more effectively in stressful situations (Pozzoli, Gini, & Scrimin, 2021). Moreover, specific beliefs and attitudes of adult educators, including academic instructors, along with the messages they convey to students also influence students' future learning activities and play a very important role in shaping their self-regulation and learning behaviors (Kolber, 2021, p. 147).

The surveyed students reported that the content presented by the lecturers was clear, accessible, and well-organized. The provided materials varied in form, were not only engaging, high-quality, and relevant to the subject, but also encouraged independent thought and activity, which helped students develop their creativity, self-control and self-discipline.

Numerous studies indicate that, from the perspective of pupils and students, distance education was generally not perceived positively (Abasi et al., 2020). In addition to commonly reported technical problems (Agarwal & Kaushik, 2020), students encountered difficulties in mastering particularly difficult concepts without direct teacher contact, maintaining high motivation during online classes, managing time effectively, and engaging in independent learning. Research by Długosz (2020) indicates that students reported monotony in classes, lack of group work, rapid presentation of material, and limited flexibility.

In contrast, in our study, students positively assessed the quality of remote classes, including the organization and structure of both group and individual work. They expressed appreciation for the quality of the presented materials and the methods of their delivery. Additionally, students reported few major reservations about the lecturers' performance; they perceived lecturers as well-prepared, committed, and skilled in using modern technologies to encourage active participation, which further motivated students to learn and engage. The overall quality of remote classes, including lecturers' contributions, was similarly rated positively by more than half of the surveyed students of applied linguistics at the University of Gdansk (Toporek, 2023), though the effects of distance learning remained somewhat inconclusive.

Nonetheless, over half of our respondents reported difficulties associated with remote communication, including health problems, difficulty concentrating, fatigue, excessive workload, mental exhaustion, stress, and a perceived lack of empathy from lecturers. Furthermore, the absence of direct social interactions was noted as a factor that may lead to discouragement, lower motivation, learning difficulties and a sense of isolation in pursuing academic goals.

Conclusions and implications for policy and practice

The widespread adoption of distance learning was initially a necessary adaptation during the pandemic. However, the shift toward a new teaching model is also due to rapid societal changes, increasing digitalization, and evolving student expectations. The use of modern formats of education at university level has become not only a necessity, but also a challenge that requires curricula to be adapted to contemporary needs and technological advancements.

Survey results on students' attitudes toward remote learning show a notable adaptation to digital forms of education. Although remote learning emerged as a response to the new challenges posed by the COVID-19 pandemic, its acceptance and effectiveness suggest that students view it as a potentially sustainable component of higher education. In this context, it is important to adapt the tools to meet students' needs. Despite generally positive assessments of remote learning, universities should regularly update the tools they use, and ensure that learning methods are diverse, flexible, and tailored to individual student needs and expectations. Universities should also offer support to help students make the most of remote learning resources. Initiatives that could make distance learning more appealing include developing more interactive learning platforms, creating engaging and interactive learning materials, holding regular online sessions, and providing technical and pedagogical support. Furthermore, student feedback surveys can help refine teaching strategies to better meet the needs of students in the Education 4.0 era.

These research findings lead to several recommendations for educational practice:

1. New educational strategies should be incorporated into the teaching process to keep students motivated and engaged in learning.
2. Materials created for remote education should be clear, accessible, engaging, and of high academic quality, while also being cognitively diverse to support independent learning.

3. Teachers' professional development should be promoted by expanding opportunities for them to gain expertise in new technologies and strategic training. Teachers' digital competences should be developed as necessary for creating cognitively and creatively stimulating teaching materials, and fostering educational innovations that drive greater educational effectiveness and satisfaction in learning.
4. Cognitive, metacognitive, affective, and social strategies should be integrated into the school curriculum.
5. New educational strategies should be embedded in teaching to promote students' motivation, engagement, and self-regulation in learning. Students should be provided with pedagogical, psychological, and social support, which includes strengthening teacher-student relationships, creating space for reflection and self-reflection, building self-regulatory skills, encouraging creative problem-solving, and helping students recognize and manage their thoughts and emotions. Additionally, students should be introduced to stress coping techniques, the development of self-efficacy, and an entrepreneurial mindset, understood as resourcefulness in life. Coaching techniques, for example, may support these objectives.
6. In order to stimulate and sustain students' engagement, teachers should bolster motivation through creating a positive atmosphere and transparency during classes, ensuring clear communication and grading criteria, offering relevant topics and tailoring instruction to students' needs, capabilities, and interests.
7. Strong relationships between students and teachers should be established and maintained to promote a supportive learning environment. Teacher training should also focus on enhancing emotional connection with students in virtual settings and improving live interactive communication through platforms like Zoom or Google Meet.
8. Research analysis suggests that students' perception of distance education is heavily influenced by factors related to the material, social, and communicative aspects of remote interactions. When communication between students and lecturers is smooth and effective,

the overall assessment of distance education improves. Therefore, it is necessary to eliminate barriers in student-lecturer communication, by providing consistent feedback, practicing active listening, and creating a positive atmosphere in class.

These findings attest to students' openness to modern educational methods that prioritize digital competences. Since this study was conducted during the COVID-19 pandemic, it does not exhaustively address all aspects of the issue; rather, it is merely a starting point for further exploration and analysis.

As the study relied solely on feedback from students at a single university, some subjectivity or limitations may be present. It would be worthwhile to carry out a similar study to compare student opinions over different periods. Such an analysis could provide a more complete picture of university students' evolving preferences for teaching methods and techniques. Despite the study's limitations, the findings contribute meaningfully to discussions on the role of distance learning in higher education.

Funding: This research was funded by University of the National Education Commission, Krakow in the project: Education during and after the pandemic COVID-19 in the perspective of the main actors of the educational process WPBU/2021/05/00192

Conflicts of Interest: The author declares no conflict of interest.

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