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# Covid-19 as a Black Swan. University Education Adaptation to Online Learning in the Second Wave of the Coronavirus Pandemic from the Perspective of Students and Academics

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## ABSTRACT

In 2020 and 2021, modern society faced a historically unprecedented situation in the field of education. Education systems worldwide underwent a massive transformation from conventional forms of face-to-face learning to distance learning alternatives. This forced transformation of teaching, triggered by the global COVID-19 pandemic, has been a major test of resilience and adaptability for universities and other academic institutions. This emergency situation, and the way it was handled, was the subject of empirical study by the University of Finance and Administration in the form of a questionnaire-based survey focused concurrently on students and academics during the 2020/2021 academic year, during what has been referred to as the second wave of the coronavirus pandemic. We observed the attitudes of students and academics, then broke these down to greater levels of detail through mutual confrontation in the areas of evaluating the quality of online education, the decreasing or increasing levels of interest in courses, the level of communication skills of educators, or their availability during online office hours. We also explored the key question of the role and significance of the absence of physical interactions that characterizes distance learning. The empirical data point to ambivalence in the perceptions of online learning in both populations studied. While, on the one hand, there are clear collective expressions of confidence in the communication skills of educators, partly in the overall quality of the online instruction they provide and partly in their willingness to continue to enhance it in subsequent semesters, on the other hand, the expectations of students were not fully met in certain subjects, which was marked by a palpable decline in interest. One criterion that was critical for the emotional acceptance of online learning is the absence of physical interaction and presence in the school environment. It would therefore appear that the ideal model for future education is a combination of full-time and distance learning that would combine their respective benefits, while eliminating their perceived shortcomings.

## KEY WORDS

Academics. Ambivalence. COVID-19. Education. Online Learning. Questionnaire Survey. Students. University.

# 1 Introduction

According to the London daily *The Times*, one of the most influential intellectual texts to emerge in the last sixty years is Nassim Taleb's *The Black Swan: The Impact of the Highly Improbable*. This bestselling book by a Lebanese-born American academic and investment advisor has inspired fundamental changes in modern thinking, highlighting the human mind's inability to predict future events and developments, its failure to understand an overly complex and ever-changing reality, the inertia of thought, and its unpreparedness to handle unexpected situations and turning points. According to Taleb, we are living in an era of black swans.<sup>1</sup>

The COVID-19 pandemic is an event of global scale, as well as being a source of hard-to-predict step change, particularly in life's social and economic structures, and of a series of accompanying transformations in power, politics, culture, and technology. In this context, the COVID-19 pandemic meets the defining characteristics of a black swan: these typically manifest as the unpreparedness of societies to face unexpected threats, the inability to predict the consequences of these threats, the promotion of chaotic and ineffective measures, growing uncertainty, and social changes of a non-linear and stepwise character.

Against the backdrop of the uncontrolled spread of COVID-19, national governments have introduced various restrictive, broad-based epidemiological measures and related legislation over the past two years that dramatically limit the social contact and physical mobility of their populations. These measures were particularly noticeable in 2020 and persisted at varying degrees of intensity in 2021. As of the beginning of 2022, the Czech Republic is preparing for a sixth pandemic wave related to the Omicron variant.

In the Czech Republic, as in other European countries, the first government measures were implemented during March and April 2020 in response to the very obvious and rapidly deteriorating pandemic situation. On 13<sup>th</sup> March 2020, these governmental measures, introduced by the Ministry of Health of the Czech Republic, were also applied across the board to the education system.

Given the rapid sequence of events, and with no option to prepare systemic changes in the organization of teaching, institutions of higher learning in various parts of the world are transforming standard contact teaching based on intensive regular face-to-face meetings between teachers and students into distance forms of online instruction.<sup>2</sup> It is estimated that approximately 200 million university students worldwide have been affected by the coronavirus pandemic.<sup>3</sup> The *European University Association* (EUA) emphasizes that the COVID-19 pandemic has affected all student populations.<sup>4</sup> Continuous monitoring reports on the current status of the global education system affected by the coronavirus pandemic are published by UNESCO. As of December 2020, a total of 877,622,671 students worldwide experienced restrictions in their learning due to school closures resulting from COVID-19 (as of 27<sup>th</sup> Jan 2022, 54,037,980 students were similarly affected worldwide, accounting for approximately 3.4% of all students globally).<sup>5</sup>

<sup>1</sup> See: TALEB, N. N.: *The Black Swan: The Impact of the Highly Improbable*. New York, NY : Random House, 2007.

<sup>2</sup> KHLAIF, N. Z., SALHA, S., KOURAICHI, B.: Emergency Remote Learning During COVID-19 Crisis: Student' Engagement. In *Education and Information Technologies*, 2021, Vol. 26, No. 6, p. 7034.

<sup>3</sup> FARNELL, T., SKLEDAR MATIJEVIČ, A., ŠKUNANEČ SCHMIDT, N.: *The Impact of COVID-19 on Higher Education: A Review of Emerging Evidence (NESET Report)*. Luxembourg : Publications Office of the European Union, 2021. [online]. [2023-01-27]. Available at: <<https://nesetweb.eu/en/resources/library/the-impact-of-covid-19-on-higher-education-a-review-of-emerging-evidence>>.

<sup>4</sup> BÜHRMANN, A. D., BUNESCU, L.: *Approaches in Learning and Teaching to Promoting Equity and Inclusion*. Brussels, Geneva : European University Association, 2021. [online]. [2023-01-27]. Available at: <<https://eua.eu/resources/publications/959:approaches-in-learning-and-teaching-to-promoting-equity-and-inclusion.html>>.

<sup>5</sup> *Global Monitoring of School Closures by COVID-19*. [online]. [2023-01-27]. Available at: <<https://en.unesco.org/covid19/educationresponse>>.

And yet it was not merely the area of education itself that was restricted, but all other physical contact students had with their schools as well, particularly in the interrelated areas of learning support, advisory services, libraries, and dining. Universities thus underwent a radical transformation of communication and collaboration systems at various levels of the relationship between university management, academic staff, administration, and students in what is referred to as the first wave of the coronavirus pandemic, which took place in the middle of the 2020 summer term. The adaptation of schools at different levels of the education system in the Czech Republic varied widely, with different schools responding in different ways: some schools introduced online learning faster, others more slowly; schools differed in the extent, and particularly the format in which they provided online learning; and in general the approach of the schools to providing alternatives to contact teaching varied as well. This was manifested by the introduction of their own innovative elements and systemic approaches, with differences in their level of creativity and the implementation of different communication platforms and distance learning tools. Students at different types of schools were thus exposed to a diverse distance learning environment emerging spontaneously with a rapid pace of change and with no chance for preparation, even in schools that had had little or no experience thus far with these forms of education.

Some schools preferred a much greater emphasis on self-study and communicated with students at varying intervals in terms of assigning homework, presenting lectures, and providing students with additional study materials and specialized resources for self-study purposes. However, some recent sociological surveys suggest that self-study was experienced negatively by students due to feelings of increased workload, stress, and frustration.<sup>6</sup> Other schools combined a self-study regimen, assigning homework and checking coursework on a continuous basis, while implementing online lectures in parallel. This often applied only to certain selected subjects in the curricula, due in part to a lack of IT tools, including the technological infrastructure and resources necessary for online learning in a home office environment. It should be emphasized that the availability of IT technology had already been limited in the commercial network at this time due to rapidly increasing interest in IT equipment not only from schools, but also from companies that were widely introducing remote work and generally intensifying the digitization of corporate communications, which created demand for suitable equipment in the form of webcams, microphones, laptops, etc.

During the first wave of the COVID-19 pandemic, the educational process of universities was rather inconsistent, yet it clearly incorporated elements of improvisation and spontaneity, measures that varied in their degree of creativity, and hybridization of instruction combining different methods of learning, sharing of study materials, self-study, and testing via online channels. The transition to distance learning was an awkward one at Czech universities during the spring wave of the 2020 pandemic, which served more as an involuntary pilot to prepare schools for what could be expected from them at the beginning of the following academic year. Unfortunately, these skeptical expectations fully came to pass, and the entire academic year 2020/2021 was conducted in a continuous mode of online teaching at all colleges and universities in the Czech Republic, either without continuous contact teaching or without any contact teaching at all (apart from limited options for face-to-face testing in December 2020 and January 2021).

The second wave of the coronavirus pandemic allowed for the implementation, albeit quite involuntarily, of continuous online education throughout the academic year, a situation that is historically unprecedented in the Czech educational space (and presumably elsewhere). It is in this specific situation that we decided to empirically identify, with the help of a questionnaire

<sup>6</sup> *Vysokoškolská studenti během první vlny pandemie koronaviru*. [online]. [2023-01-27]. Available at: <[https://www.soc.cas.cz/sites/default/files/soubory/tz\\_20200924\\_vysokoskolsti\\_studenti\\_behem\\_prvni\\_vlny\\_pandemie\\_koronaviru.pdf](https://www.soc.cas.cz/sites/default/files/soubory/tz_20200924_vysokoskolsti_studenti_behem_prvni_vlny_pandemie_koronaviru.pdf)>.

survey, in the academic year 2020/2021, the attitudes and opinions of students and educators on selected circumstances of online learning and its importance, benefit, and effectiveness in the process of academic education.

The objective of this study is to empirically assess the attitudes and opinions of students and educators towards online teaching in the second wave of the COVID-19 pandemic at the University of Finance and Administration in Prague, the first private university of economics in the Czech Republic. Based on empirical data, we make predictions about the potential for student interest in forms of online learning in subsequent stages of their studies and assess their other experiences with online learning as an alternative form of conventional teaching, as well as those of the professors. The attitudes of students and academics are thereby exposed to mutual confrontation when evaluating the quality of online education, the decreasing or increasing levels of interest in course subjects, the level of communication skills of the professors, or the availability of professors during online office hours. We also pursued the key question of the role and importance of the absence of physical interaction during distance learning.

Based on our sociological findings, we seek to rationalize the strategic decision-making of university management for introducing online teaching as a form of education parallel to the standard contact mode of study. By comparing the attitudes of students and educators towards the circumstances of online teaching, we have drawn conclusions about the degree of consistency – or inconsistency – in the cognitive and emotional attitudes of the student and academic populations towards online teaching. This comparison also juxtaposes educators' statements regarding their own approach to teaching (e.g., self-assessment of their communication skills) and students' reflections on the real effects and quality of online instruction provided. At the same time, analyzing this empirical data can further develop the argument about the strengths and, conversely, the weaknesses of online teaching and can specifically contribute to addressing the more general issues of increasing the sustainable implementation of online teaching in a university setting.

## **2 Literature Review**

In March 2020, there was an unprecedented reduction in contact education worldwide. Education systems of all types and forms around the world adapted to online forms of knowledge transfer and verification due to the coronavirus pandemic. This situation has prompted research interest in identifying, describing, understanding, and explaining the various circumstances and processes associated with such a radical and sudden change on such a massive scale. The first empirical studies began to appear in the past two years, reporting on a number of topics, problems, and issues in the areas of educational policy, pedagogy, or the psychology and sociology of education. These consist predominantly of case studies illustrating specific situations and conditions of online education at different universities in different parts of the world. However, these individual research contributions do not operate in isolation, but instead, they collectively create a relatively comprehensive perspective on the transformation of education during the COVID-19 pandemic, from which more universal principles and general rules and trends can be derived regarding the functioning and effectiveness of online education.

Osborne and Hogarth empirically studied various factors in the differences between online learning and conventional face-to-face teaching, focusing on differences in students' expectations and experiences with the realities of online teaching. Based on their own findings and related empirical evidence from similar investigations, they propose strategies and methods (e.g., the appropriate formulation of a combination of asynchronous and synchronous instruction) for motivating students to actively participate in virtual learning environments and facilitating

interactivity.<sup>7</sup> Kohnke and Moorhouse conducted a qualitative research at a major university in Hong Kong (Hong Kong Baptist University) in which they analyzed in detail the experiences of nine selected educators with instruction via videoconferencing. They reached the conclusion that these experiences sharply polarized their sample of respondents into distance learning optimists and skeptics. The optimists consider videoconferencing to be an effective form of knowledge transfer, full of positive effects, while the skeptics are highly critical of this communication platform, having adopted it as a necessary evil.<sup>8</sup> Similarly ambivalent attitudes towards online learning are noted by Modrzyński, Zajdel, and Michalcewicz-Kaniowska, based on sociological findings at the University of Science and Technology in Bydgoszcz, Poland. Based on an exhaustive questionnaire survey of the student and academic population of this university, they identified both the significant future potential of online learning and critical attitudes related, for example, to the impossibility of achieving the full scope and quality of practical and laboratory exercises. At the same time, the authors of the study also identified clear resistance to the idea that online teaching should completely displace conventional face-to-face teaching.<sup>9</sup> Similar conclusions were reached by Kawasaki, Yamasaki, Masuoka, Iwasa, Fukita, and Matsuyama at the Hiroshima University in an experimental study that compared the effectiveness of a nursing course taught using emergency remote teaching to one that used conventional face-to-face teaching. The experiment was conducted by comparing a sample of 46 female students attending a course conducted using the traditional face-to-face method and 56 female students attending a course conducted virtually. Again, the high potential of online teaching and its comparable effectiveness to face-to-face teaching was confirmed; and yet once again there are findings related to the ambivalent nature of the online form of education, as the non-contact form of teaching very fundamentally limits the practical training of manual nursing skills.<sup>10</sup> An extensive sociological investigation was carried out at the University of Latvia by Baranova, Nimante, Kalnina, and Olesika. Data collection took place in two phases: the first one in the spring of 2020, and the second one at the same time one year later. Their survey included a total of 2,248 students across 13 faculties and focused on students' reflections on numerous different dimensions of their own experiences with online learning. It demonstrated in both the first and second phases of the survey that the forced conversion from conventional face-to-face learning to virtual learning was positively received by the majority of students and generally rated as high-quality and useful.<sup>11</sup>

Gouëdard, Pont, and Vennet use empirical data available from OECD countries to analyze the transformation of educational institutions during the coronavirus pandemic, evaluating the implementation of various systemic measures by school institutions to enable continuity of the educational process. They also present various practical recommendations based on these analyses that are intended to strengthen the resilience of schools in times of similar crises and to orient the design of strategic measures of school educational systems in their

<sup>7</sup> OSBORNE, S., HOGARTH, K.: Mind the Gap: The Reality of Remote Learning During COVID-19. In *Accounting Research Journal*, 2021, Vol. 34, No. 3, p. 331-332.

<sup>8</sup> See: MOORHOUSE, B., KOHNKE, L.: Thriving or Surviving Emergency Remote Teaching Necessitated by COVID-19: University Teachers' Perspectives. In *The Asia-Pacific Education Researcher*, 2021, Vol. 30, No. 3, p. 279-287.

<sup>9</sup> MODRZYŃSKI, P., ZAJDEL, M., MICHALCEWICZ-KANIOWSKA, M.: Conditions and Potential for Remote Student Teaching. In *European Research Studies Journal*, 2020, Vol. 23, No. 1, p. 860.

<sup>10</sup> KAWASAKI, H., YAMASAKI, S., MASUOKA, Y., IWASA, M., FUKITA, S., MATSUYAMA, R.: Remote Teaching Due to COVID-19: An Explorations of Its Effectiveness and Issues. In *Journal of Environmental Research and Public Health*, 2021, Vol. 18, No. 5, p. 2672.

<sup>11</sup> BARANOVA, S., NIMANTE, D., KALNINA, D., OLESIKA, A.: Students Perspectives on Remote On-Line Teaching and Learning at the University of Latvia in the First and Second COVID-19 Period. In *Sustainability*, 2021, Vol. 13, No. 21, p. 11890.

various dimensions more closely with sustainability and further development.<sup>12</sup> One interesting case study on the effectiveness of distance education is presented by Son, Anh, Jaafar using the example of the FPT University in Vietnam. The authors of this study confirm that, despite existing theories and commonly available practical methodologies for online distance learning, the forced conversion of standard face-to-face teaching to its online equivalent during the COVID-19 pandemic remains a very complex process. The reason is that it requires many changes to be made in parallel over a relatively short time and without the possibility of more thorough preparation. The factors of educators' competence, communication skills, and practical skills play a key role in the process of implementing distance learning as a meaningful and adequate alternative to contact teaching. Equally important is the willingness, readiness, and motivation of students to accept this form of education and to use it effectively for their own development. Based on a questionnaire survey monitoring the opinions and attitudes of the student population towards the process and content of distance learning, the findings of the authors address numerous complications in the process of distance learning. In addition, they challenged the original research hypothesis that students would, on average, achieve worse grades in distance learning assessments than they did in the standard mode of teaching and examination during 2019. This points to success in the implementation of distance learning as well as appropriate preparation, implementation, and especially verification of distance testing.<sup>13</sup> The authors Gillis and Krull empirically examined the effectiveness of instructional techniques implemented as part of the conversion to distance learning. At the same time, the authors of the study tracked student perceptions by race, gender, and socioeconomic status of the barriers to this transition needing to be overcome. The authors concluded that most students did experience these barriers and perceived the transition to distance learning as a complication in many aspects. The students' feedback clearly reports higher levels of anxiety, loss of concentration, mental distraction, and reduced motivation to study. These negative experiences are most commonly identified in the population of non-white females and first-year students.<sup>14</sup> A larger international study of sociological research, the School Barometer survey, is presented by Huber and Helm. This questionnaire-based survey tracks the rapid changes in the education systems of Germany, Switzerland, and Austria during the spring of 2020. This empirical study is not only unique in its scope, but also in the expansion of respondent groups to include academics, students, parents, school administrators, school staff, and the many other people who support school functions and participate in education activities. The authors acknowledge certain limitations of the results obtained and also point out the methodological limitations of this quantitative research, but nevertheless present a series of findings that are applicable to educational policy, pedagogical practice, and other similar research projects.<sup>15</sup>

Among the more important sociological research conducted in the Czech Republic in 2020 and 2021, we note the activities of the Institute of Sociology of the Czech Academy of Sciences and the Faculty of Social Sciences of Charles University, who participated in the Antwerp University COVID-19 *International Student Well-Being Study* (C19 ISWS).<sup>16</sup> A total of

<sup>12</sup> GOUËDARD, P., PONT, B., VIENNET, R.: *Education Responses to COVID-19: Implementing a Way Forward. OECD Working Paper No. 224*. Paris : OECD iLibrary, 2020. [online]. [2023-01-27]. Available at: <<https://doi.org/10.1787/8e95f977-en>>.

<sup>13</sup> See: SON, T. N., ANH, N. B., JAAFAR, J.: An Analysis of the Effectiveness of Emergency Distance Learning Under COVID-19 at FPT University. In *CCRIS'20: Proceedings of the 2020 1<sup>st</sup> International Conference on Control, Robotics and Intelligent System*. New York, NY : Association for Computing Machinery, 2021, p. 136-143.

<sup>14</sup> GILLIS, A., KRULL, M. L.: COVID-19 Remote Learning Transition in Spring 2020: Class Structures, Student Perceptions, and Inequality in College Courses. In *Teaching Sociology*, 2020, Vol. 48, No. 4, p. 286-287.

<sup>15</sup> HUBER, G. S., HELM, CH.: COVID-19 and Schooling: Evaluation, Assessment and Accountability in Times of Crises – Reacting Quickly to Explore Key Issues for Policy, Practice and Research with the School Barometer. In *Educational Assessment, Evaluation and Accountability*, 2020, Vol. 32, No. 2, p. 240-241.

<sup>16</sup> *COVID-19 International Student Well-being Study*. [online]. [2023-01-27]. Available at: <<https://www.uantwerpen.be/en/research-groups/centre-population-family-health/research2/covid-19-internation>>.

27 European countries have been participating in this initiative to empirically monitor college and university student populations in order to identify the consequences of pandemic measures, not only on fields of study but also on mental well-being and other indicators of quality of life and everyday experience. Participation in this research initiative was confirmed by 7 Czech universities, where a total of 6,497 questionnaires were collected and evaluated. In Slovakia, a more significant sociological survey of the student population was also carried out at the time of the first wave of the coronavirus pandemic, at such institutions as Comenius University in Bratislava.<sup>17</sup>

### 3 The Potential of Online Education and Its Main Challenges

A review of available empirical studies from different parts of the world referencing the forced and relatively rapid transformation of universities from conventional face-to-face teaching to virtual online connectivity environments in 2020 and 2021 tends to reinforce a positive belief in the global and local resilience of universities and the adaptability and flexibility of academic and student populations. In a very short time, the coronavirus pandemic forced universities to transform their forms of education and convert contact learning to a digital environment. However, in no case has there been any massive failure, paralysis, or even crippling of university functioning. In fact, many universities already had had distance learning formats in place to varying degrees and to varying extents, often applying them as forms of teaching parallel to conventional teaching. Sociological studies mostly indicate a more general trend toward accepting and developing online learning as a suitable and effective platform for education, but in combination with the traditional methods and approaches of contact teaching. At the same time, these studies point to certain trends toward hybridization of learning, where the advantages of conventional and distance forms of learning are combined in different ways.

And yet distance forms of education face several major challenges in the wake of their global and forced introduction into the university education system.<sup>18</sup>

The first is a technological challenge, as it requires that internet connectivity be available and reliable and that sufficient university technology and communications infrastructure be provided. However, not all universities meet these requirements, especially in economically less developed regions. The technological challenge is not only a question of the capacity and standard of equipment and the preparedness of universities, but also a matter of the economic means of students and their families. Insufficient internet coverage, and the financial unavailability of information and communication tools, are among the main constraints. Furthermore, the technological pillar of distance education is potentially limited by low levels of digital literacy. Especially for the older generation of academics, the transition to digital forms of education is more complicated, as they often promote conservative attitudes and demonstrate reluctance to abandon traditional forms of teaching.

The second challenge is pedagogical. This includes, in particular, the ability to provide learning materials of sufficient quality in an interactive form and to use multimedia teaching tools effectively. However, this requires a certain level of digital literacy. It is this very interactivity through multimedia tools that is a prerequisite for engaging students in learning and enhancing their active participation in the learning process. It is a challenging pedagogical task to concurrently motivate students and maintain their interest in collaboration. Educators should therefore provide students with the widest possible opportunities for feedback and ensure a reliable and fair system for verifying the knowledge and skills acquired.

<sup>17</sup> *Vyhodnotenie prieskumu o dištančnej výučbe 2020 – študenti.* [online]. [2023-01-27]. Available at: <[https://uniba.sk/fileadmin/ruk/cit/e-learning/20200615\\_distančne\\_vzdelavanie\\_anketa\\_studenti.pdf](https://uniba.sk/fileadmin/ruk/cit/e-learning/20200615_distančne_vzdelavanie_anketa_studenti.pdf)>.

<sup>18</sup> FERRI, F., GRIGONI, P., GUZZO, T.: Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations. In *Societies*, 2020, Vol. 10, No. 4, p. 86.

The third challenge is social. The home study or teaching environment should provide sufficient space, peace, and comfort. The material conditions and overall facilities should be sufficient to the needs of distance education. And yet the necessary absence of face-to-face social contacts is becoming an even greater barrier of a non-material character. It is precisely this lack of physical contact that has emerged as one of the most important criteria in critical assessments of distance learning.<sup>19</sup> Here, a social and psychological need for sharing emotions, actual physical contact, and informal face-to-face conversation is expressed.

We anticipate that online learning may be promoted and implemented at universities in the future to a much greater extent and intensity than was the case before the experience of the coronavirus crisis. It may even become a preferred and sought-after platform for transferring information, sharing knowledge, and testing that knowledge in the academic environment and student population. According to Duffin, prior to the 2016 coronavirus pandemic, the US university population had already empirically demonstrated a strong positive attitude among nearly 81% of university students towards digital learning technologies as an effective learning platform to improve their learning outcomes.<sup>20</sup> Similar studies support the assumption that participants in online courses achieve comparable or better learning outcomes compared to participants in face-to-face courses.<sup>21</sup> According to a recent sociological survey conducted at the University of Lithuania, the proportion of students who believe that online learning can provide them with a full-fledged education has increased significantly year-on-year. While 54% of the university students espoused this view in 2020, in 2021 it was now the case for 84% of the respondents.<sup>22</sup> The significant level of preference for online learning among university students in later stages of study during the second wave of the coronavirus pandemic was further confirmed by an empirical study by Roubal<sup>23</sup>. Positive attitudes from academics and students towards online learning have also been identified in other empirical studies, contributing to belief in the growing potential of more firmly and permanently embedding online forms of learning in university settings in the future.<sup>24</sup> Indeed, it can be assumed of some schools who gained their first major experiences of widespread adoption of online learning during the first and especially the second wave of the coronavirus pandemic that they will be motivated to further strengthen and petrify it in their curricula. This may also lead (and in many schools has already led) to greater efforts to expand distance learning curricula offerings and applications for accreditation.

At the same time, the trend toward reducing contact teaching in favor of distance learning is reinforced by an interesting ecological argument. Moreover, there is ample factual data available in professional discourse on the negative ecological impacts of contact teaching and on instruction based on digital platforms as much more environmentally friendly. *“In a country such as the United Kingdom, taking into account factors such as residential energy consumption, campus expenses, and travel between residence and university, an online teaching model could help to reduce an estimated 88% of energy consumption and 83% of the carbon*

<sup>19</sup> FERRI, F., GRIGONI, P., GUZZO, T.: Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations. In *Societies*, 2020, Vol. 10, No. 4, p. 86

<sup>20</sup> DUFFIN, E.: *E-Learning and Digital Education – Statistics & Facts*. [online]. [2022-01-27]. Available at: <<https://www.statista.com/topics/3115/e-learning-and-digital-education>>.

<sup>21</sup> PAUL, J., JEFFERSON, F.: A Comparative Analysis of Student Performance in an Online vs. Face-to-Face Environmental Science Course from 2009-2016. In *Frontiers in Computer Science*, 2019, Vol. 1, no paging. [online]. [2022-01-27]. Available at: <<https://doi.org/10.3389/fcomp.2019.00007>>.

<sup>22</sup> BARANOVA, S., NIMANTE, D., KALNINA, D., OLESIKA, A.: Students Perspectives on Remote On-Line Teaching and Learning at the University of Latvia in the First and Second COVID-19 Period. In *Sustainability*, 2021, Vol. 13, No. 21, p. 11890.

<sup>23</sup> ROUBAL, O.: The Identification of University Students with Online Teaching in the Second Wave of the Covid-19 Pandemic. In HOSSOVÁ PROSTINÁKOVÁ, M., RADOŠINSKÁ, J., SOLÍK, M. (eds.): *Megatrends and Media 2021: Home Officetainment*. Trnava : FMK UCM, 2021, p. 343.

<sup>24</sup> MODRZYŃSKI, P., ZAJDEL, M., MICHALCEWICZ-KANIOWSKA, M.: Conditions and Potential for Remote Student Teaching. In *European Research Studies Journal*, 2020, Vol. 23, No.1, p. 861.



footprint”.<sup>25</sup> Authors Versteijlen, Salgado, Groesbeek, and Counotte state that “the student travel-related emission value of a face-to-face model is about 1500 kg CO<sub>2</sub> and the value of an online model about 25 kg CO<sub>2</sub> per student per year”.<sup>26</sup> Similar environmental and ecological arguments in the era of *Green Deal* advocacy can make a major contribution to further strengthening online learning in a university setting and beyond.

## 4 The Ambivalent Nature of Online Education

Sociological studies monitoring the circumstances of online learning in various universities around the world often implicate its ambivalent quality. The student and academic populations of universities often experience virtual learning as simultaneously effective, beneficial, and comfortable, yet also unreliable, complicated, and preventing the authentic experience and shared emotionality created by the reciprocity of physical contact.<sup>27</sup> Such attitudes towards distance learning are well illustrated, for example, by a study by Polish authors who empirically identify positive and negative determinants of online learning among students and academics.<sup>28</sup> Both studied populations rate the comfort of learning from home positively, yet at the same time consider online learning uncomfortable in terms of possible health risks generated by prolonged sitting at the computer and headaches. According to the respondents, savings on time spent commuting to school is identified as another positive determinant, and yet too much time spent on the computer is identified as a negative determinant.

Against a background of similar empirical studies<sup>29</sup> and our own pedagogical experience, the following positive and negative dimensions of online learning can be considered in more general terms.

The first potential positive are the financial and time savings. Online lectures allow for teaching without the in-person presence of teachers. At the various branches of regional schools in particular, this reduces the financial costs of posting teachers and providing accommodations. Non-economic benefits are also evident in the form of time savings in eliminating the travel of academics between academic facilities. Online lectures are then delivered centrally to larger numbers of students in connected study groups, which also places pressure on teaching hours and achieves an incremental reduction in the financial cost of the teaching provided. The potential for financial savings can be seen not only on the part of the universities, but also on the part of the students and, to some extent, the academics. Distance learning conducted from home means significant financial savings on transport. Furthermore, students do not only find savings in the cost of transportation, but also in the cost of accommodations. In addition, distance learning students can take advantage of online lectures from their places of employment and can flexibly arrange the fulfillment of their study obligations and work commitments. They do not have to take holidays, which contact teaching sometimes requires. Furthermore, there is the option for universities to provide students with video recordings of lectures, allowing students unlimited access to those courses they are unable to follow online for time reasons.

<sup>25</sup> JARILLO, P. M., PEDROZA, L., GER MORENO, P., BOCOS, E.: Challenges of Online Higher Education in the Face of the Sustainability Objectives of the United Nations: Carbon Footprint, Accessibility and Social Inclusion. In *Sustainability*, 2019, Vol. 11, No. 20, p. 5580.

<sup>26</sup> VERSTEIJLEN, M., SALGADO, F. P., GROESBEEK, M. J., COUNOTTE, A.: Pros and Cons of Online Education as a Measure to Reduce Carbon Emissions in Higher Education in the Netherlands. In *Current Opinion in Environmental Sustainability*, 2017, Vol. 28, p. 82.

<sup>27</sup> BIJEESH, N.: *Advantages and Disadvantages of Distance Learning*. [online]. [2023-01-27]. Available at: <<https://www.indiaeducation.net/online-education/articles/advantages-and-disadvantages-of-distance-learning.html>>.

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Conversely, a negative determinant from the perspective of universities may be the financially costly investment in digital infrastructure and communication equipment. This applies not only to technical equipment in the form of computers, laptops, webcams, and microphones, but also to the licensing of communication platforms. And yet investments in technical equipment are also expected on the part of individual students and teachers. Various hidden costs are required, ranging from energy consumption to the need to purchase different technological and communication equipment. At the same time, studying and teaching from home may not provide nearly as much space, comfort, and peace of mind. The capacity of home study or teaching is also limited by the fact that it is often combined with work from home or distance learning by other household members.

The second positive determinant from the student perspective is the availability of instructors outside of lectures/instruction and the use of digital connectivity even at times outside the standard schedule and office hours. This enables students to make better and more frequent use of post hoc consultation and to draw on supplemental support from academics in a variety of one-to-one consultations, as well as the provision of study materials from the comfort of home without the need to commute.

The negative aspect here remains the absence of physical contact and face-to-face meetings, which are generally seen as irreplaceable and difficult to compensate using contacts of a virtual nature. This does not merely reflect the mutual need for physical contact among students and academics, but also the need for both groups to meet together. Absent is the opportunity to share experiences, affirm social bonds, and experience interpersonal relationships.

The third positive determinant is the improvement of one's own digital competencies and skills. This not only facilitates the emotional acceptance of digital forms of learning, i.e. overcoming prejudices, but also prompts a further deepening and broadening of these skills in order to discover the potential of this form of knowledge sharing.

The unreliability of digital connectivity, technical difficulties, and the unavailability or disruption of internet connections can be identified as negative aspects. At the same time, the willingness and potential to improve digital competencies sometimes has its limits, especially among older academics who prefer conservative and proven teaching methods and forms of communication.

## **5 Study Design**

We conducted an anonymous survey of students and academics at the University of Finance and Administration in Prague in two successive stages. The University of Finance and Administration has been one of the largest private universities in the Czech Republic since 2000 and one of the largest universities in the Czech Republic since 2009. It has generated over 20,000 graduates and currently hosts nearly 2,500 students at the Faculty of Economic Studies and the Faculty of Legal and Administrative Studies.

We sought to use a standardized questionnaire to collect empirical data reflecting the attitudes and opinions of students and academics toward online learning during the second wave of the coronavirus pandemic. The first survey was conducted among students at the end of the winter semester 2020 and a follow-up survey was conducted among academics at the end of the summer semester 2021. We gained some insights about the attitudes of students and academics toward online teaching from the first wave of the coronavirus pandemic during the period April to June 2020. At the time, we operated solely from the experiences and informal reactions of those students and academics. And yet these suggested some polarization of opinion in terms of positive and negative experiences of online learning and, to varying degrees, to online learning as an accepted alternative to contact teaching. For this reason, we did not wish to rely for the case of our university solely on the incomplete and informal responses from the

spring of 2020, and moreover from a limited number of students and academics, and therefore decided to conduct a systematic survey. In the first phase of the survey, we had addressed the questionnaire to students of all forms, degrees, and types of study; in the second phase of the survey, we asked a total of 105 academics to complete an anonymous questionnaire. Thus, all officially enrolled students at our university and all academic staff lecturing in the academic year 2020/2021 were contacted.

## **5.1 Methods**

The data was collected using a quantitative research method via a standardized anonymous questionnaire technique. A link with a cover letter and access to the questionnaire was sent to all students and academics at the university. The invitation to complete the questionnaire was repeated every 10 days after the first invitation to complete the questionnaire. The average time to complete the questionnaire was approximately 11 minutes for students and 13 minutes for academics. The data was then statistically processed in SPSS and subjected to further interpretation.

## **5.2 Characteristics of the Study Population**

A total of 2,455 students (and 105 academics) in the degree programs of Marketing Communications, Economics and Management, Finance, Applied Computer Science, Security and Legal Studies, Criminal Justice and Forensic Science, Law in Business, Regional Studies, and Public Administration were given the opportunity to complete the questionnaire. In addition, the study programs of Marketing Communication and Economics and Management are taught in English, and the study program Finance is also taught at the doctoral level.

The questionnaire was opened by a total of 1,181 students (i.e., 48.1% of the core group), and a fully completed questionnaire was received from 684 of them (i.e., 27.8% of the core group). Partially completed questionnaires were also used in the processing of the data, and as such a total of 723 questionnaires (i.e., 29.4% of the base set) were processed in the statistical analysis. In the case of academics, 75 (71.4%) of the 105 professors contacted opened the questionnaire, and a total of 47 (44.7%) of them were usable for statistical processing purposes.

## **5.3 Data Collection Technique**

The empirical data was collected using standardized questionnaires with an estimated completion time of 15 minutes. According to our experience from the pilot survey, this is a time limit beyond which the willingness of respondents to complete questionnaires decreases substantially. The research questionnaires for students and academics contain a total of 25 substantive questions, of which 10 questions track more general views on the coronavirus crisis and their own experiences and expectations of future social and economic developments. The other 13 questions focus on an evaluation of the specific parameters of online learning, and the last 2 questions are identification questions. The validation of the questionnaires was carried out in early November on a sample of 30 respondents (in the case of students) and in early April on a sample of 5 academics. The questionnaires were further modified and some questions were refined and added.

## 5.4 Distribution of the Questionnaire

The link to the questionnaire was sent with a cover letter to all students and academics of the University, on two separate dates each time in order to increase the return rate of the completed questionnaires. In the case of students, they were approached to complete the questionnaire first on 24<sup>th</sup> Nov and then in the second phase on 4<sup>th</sup> Dec 2020 (in the case of academics, first on 4<sup>th</sup> May and then on 14<sup>th</sup> May 2021).

## 5.5 Data Processing and Use

The data was processed in SPSS software; the open-ended questions were then extracted from the system file and recorded on a total of 47 standard pages. Two types of graphs are used in the text for quicker reference, with bar charts in the case of students and pie charts in the case of academics. Due to the smaller number of respondents in the case of academics, the resulting frequencies in percentages are rounded.

The main output of this sociological survey is a detailed research report, intended for university management, faculty, and departmental leadership in order to evaluate the quality of online teaching in the winter and summer semesters of the academic year 2020/21 and to make further strategic decisions for the implementation of online teaching in the subsequent period. We anticipate that online teaching will become more and more heavily promoted and will coexist to varying degrees with contact teaching following the experience of its forced blanket introduction as a result of the coronavirus crisis.

The data collected serve not only the internal needs of university management policy and decision-making or for the self-reflection of the educators themselves, but as a valuable research matrix for empirical research on student and academic populations and their attitudes towards the emergency situation of schools who have transformed their education and learning support systems relatively rapidly in the past 2 years of their operations.

## 5.6 Research Questions

In this section, we focus on an analysis of a few selected questions from the survey, explicitly aimed at ascertaining the views of students and academics on the extent of the effectiveness of online learning and its emotional acceptance as an adequate alternative to contact learning. At the same time, the choice of the analyzed questions was determined by the possibility of mutual confrontation of student and academic attitudes. We empirically measured the respondents' attitudes and opinions in terms of the degree of agreement with different statements (a, b) and formulated the following research questions RQ1-RQ6.

### **RQ1: Does online learning reduce the quality of higher education?**

- a) Students – *“Online learning generally reduces the quality of higher education.”*
- b) Academics – *“Online learning generally reduces the quality of higher education.”*

### **RQ2: Is online teaching a more preferable form of knowledge sharing than in-class teaching in upcoming semesters?**

- a) Students – *“I would prefer online teaching to in-class teaching in upcoming semesters.”*
- b) Academics – *“I would prefer online teaching to in-class teaching in upcoming semesters.”*

### **RQ3: Is there reduced student interest in certain subjects as a result of online teaching?**

- a) Students – *“I feel reduced interest in certain subjects when taking classes online.”*
- b) Academics – *“I perceive reduced student interest in certain subjects when teaching online.”*

**RQ4: Are physical interactions truly irreplaceable in higher education?**

- a) Students – “There is no substitute for personal contact with the teacher.”
- b) Academics – “There is no substitute for personal contact with students.”

**RQ5: Do teachers have sufficient communication skills?**

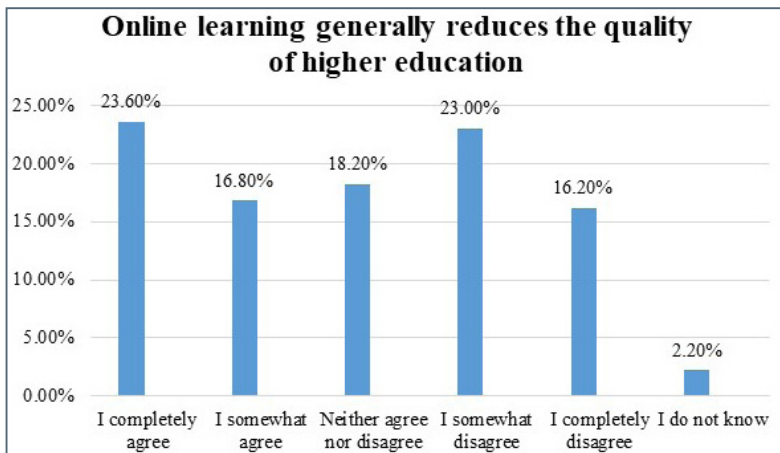
- a) Students – “My teachers generally have good communication skills.”
- b) Academics – “I think I have generally good communication skills when interacting with students.”

**RQ6: Are teachers available during their online office hours?**

- a) Students – “My teachers are sufficiently available during office hours.”
- b) Academics – “I try to be sufficiently available to students during office hours.”

## 6 Data

Students’ basic attitudes toward online learning were monitored using their level of agreement with the statement “Online learning generally reduces the quality of higher education”.

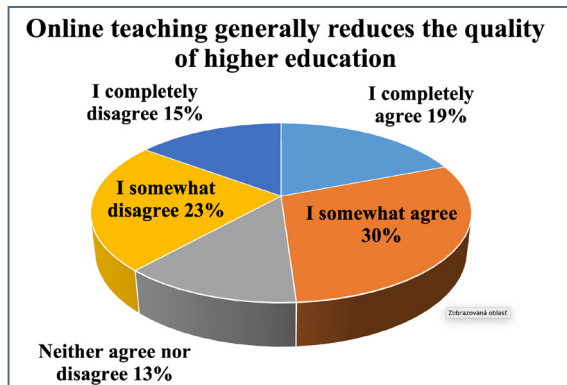


**FIGURE 1:** “Online learning generally reduces the quality of higher education”, **students**, overall response frequency in %

Source: own processing, 2022

Figure 1 shows an even distribution of the proportion of responses expressed as a measure of agreement with the statement that online learning reduces the quality of higher education. The student population is far from unified on this issue; in fact, it is roughly equally divided into supporters and skeptics of online teaching, with approximately 40% of students on each side of these polarities. One in five student responses tended toward the middle answer of “I don’t know”. However, a cross-check of the values of student and academic responses (Figure 2) suggests a higher degree of skepticism in this question on the part of instructors, with a roughly 10% higher proportion of negative attitudes compared to the proportion of similar student responses. It is also interesting to compare the values of the neutral responses with each other: 13% of the lecturers did not find a clear answer to this question, while only about 2% of the students identified with a neutral answer. Thus, the perspectives of students and academics diverge slightly in this part of the evaluation of the quality and benefits of online teaching in higher learning, pointing to a higher level of confidence on the part of the students toward online teaching as an adequate alternative to contact teaching. The academics here

show slightly more conservative attitudes and a slightly higher level of skepticism toward online learning options.



**FIGURE 2:** "Online learning generally reduces the quality of higher education", academics, overall response frequency in %

Source: own processing, 2022

It is useful to analyze this statement further by the type of study (full-time vs. combined). As we can see in Figure 3 (the higher the mean, the stronger the disagreement with the statement), students in combined studies rate online learning significantly more positively compared to their full-time colleagues. They are much less convinced that online teaching reduces the quality of higher education. This can be partly explained by the fact that the students in the combined study form consider distance learning and less intensive face-to-face interaction with teachers a normal part of their studies and their own learning path. They consider the minimization of personal contacts with teachers, with the predominance of self-study supported by online consultations, to be a natural situation that does not interfere with or reduce the quality of their studies. On the other hand, full-time students are more prone to reject online learning or to show stronger skepticism, as their university studies usually immediately follow their studies at secondary schools where student-teacher interactions were an everyday practice. Thus, from this perspective, the transformation of contact teaching into online learning may appear more dramatic, suspect, and potentially unreliable. Moreover, their expectations on entering university did not anticipate as much non-in-person teaching as in the case of the students in the combined study form, where less frequent "live" interactions were anticipated.

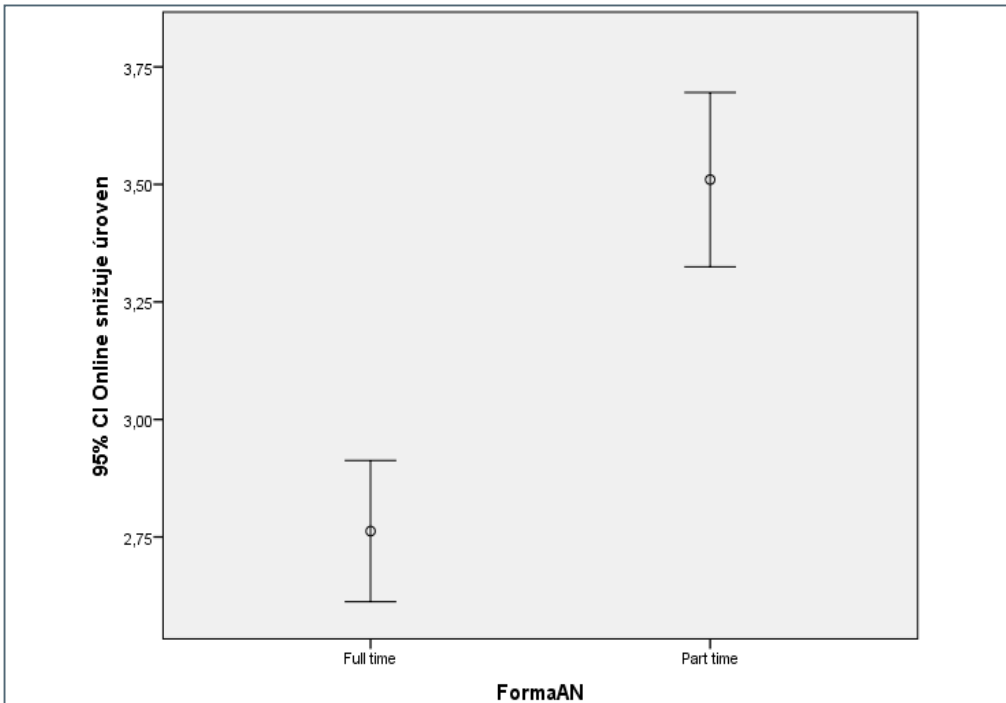


FIGURE 3: "Online learning generally reduces the quality of higher education", students, overall averages by form of study

Source: own processing, 2021

One important part of this research was to identify future preferences for learning formats. Therefore, we were also interested in the level of agreement with the statement "I would prefer online teaching to in-class teaching in upcoming semesters".

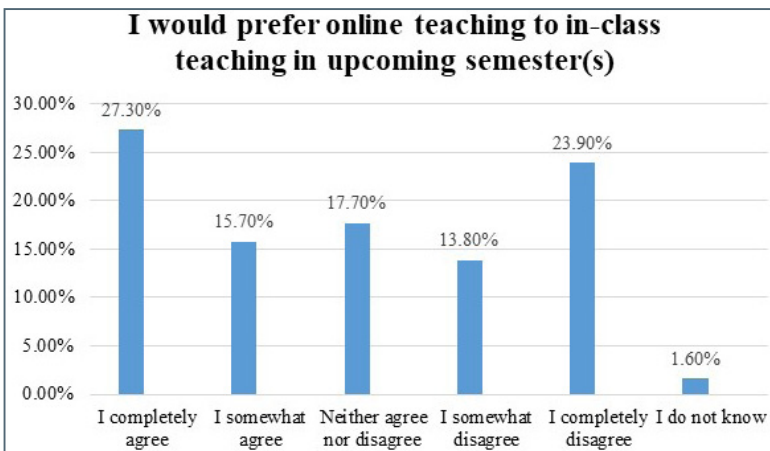
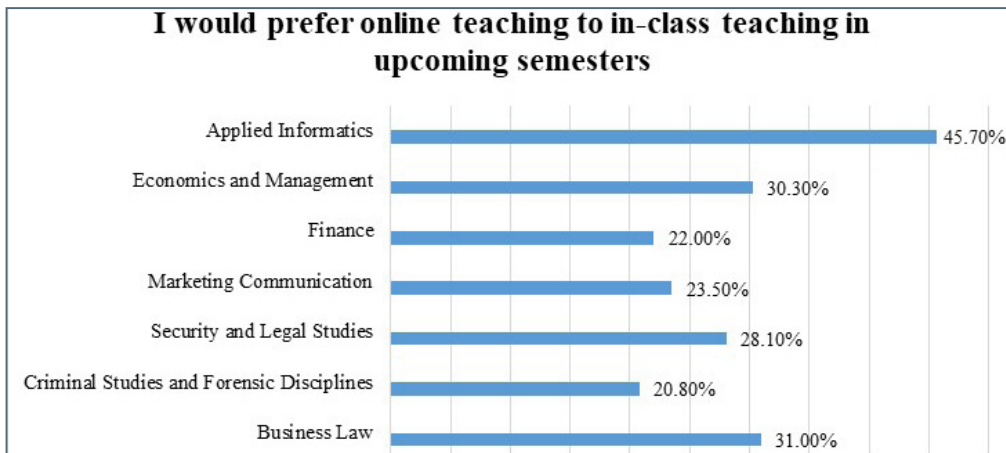


FIGURE 4: "I would prefer online teaching to in-class teaching in upcoming semesters", students, overall response frequency in %

Source: own processing, 2022

As can be seen in Figure 4, in this question as well, students do not show any significant trend in their opinions toward any one of the possible polarities, differentiating students into supporters of online teaching on the one hand and skeptics on the other. The distribution of responses here is very similar to the distribution of responses in the question on beliefs about the relationship between the quality of higher education in the in-person and online distance learning formats. Nevertheless, there is moderate optimism and a greater degree of friendliness evident toward the possibility of future implementation of online learning at the expense of contact learning, which implies not only a certain tolerance toward online learning, but also an acceptance of it as a full-fledged form of university knowledge sharing in future studies.



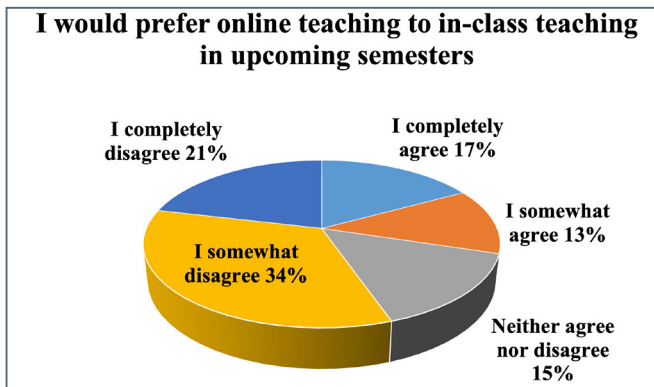
**FIGURE 5:** "I would prefer online teaching to in-class teaching in upcoming semesters", students, total response frequency in %

Source: own processing, 2022

The degree of willingness to opt for online teaching over standard face-to-face teaching in upcoming semesters can also be shown in greater detail for students according to the different study programs. These findings can facilitate any decisions about the future implementation of distance learning in the different study programs. Figure 5 shows that preferences for online learning are related to field of study. Future online study is the most attractive option for students of the Applied Computer Science program, followed by Economics and Management and Law in Business. On the other hand, the lowest interest is observed in those study programs where the focus of individual courses implies different practical and laboratory exercises, which are best implemented as part of personal interaction between students and lecturers. The Marketing Communication study program includes training in soft skills and communication skills and other competencies based on content shared face-to-face. Similarly, students in the Criminal Justice and Forensic Science disciplines do not identify by far with the notion that contact-based interactive learning should give way to distance learning, which does not allow for hands-on criminal justice practice focused, for example, on crime scene examination or trace identification and analysis.

In the case of academics (Figure 6), their overall preference for online teaching over contact teaching is limited compared to student attitudes. There is a higher overall level of reluctance to accept online teaching as the primary form of learning in the future. The proportion of positive attitudes toward strengthening online teaching in future semesters is approximately one-third stronger among students than among academics. Even in this mutual comparison, academics show not only a greater degree of overall skepticism toward online teaching, and perhaps nostalgia for traditional forms of contact teaching, but also a much greater degree of indecision and uncertainty on this issue (15% of the academics responded "I don't know").





**FIGURE 6:** "I would prefer online teaching to in-class teaching in upcoming semesters", academics, overall response frequency in %

Source: own processing, 2022

In the context of questions ascertaining the level of confidence in the quality of online instruction and shared preferences for its implementation for future academic terms, we also looked at the potential for a decrease in student interest in the courses taught due to the absence of physical interaction. It can be assumed that online instruction may actually reduce the attractiveness of courses and suppress the overall potential for interactive dynamics in learning. An indicator of this is decreased student interest in certain subjects where the online form of learning does not meet the needs of students and does not meet the criteria of their expectations. This assumption of ours has been partially confirmed.

Almost 45% of the students share a feeling of reduced interest in certain courses and one in four students identify very strongly with this feeling (Figure 7). Looking at this in greater detail, we see that this feeling is shared by the students who also expressed the most skeptical attitudes toward the future introduction of online learning to the detriment of face-to-face learning. This is particularly the case for full-time students of the Criminology and Forensic Science, Marketing Communications, and Finance programs, where course content is often based on interactions and practical exercises. These findings are not very consistent with the problem of declining student interest in courses as perceived by academics (Figure 8). The real feelings of students of decreased interest in some subjects are not entirely echoed by the feelings of academics, who have slightly more optimistic beliefs. While approximately 44% of the students realistically experience reduced interest in certain subjects, in the case of academics, a total of 33% of the lecturers experienced this feeling. Here, again, we observe a relatively higher proportion of neutral responses (19%) in the case of academics.

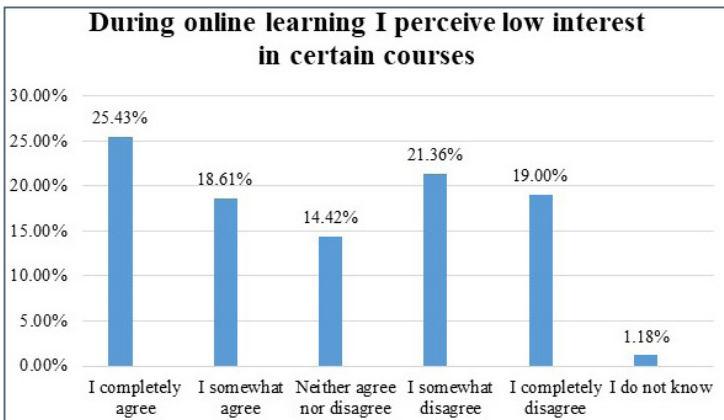


FIGURE 7: "I feel reduced interest in certain subjects when taking online classes", students, total response frequencies in %

Source: own processing, 2022

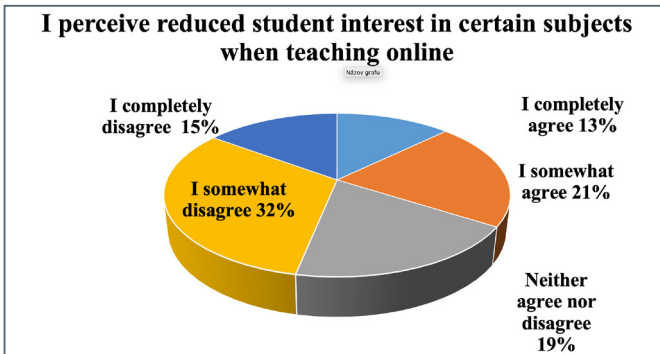


FIGURE 8: "I perceive reduced student interest in certain subjects when teaching online", academics, total response frequencies in %

Source: own processing, 2022

Reduced student interest in some subjects may be related to a lack of personal contact with the instructor as well as their communication skills. Therefore, in the next part of the survey we focused on these two important circumstances of online learning.

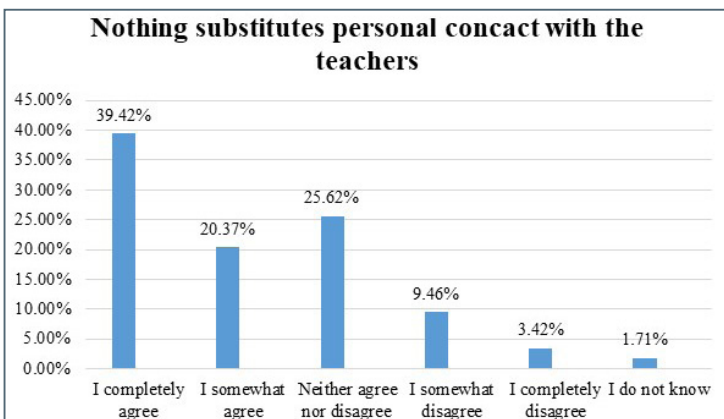


FIGURE 9: "There is no substitute for personal contact with the teacher", students, total response frequencies in %

Source: own processing, 2022

The need for mutual physical interaction is clearly evident in the results of the responses for both students and academics. In other words, the absence of such interactions is perceived as a shortcoming by the majority overall and may act as one of the main factors limiting the benefits of online learning, as well as the willingness to experience it more positively and embrace it emotionally. Here too, however, we see some differences in the values of the responses from students compared to those of academics. While the response rate for the students is around 60% (Figure 9), full or partial agreement with the statement regarding the irreplaceability of mutual physical interactions is expressed by around 70% of the academics (Figure 10). Approximately one in four students are ambivalent about this question. This also suggests that students are relatively adaptive and consider face-to-face contact with the instructor to be something that can be flexibly replaced with virtual contact in certain situations.

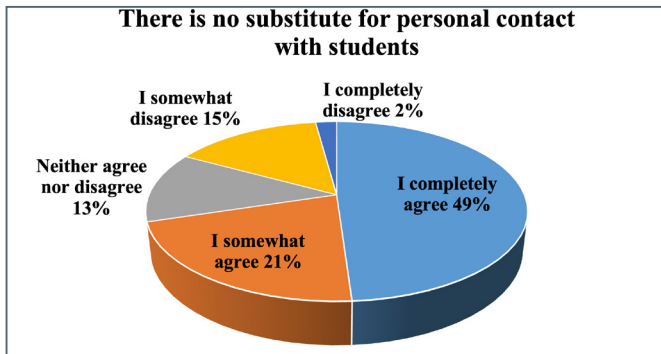


FIGURE 10: "There is no substitute for personal contact with students", academics, total response frequencies in %  
Source: own processing, 2022

Another important part of our survey was the question of the communication skills of instructors. We were interested not only in how students evaluate the communication skills of their instructors, but also how the instructors themselves evaluate their own communication skills. Thus, we tried to juxtapose the external objective view of the students (Figure 11) and the subjective self-reflection of the instructors (Figure 12).

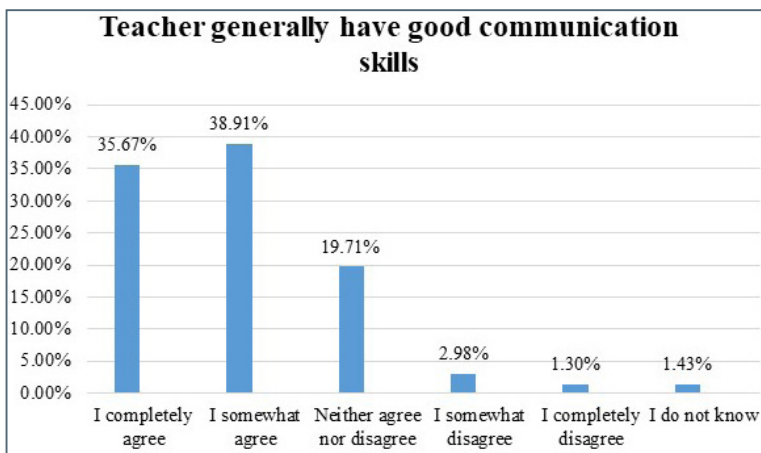


FIGURE 11: "My teachers generally have good communication skills", students, total response frequencies in %  
Source: own processing, 2022

Students generally rate their teachers' communication skills positively, with approximately two-thirds of the respondents agreeing with the statement that "My teachers generally have good communication skills". About one-fifth of the students responded ambiguously and expressed neutral attitudes on this question. The question remains as to why a relatively high proportion of students are similarly undecided and unable to express a clearer evaluative position on this key academic competence. It can only be assumed that this group may consist partly of students who have not participated in online learning, or who have participated only sparingly and irregularly. The self-reflection of the academics concerning their own communication skills roughly corresponds to the students' actual evaluation of these skills, but the self-assessment of the instructors is ultimately less critical and more clearly guided in a positive evaluative direction (Figure 12).

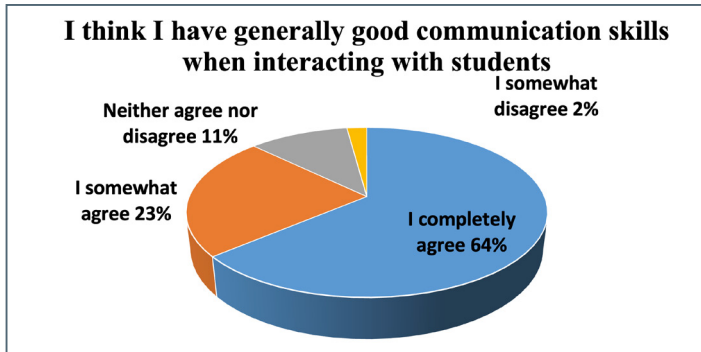


FIGURE 12: "I think I have generally good communication skills", academics, total response frequencies in %  
 Source: own processing, 2022

In addition to assessing the communication skills of instructors, we also looked at an important circumstance of teaching in the form of its support with the availability of online office hours. Here, again, as in the case of the evaluation of the communication skills of instructors, we tried to juxtapose the objective perspective of the students and the subjective self-assessment of the academics. On the question of the availability of instructors during their office hours, it can be seen that almost 40% of the students are unable to answer this question in a relevant way (Figure 13). Based on this observation, it can be assumed that this is the segment of students who have not used online office hours and thus are unable to accurately assess the availability of their instructors during office hours.

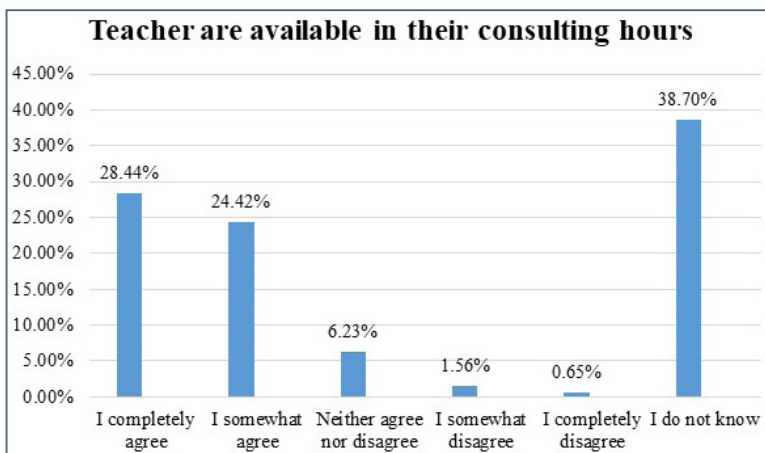
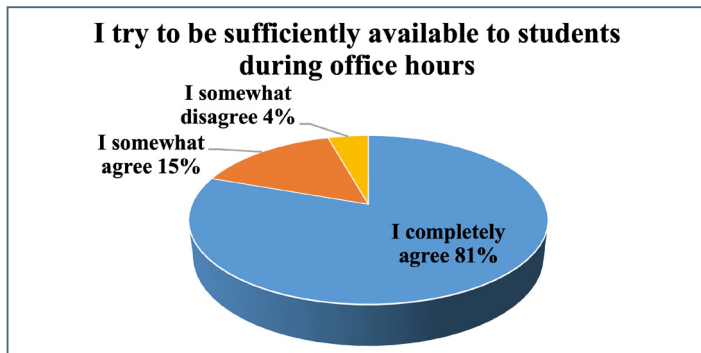


FIGURE 13: "My teachers are sufficiently available during office hours", students, total response frequencies in %  
 Source: own processing, 2022

As expected, the self-assessment by the instructors of their availability during their office hours is clearly positive (Figure 14). Unfortunately, we can only partially confront these responses with the students' experience, as it turns out that a significant proportion of students were unable to assess this question due to not making use of this form of academic support.



**FIGURE 14:** "I try to be sufficiently available to students during office hours", academics, total response frequencies in %

Source: own processing, 2022

## 7 Conclusion

As expected, the empirical evidence tracking the attitudes of the population of university students and academics towards online learning during the coronavirus pandemic of 2020 and 2021 is far from saturated in the current literature.

In the second half of 2020, we find the first sociological studies from university education and elsewhere reporting on the transformation of the education system and the involuntary transformation of interactive contact teaching into distance learning forms of online learning. As expected, these studies agree that the COVID-19 pandemic hit the university environment and other settings very hard and led to the unexpected and involuntary adoption of distance learning formats by schools. The interruption of contact teaching in universities and the forced conversion of the educational process to a virtual environment has also meant major changes in the areas of related educational mechanisms and academic support, specifically, for example, in terms of the form of office hours, the academic advising of qualification papers, the verification of learning, and the formats of final examinations.

In this empirical study we are focusing on a situation that is historically quite unprecedented. University teaching took place over the course of one academic year in a distance learning format in a continuous and involuntary manner. Given the uniqueness of such a situation, we conducted a cross-sectional empirical study at the University of Finance and Administration in Prague that combined the attitudes and opinions of both students and academics, thereby allowing for further cross-comparison and a more detailed understanding of the assessment of online learning in both target groups.

Based on the available empirical studies published in the last two years, we can assume that online learning in the university environment is likely to be promoted and sustained to varying degrees as a parallel form of contact learning after this forced reset, even at the universities where distance learning only began to be implemented with the advent of the coronavirus. Universities have equipped themselves with digital infrastructure and have put mechanisms in place to support distance forms of collaboration and contact between students and universities. Above all, however, distance learning has made it possible for both students and teachers to recognize its actual benefits and various sub-benefits.

This trend of more intensive introduction of distance learning, combined with full-time teaching, is currently being promoted at the University of Finance and Administration. Instruction can thus be designed much more frequently in the future in the form of hybrid instruction that combines distance and face-to-face forms of education in various ways, as is already the case at many other universities.

In our case, trust in online teaching has been confirmed particularly among students of the combined form of some study programs, but the same is also true for a considerable number of students of the presentational form of teaching. While academics show some reticence toward online teaching, only a very small proportion of lecturers report a strong rejection of distance education. The key academic competence of lecturers in the form of their communication skills in virtual environments has been confirmed both by students' evaluations and by their subjective self-evaluation. This is an important prerequisite for distance learning to be implemented, expanded, and sustained. The absence of face-to-face contact is a more oppressive experience for teachers and less traumatic for students, who more often than not take a neutral stance on this issue. Nevertheless, this circumstance seems to have a negative effect on the declining interest of students in certain subjects, whose attractiveness may be dampened by the impossibility of personal contact with the teacher during practical exercises and experiments that require live interaction.

The lack of personal interaction in distance education is generally perceived as a common handicap and a collectively shared moment, which also reinforces a shared belief in the need to maintain live interactivity, which is difficult to replace with virtual contact. This may partly explain the likely lower interest of students in using online office hours, indicated by the relatively high proportion of students unable to assess the availability of teachers during their office hours.

The experiences with online teaching forced by the coronavirus pandemic have transformed the university learning space. Universities have equipped themselves with technological and communication infrastructure, increased computer literacy, improved competencies and skills in navigating the online environment, improved technical skills in operating and manipulating devices, and enhanced the ability to teach virtually. The relationship to distance learning remains ambivalent, consisting of a mix of benefits and drawbacks. A hybrid learning model that combines the advantages of contact and virtual learning appears attractive for the future.

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