Study the attitude of teachers and students toward online classes at technical university

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Abstract. This study is aimed at studying the attitude of university teachers and students to online classes. The opinion of students about the implementation of online courses, their usefulness and support from teachers in online classes, as well as the opinions of teachers about the usefulness of online courses, about teaching methods and practice, education process were studied. The results showed that students generally felt positive in online classes, received sufficient support from tutors, but they did not believe that online classes would replace traditional face-to-face education. Educators have often experienced difficulty due to a lack of proper training for delivering online classes. Technical issues are a major concern for the effectiveness of online classes. The majority of respondents have a positive attitude towards the digitalization of education, highly appreciate the importance of digital literacy of participants in the educational process. Students associate the advantages and disadvantages of digitalization of education with their own experience of online learning during the pandemic.

Keywords: Online Education, Online Tools, Online Course, Digitalization.

1 Introduction

The COVID-19 pandemic has changed life around the world and has given impetus to the intensification of the introduction of online learning into the educational space of universities. Many countries have decided to move many types of work and education online to prevent the spread of the COVID virus.

Since the onset of the COVID-19 pandemic, universities have been introducing digital methods of teaching and learning, which caused adaptation problems for both students and teachers [1]. Some teachers lacked digital skills, which affected the preparation and conduct of online classes. Passey et. al. (2018) pointed out the positive consequences of the introduction of online learning, which manifested itself in the fact that many teachers were forced to develop their digital competencies, they were motivated to do so by the current situation. But preparing for online classes began to take much more time than preparing for similar classes in person [2]. The transition to distance teaching has led to a significant reduction in the publication activity of teachers [3].

Some universities have been able to quickly adopt online learning, thanks to the availability of part-time education and the necessary electronic tools, which has allowed students to quickly engage in the learning process. Crawford et al. [3] points out that the lack

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of suitable infrastructure and digital tools and technologies at universities negatively affected the transition of the educational process to online mode.

An analysis of the opinions of students and teachers, as key subjects of the educational process, allows us to identify the main gaps and negative trends in the rapid transition to online classes. Thus, the results of studies have shown an increase in tension and stress among students in conditions of remote learning, an increase in the amount of teaching load, an increase in technological pessimism and a negative assessment of the prospects for online education [4]. Significant difficulties today are visible in the lag of the material and technical base of universities from the new requirements of complex integration of electronic digital technologies into the educational process.

The potential implementation of technical innovations is faced with limitations of a resource and organizational-and-managerial nature, lack of technical knowledge, organizational support [1]. As an additional risk of the development of the online education system, there are problems of digital inequality and unequal access to the Internet. Limitations in access to software in the field of education, an insufficient level of digital literacy among teachers have been identified in a number of countries [1].

Rapid adoption of online technologies in the educational process is an ambitious task, which is associated with overcoming resistance to organizational change, developing ideas of trust and cooperation. In this case, the views and attitudes of teachers and students become important, since their perception and attitude to online classes are crucial for motivation and learning, helps to take advantage of online classes [6].

The popularity of online classes in recent years has led to an increase in the number of online courses offered by universities along with face-to-face classes. It should be noted here that online classes are considered as a modern tool for solving problems in the learning process [7]. Most universities plan to expand virtual classrooms and recruit and train teachers for online teaching. Virtual classrooms are collaborative learning through video and using tools that involve students in the educational process, this makes classes interactive and allows you to receive timely feedback. It is expected that the proportion of online learning with interactive elements will continue to increase significantly in both universities and corporate organizations in the coming years [8]. This type of learning creates an environment in which students actively interact with the material of the classes and learn by doing [8], and also contributes to a better understanding and assimilation of new knowledge [9].

Many universities introduce online teaching of their disciplines without proper planning, but before that, teachers have previously completed appropriate programs of additional education and advanced training [10]. Training can be conducted online at a lower cost than face-to-face training; thus, students will have more opportunities to take courses [10]. A lot of research has been done to examine the attitudes of teachers and students towards online learning. The students noted that the main advantages of online classes were "flexibility" and "self-control" in the educational process, and they also believed that online classes would be a more convenient way compared to face-to-face education [9]. Many students felt that grades obtained from online courses were not reflect real performance as the traditional face-to-face teaching method. This may influence students' desire to enroll in online courses. Therefore, programs to raise awareness of the importance of online learning are needed [10].

Despite the fact that students expressed positive opinions, the opinion of teachers about online classes was ambiguous [11]. Many organizers of the educational process at the university believe that with the help of the teacher development program one can become an effective online instructor and continue to act as a coach, stressed the importance of forming a sense of community in online learning. According to the authors, 78% of online teachers believe that a professional development program is needed for tutors [12].

Effective online course delivery requires skills such as: ability to recycle teaching methods, the ability to develop new vocabulary, and the ability to communicate with tutors.
From the above it follows that it is important to study the attitudes of teachers and students towards online classes.

2 Methods

This study examined the attitudes of students and teachers to aspects of online learning. The authors used the method of questionnaire survey. The questionnaire was sent to 155 participants, students of a technical university, 140 completed responses were received and analyzed. The questionnaire was sent to 25 teachers, 25 responses were received.

The study involved bachelors studying in the following areas: management (24%), state and municipal administration (21%), economics (18%), project management (17%). The average age of the respondents was 18.9 years (SD = 3.27), the minimum age was 18 years and the maximum age was 31 years. 74 participants were male (52.8%) and 66 were female (47.2%). Participation in the study was voluntary, the participants were informed about the purpose of the study, they were not offered material rewards.

A pilot study was conducted prior to the questionnaire to test the reliability and validity of the questionnaire. Three experts took part in the pilot study. Some items of the questionnaire were changed following the results of the pilot study.

The questionnaire contained statements that were rated on a five-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). Exploratory factor analysis (EFA) was performed to evaluate our questionnaire [14]. We performed the EFA separately for each factor "Impact of online classes on learning effectiveness", "Quality of online classes" and "Support from teachers". Each variable assumes a one-factor solution. After that, elements with factor loadings below 0.5 were removed.

Internal reliability tests were then performed for each variable based on the final items. Cronbach's alpha for each variable: 0.858, 0.607, 0.822, respectively.

Initially, the questionnaire had five statements for each factor related to "Impact of online classes", "Quality of online classes" and "Support from teachers". The EFA was conducted to reduce the number of items that less explained the relevant factors.

The data collected was classified by demographic information, attitude to learning and teaching and tools used. The data later analyzed using the Statistical Package for the Social Sciences (SPSS 22).

3 Results

The researchers rated the tools that participants used in online classes. Among the digital tools for organizing online teaching, teachers most often used Google services (Google Docs, Google Sheets), Google Form, Google Classroom, Zoom, WhatsApp, Microsoft Teams. Almost everyone used Zoom (N=138), followed by WhatsApp (N=120), followed by Google Sheets (N=94). Russian students generally have basic digital competencies, work with MS Word, MS Excel, PowerPoint, Dropbox, Google Drive, Microsoft OneDrive file hosting, Dropbox, Google One, Yandex.Disk, iCloud, pCloud cloud services. So, simple and convenient tools were used to conduct online classes, regardless of their purpose.

When conducting the EFA analysis, it was found that in the “The impact of online classes” factor, three statements describe 89.2% of the factor; so other items have been removed. Here, the commonality value, which explains the degree of variance to us, is considered for the extracted factor (if the commonality value is less than 0.5, it will be removed from the factor). In the "Quality of online classes" of seven items, three items explain 71.4% of the factor with a generality value of more than 0.5, and in the "Support from teachers", three statements describe 84.8% of the element.
According to Brahmasrene, J.-W. Lee [15], students' understanding, mindset and attitude towards online classes are important aspects of the success of online learning. It is extremely important to create an opportunity for external interaction between teachers and students [16] to increase students' motivation for learning.

The descriptive statistics results explain that students believe that online classes have a significant impact on their learning style (M = 3.49), and they also agreed that they receive support from the teacher in the online class, for example, get good methodical material, as well as clarifying their doubts using online tools (M=3.71). But students did not consider that the online class replaces the traditional face-to-face teaching in the classroom, and they believe that online courses are less convenient compared to the traditional teaching method (M = 2.87). When analyzing each item of students' attitude, it is noted that it can be divided into three aspects, i.e. 1) positive attitude, 2) negative attitude, 3) neutral attitude. A positive attitude is based on all of the students' positive beliefs about an online class, a negative attitude is based on all of the negative feelings or shortcomings of an online course. A neutral attitude is based on neutral judgments. These classifications are explained below.

1) Positive attitude. Positive statements such as «I have improved my academic performance thanks to online classes», «I feel that I am doing well with the material using online learning tools», «I receive enough support and advice from my teacher” constitute one aspect, that is positive perception». Here, we have considered all positive claims in one group and calculated the combined mean for that group (M = 3.48).

2) Negative attitude. Negative statements such as: "I can't pay more attention to online classes" (M=3.18), "I score poorly in online classes" (M=3.31), and "Teachers have difficulty keeping students' attention" (M=3.39) give a negative ratio.

3) Neutral attitude. Neutral statements such as: “My performance in online classes has not changed (M = 3.13), “I regularly use online learning tools” (M = 4.08), “I receive advice from my teacher on request” M = 3.24).

The combined mean of positive and negative attitude tells us about the attitude of the online class as positive with a mean of 4.1, which is higher than the negative perception mean (M=2.9). Thus, in general, students have certain opinions about online classes. However, when considered individually, students have a more accurate perception of "efficiency impact" and "teacher support" than "quality" (see Table 1).

The combined mean ratio tells us a positive attitude towards online classes with a mean of 4.1, which is higher than the negative ratio value (M=2.79). Thus, in general, students have certain ideas about online classes. However, when considering each factor, students have a more accurate perception of "impact on learning efficiency" and "support from teachers" than of "quality of online classes" (see Table 1).

<table>
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<th>Table 1. Students’ attitude to online-classes.</th>
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<td>N</td>
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<tr>
<td>Impact of Online Classes on Learning Efficiency</td>
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<td>Quality of online classes</td>
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<td>Support from teachers</td>
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<td>Neutral attitude</td>
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Considering the factors that determine the success of the digitalization of education, the majority of respondents single out such factors as a good material and technical base and the digital competence of teachers. Shortcomings in these areas have a negative impact on young people's perception of the prospects for the digitalization of education. In this context, the practices of increasing the digital competence of a teacher, optimizing his teaching load, creating organizational conditions that provide the opportunity to acquire additional skills...
and form readiness for the introduction of digital technologies in the educational process are of particular importance.

Teachers are another important pillar of online learning. Their interest and skills in conducting online classes are important for the online learning process. How teachers perceived online classes, whether teachers are able to conduct online classes are questions that arise before their implementation, because some teachers may not always have the competence to teach online courses [17].

Therefore, it is necessary to collect and study the opinions of both students and teachers. In addition to demographic information, the survey asked questions about teachers’ attitudes towards their teaching practice, their overall self-efficacy in teaching and technology, and the level of professional development they received and expected to succeed. Items such as "Teaching practice", "Impact of online classes", "Quality of online classes" are evaluated on a five-point Likert scale, where 1 - strongly disagree, 5 - strongly agree. After data collection, the researcher conducted an internal reliability test that was performed on five items of the scales: "Online teaching practice", "Impact of online classes", and "Quality of online classes", and the elements of each variable showed a Cronbach alpha greater than 0.6. This descriptive analysis is given, the results are presented in Table 2.

Table 2. Teachers’ attitude to online-classes.

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<th>N</th>
<th>Mean</th>
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<tr>
<td>Impact of Online Classes on Learning Efficiency</td>
<td>25</td>
<td>3.62</td>
<td>0.32</td>
</tr>
<tr>
<td>Quality of online classes</td>
<td>25</td>
<td>3.42</td>
<td>0.77</td>
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<tr>
<td>Online teaching practice</td>
<td>25</td>
<td>2.87</td>
<td>0.71</td>
</tr>
<tr>
<td>Positive attitude</td>
<td>25</td>
<td>3.29</td>
<td>0.37</td>
</tr>
<tr>
<td>Negative attitude</td>
<td>25</td>
<td>3.41</td>
<td>0.41</td>
</tr>
<tr>
<td>Neutral attitude</td>
<td>25</td>
<td>2.81</td>
<td>0.53</td>
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Based on the descriptive statistics, we think that teachers agree with the teaching methods they follow, with an average score of 3.63, and they also believe that they are very confident in the effectiveness of their online classes (M = 3.62). But they are not satisfied with the training and support provided by the institution. This result shows that teachers attended online classes with less training and they are satisfied with their work. Teachers interacted regularly with their students to keep them engaged (M=3.81), a commonly used pedagogical practice along with "I help students connect between content and their lives", average score of 3.63. To improve the effectiveness of online classes, most teachers set rules for communication and interaction (M = 4.07) to avoid abuse of the online platform by students. Teachers showed average scores for organizing and structuring learning content (M = 3.79) and professional development for online classroom management. When considering and analyzing all statements, it was found that attitude can be divided into positive, negative and neutral attitude.

When considering the general opinion of teachers about the online class, it is clear that their opinions are ambiguous. Some respondents expressed their opinion in an open question, stating that they believe that "online classes will increase unemployment or reduce the demand for teachers", "Without providing the proper infrastructure, it is difficult to conduct online classes" and they also opined that "it is difficult to conduct an online practice class". In conclusion, we can say that teachers do not support the conduct of online classes without preparation and proper infrastructure facilities.

The main reasons teachers don't teach online are "due to technical issues". In addition to this, some educators also find that they do not feel safe using online tools such as the Zoom, Skype, WhatsApp. They also find it harder to get feedback from students.
Many students prefer online classes because of its flexibility in time and place and its wide knowledge base. Students believe that online classes are not as effective as face-to-face learning (82.4%), they find it difficult to understand the online learning system.

The participants of the educational process named the weaknesses of the use of electronic technologies in education: it becomes possible to pass current control measures by another person, a more loyal attitude of teachers towards online students, which leads to reduce students’ effort, it becomes more difficult to receive feedback, distance education is not popular among applicants, employers are distrustful of it [17].

4 Discussions

The COVID-19 pandemic has left a significant impact on the educational process and the intensity of the introduction of digital technologies. Online learning in modern conditions is associated with the digitalization of education.

Most of the surveyed respondents have a positive attitude towards online education. Despite the general optimistic trend in these assessments, the negative consequences for students are associated with a deterioration in interpersonal communication skills and a reduction in classroom work time. A third of the respondents are afraid of a decrease in the level of knowledge in view of the spread of confidence in the general availability of information, the absence of the need to memorize it. The main factors determining the success of online education are the material and technical base and the level of digital competence of teachers.

The prospects for the digitalization of education are perceived by Russian students quite optimistically. At the same time, such possible risks and negative consequences as the insufficiency of direct practices of interaction between students and the teacher, deterioration in interpersonal communication skills were highlighted. Similar risks are highlighted in international studies. We agree with the authors [16] that the intensive development of digital technologies can “marginalize” or exclude the direct interaction from many areas of public life, including education. In this context, attention should be paid to the need to integrate the practices of traditional and digital pedagogy, a reasonable combination of these approaches to teaching young people.

A third of the respondents surveyed see a decrease in concentration of attention, a distraction from educational goals as negative consequences of digitalization. The data obtained by us are consistent with the opinion of a number of authors [1, 4], who note a spontaneous increase in the amount of information that young people consume today. The consequence of information overload is cognitive distortions, impaired attention, weakening of memory and a number of other negative manifestations. We agree with the opinion of the authors [5, 6] that in conditions of information overload, special attention should be paid to critical thinking skills and problem-based learning methods. In the conditions of public access to information, the focus of teaching practices should shift from the transfer of knowledge to the formation of skills in data analysis, their generalization, and systematization. Pedagogical technologies aimed at the self-organization of students, the development of horizontal connections between them, and the exchange of experience are gaining relevance. We can agree with the point of view of scientists who argue [13] that their use in pedagogy in conjunction with gamification technologies ensures independent progress of students in the study of disciplines, increases the level of their involvement in the educational process.

It can be concluded that the resource support for the digitalization of education includes the following elements: information and communication infrastructure, organizational support from management and IT specialists, a system of advanced training and tutor support for professional activities. Based on their own ideas about the possibilities of digital
innovation, students would like to see in pedagogical practices not only traditional presentation tools to accompany lectures, but also advanced digital technologies that ensure the interactivity of the educational process. Similar results were obtained in other studies, which indicate that the modern teacher of higher education is not fully adapted to the use of digital innovations [17].

5 Conclusion

Online learning has generally had a positive impact on both student education and teacher. The growing use of technology in education has improved the quality of education. Both teachers and students are optimistic about online classes. However, there is always a lot of room for improvement in online learning.

Clearly, online learning has more significant benefits as it fills the literacy gap covering regions [11]. Online classes require a learner-centered environment that requires learners to be self-motivated and self-reliant. Universities and teachers should make every effort to change the way students think. To achieve this goal, universities should regularly conduct training and development programs for teachers and students.

Thus, understanding the experience of online learning in a pandemic allows us to take a fresh look at the specifics of students' attitude to the processes of digitalization of education. The data obtained complement international and Russian studies in terms of analyzing such negative consequences of digitalization as increased information load, displacement of educational goals from the student's priority areas of attention due to the complexity of self-organization of educational activities, maintaining a multitasking regime.

The study also showed that e-learning will play a more important role in the future, but it cannot replace traditional face-to-face classroom learning. The full transition to online learning is quite difficult. However, we cannot ignore the benefits of e-learning. Thus, it is necessary to understand the barriers that arise to the adoption of online learning and take corrective measures to overcome them.

References


