Article

The Use of Social Networks in E-Learning Technologies in the Context of Distance Education

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Abstract: The research purpose is to identify trends, opportunities, and limitations in the use of social media in higher education based on the study of how students and teachers use social networks in distance learning. The study involves 500 students and teachers of Sechenov First Moscow State University and Kuban State Technological University. The research methodology is based on an empirical approach. The study contained the authors' questionnaire with 25 questions addressed to students and teachers. Respondents answered them using a Likert scale (1 to 5). It has been found that Instagram is the most popular network used by students (90%) which is followed by VKontakte and Facebook used by 81% and 49% of the respondents, respectively. The results show that students are much more active users compared to teachers and are more satisfied with distance learning. The results obtained can be used in international practice to improve the quality of the remote learning process, develop more advanced types of content consumption, and improve the channels of personal communication between the teaching staff and students.

1. Introduction

The integration of Internet technologies into education provides people around the world with a variety of learning opportunities [1]. In addition to textbooks and classroom lectures, social media allow students to share ideas, resources, and information. Platforms such as Facebook, LinkedIn, Instagram, Twitter, and many others provide students and teachers with free online communication channels and access to information [2].

Social media can be a very useful learning tool. Participants in the educational process can use modern technological products through a laptop, iPad, and smartphone. In addition, educators can implement a wide range of social media functions: create webinars, discussion forums, and other similar platforms to improve higher education [3]. Social media allow students to share and explore large amounts of information on websites daily, as well as to take part in webinars or use training videos [4].

According to some researchers, most educators in developed and in many developing countries already use social media to some extent in a pedagogical context [5]. For example, biology teachers can use a TikTok social media video to briefly explain key points of topics (the difference between RNA and DNA, for example). In turn, students can watch the video an unlimited number of times and remember the information well [6]. This has become of relevance in the context of the pandemic and the forced introduction of distance education.

Thus, it can be concluded that teachers who found themselves in modern realities were forced to resort to social networks to carry out their teaching practice.

Teachers are more passive users of social media than students [7]. Generally, they see considerable potential of social media and technology for the improvement of the educational process but note a number of serious obstacles. From the point of view of teachers, the problems are slow processes when conducting online lessons and the lack of student motivation, which is associated with the lack of competition in online learning; this means that initially students must be highly motivated to achieve the desired learning outcomes [8]. Teachers are also concerned about the high probability of violation of academic integrity by students in online classes and the limited number of opportunities for assessing knowledge in the online environment [9].

The sudden shift from classroom teaching to virtual platforms during the COVID-19 pandemic has had an unprecedented impact on student learning styles. Online learning has become an alternative to traditional classes, but it is associated with a number of challenges: lack of access to resources and facilities to conduct online classes, increased workload at home, mental stress, and uncertainty due to the pandemic [10]. Other problems relate to inadequate staff training and the promptness of the transition to the new system, which limited the use of online platforms [11]. Teachers were forced to respond quickly to such innovations, create content for online lectures, develop methods to assess student performance, as well as master social networks and platforms to deliver classes. To date, teachers and students have developed skills and mastered the systems of distance education, although this took some time. Thus, a considerable increase in the use of e-learning mechanisms shows that there is a possibility of continued use of digital learning platforms after the pandemic due to their accelerated implementation and adoption by students and teachers.

The introduction of social networks into education forced teachers to consider the educational process from a new perspective. Students and teachers use new technologies to connect with peers and colleagues, exchange ideas, resources, and experiences in extracurricular activities. Thus, earlier studies considered the concept of social networks (activities that all students were actively involved in) in the academic environment, and the purpose of this technology is to develop "outside the box" thinking and analytical skills [12].

Social networks are platforms on the Internet to keep in touch with friends, family, colleagues, customers, clients, classmates, and so on. Social media can have a social purpose, a business purpose, or both through Facebook, Twitter, LinkedIn, Instagram, and others [13,14].

Despite fierce competition, Facebook remains the largest and most popular social network; the data obtained from the financial statements of the corporation indicate that as of 31 December 2020 there were 2.8 billion people using the platform monthly. According to Statista [15], it is followed in order of popularity by Instagram, Facebook Messenger, Twitter, and Pinterest. Additionally, the top ten most popular social networks include Reddit, Snapchat, WhatsApp, Google Messenger, and Tumblr. According to a survey [16], students spend an average of 5.2 h a day on social media.

On the other hand, it is worth noting the effectiveness of distance education in the context of scaling the effect of sustainable development of students. In particular, advocating the concept of education for sustainable development, Zhang et al. [17] point to the usefulness of applying digital paradigms to student learning, which in turn provides insight into the relationship between sustainability issues and the development of knowledge, skills, perspectives, and values. Using social media to globalize existing problems (hunger, climate change, etc.) allows students from one corner of the world to influence their solutions in another continent.

The study is reflective research that aims to identify the most convenient and most often applicable social networks in the context of the quarantine restrictions caused by the COVID-19 pandemic, as well as the difficulties or advantages faced by the teaching staff and students of higher educational institutions in the Russian Federation. Additionally, the

research objectives are to determine the prospects for the further use of social networks and online learning platforms; to develop possible solutions to improve communication between teachers, students, as well as the teacher and students; and to increase the quality and efficiency of the educational process.

The study describes the data on the effect of the use of social networks in distance learning, which is a relevant issue in the face of the challenges associated with the COVID-19 pandemic and global digitalization. The study also aims to comprehensively demonstrate the e-learning model based on social networks while exposing its advantages and disadvantages, which will subsequently help to improve the quality of distance education, the share of which is expected to increase over the next years.

1.1. Literature Review

According to UNESCO, by April 2020, 186 countries had introduced nationwide quarantine restrictions affecting 73.8% of the total student population worldwide. As of June 2021, there was a new surge in the cases of COVID-19 in the Russian Federation due to new virus variants and low vaccination rates in the country [18], which indicates that distance learning may be introduced again.

At first, the pandemic forced educational institutions to implement digital platforms to communicate with their students. There is no doubt that e-learning has played a crucial role in the effective planning, delivery, and regulation of the educational process. At the same time, the effectiveness of e-learning depends on the level of availability of resources and equipment in educational institutions and the readiness to adopt such a system. However, e-learning differs from traditional classroom learning when it comes to learning satisfaction, motivation, and student interaction [2,19].

For example, in India, the paradigm shift towards e-learning has created serious challenges in terms of education quality and delivery efficiency [20]. In other words, the effectiveness of e-learning depends on how well the content is adapted for the online platform.

A new generation was born in the era of the Internet, which shaped their perception of the world in a different way; thus, today most young people spend a lot of time in virtual reality [21,22].

The interaction between the teacher and the student on social networks is an important issue in the context of the use of social networks in the educational process. There is a risk of close contact, and some researchers suggest that administrators impose restrictions on teachers' use of social media as excessive self-disclosure can harm them and even lead to disciplinary procedures [23].

The role of a student or a teacher is also important: they can become active (for example, use comments) or passive (view or read the content) users. While considering passive behavior to be more appropriate, some researchers found that this type of interaction gives teachers and students an opportunity to get to know each other better, which can improve their relationships in the learning environment [24].

Among online learning platforms, social networks have many advantages. For example, they contribute to the establishment of contact between a student and a teacher; they are available to each user; and do not require any fees (except for the Internet access fee). Additionally, social networks allow instant notifications and bulk mailing. Another important feature is information storage, which allows everyone to view any documents and files, as well as to fill knowledge gaps, which becomes particularly relevant if the student has missed a lesson [25].

The growing interest in social networks is associated with the need to ensure direct contact with all participants in the educational process: students, teachers, academic administration, as well as the employer [26].

Research on the impact of social media, in particular Facebook, was conducted at the Chinese University of Hong Kong, which showed that interpersonal relationships, communication, social relationships, and participation greatly affect student motivation to learn. Three factors were investigated: interaction between the teacher and the student,

technology usability, and student attitude towards Facebook, which had a considerably positive impact on student motivation. According to statistics, 83.4% of students' motivation for learning variability can be explained by these three variables. The model created based on the multiple regression analysis demonstrated a high level of representativeness in the context of these variables. Among the three independent variables, students' attitudes towards Facebook had the strongest impact on their motivation to learn. This means that this factor is the most important one in engagement [27].

The growing proliferation of social media along with technological breakthroughs in 5G and mobile learning devices will make them a safe tool for learning [28]. Despite this optimistic estimate, there is little evidence that educators and educational institutions should select one particular social network to be used in the learning process. According to some studies [29,30], Twitter is expected to become the most popular social network in the field of higher education; however, this assumption raises some doubts.

Research on the impact of social media on students and their academic performance shows ambiguous results. On the one hand, overuse of the Internet negatively affects academic performance and the quality of education [9]. On the other hand, e-learning and the competent use of up-to-date technologies in learning have a very positive effect both on the pace of acquiring knowledge and the ability to use the Internet to search for information [31]. The example of teachers is still the key factor in the interaction of young people with online resources. It has been found that the way the teacher uses the e-learning system largely determines the patterns of student actions [10].

Today most teachers do not introduce social media in their teaching activities but agree that the role of social media in education will increase in the coming years. Teachers from all over the world believe that networking sites can facilitate learning, and the negative attitude is due to the fact that some teachers are not well aware of social media [11].

Regional studies identified general trends in the use of social networks in the educational process, as well as certain differences associated with the socio-demographic and cultural characteristics of the Russian Federation and Kazakhstan. On the one hand, there is a trend towards general preferences for social media; in particular, students use VKontakte while teachers prefer Facebook [32].

At the same time, the use of social media for non-academic purposes negatively affects student achievement, causing concern among the academic staff [7].

Teachers and students believe that the rational use of Twitter and other social media could benefit student-centered learning. The results show that an opportunity to discuss and share information with each other and with the teacher 24/7 benefits the educational process [33].

It should also be noted that, although a large number of studies are devoted to distance education in the context of increased global risks, only a small number of publications actualize the issues of active implementation of social networks in education as an aspect of innovation and mobility of educational programs. At the same time, the specificity of the chosen region of the study, given the limited available (free) digital resources in this article, demonstrates the commitment to a thorough study of this topic in the academic circles of universities and authorities in Russia.

1.2. Setting Objectives

The key objective of the study is to obtain new experimental data, which can create the basis for developing a program to improve the quality of distance education, by analyzing the gaps in the current system of education.

The purpose of the study is to identify the advantages and disadvantages, as well as the features and trends of using social networks in the context of distance education. Comparison criteria include the following indicators: status in the educational institution (student/teacher), gender and age characteristics, region.

Additionally, one of the key objectives of the research was to identify the qualitative difference in the use of social networks by teachers and students: the purpose, frequency,

convenience, accessibility, quality, etc. It was also important to study which kind of social networks students and teachers prefer and whether there is a correlation determined by the region and age.

2. Materials and Methods

The research methodology is based on the empirical approach, which involves a research survey based on a questionnaire containing open-ended and closed-ended questions. SPSS Statistics 25 was used for a comprehensive analysis of the data received. The confidence level and the margin of error were 95% and 5%, respectively.

The survey involved students and teachers of Sechenov First Moscow State University and Kuban State Technological University. The experiment took place from January to June 2021. Four hundred students (200 from each educational institution) and one hundred teachers (50 from each educational institution) were interviewed. An online questionnaire (Appendix A) was sent to students and teachers by e-mail. Those respondents who did not want to disclose their personal information filled in an online questionnaire created on the Survio website, which guaranteed the confidentiality of their data. Incomplete questionnaires were considered irrelevant and were excluded from the sampling; there were three of them.

The final version of the questionnaire contained 25 questions divided into three sections. Appendix A.1 (Personal Information) aimed to define the profile of the respondent: gender, age, degree, rank, university. This section contained a question that determined the participants' awareness about social media to ensure the reliability of the conclusions drawn from the analysis.

To examine teachers' attitudes towards the use of social media for educational purposes, the questionnaire included two sections—Impression of the use of social media in teaching (Appendix A.2) and Advantages and disadvantages of social media (Appendix A.3). Appendix A.2 included a list of 10 statements numbered 6–15 (Appendix A). The respondents were asked about the use of social networks for various purposes: general (communication, consultation, discussion, exchange of information), educational, and research. Appendix A.3 was a list of advantages and disadvantages of using social media in distance learning.

The respondents were to express how much they agreed with these statements on a 5-point Likert scale, where 1 is Strongly Disagree (SD), 2—Disagree (D), 3—Neutral (N), 4—Agree (A), and 5—Strongly Agree (SA). There are open-ended questions at the end of these sections.

The information on the gender and age of the respondents from the two universities is described in Table 1. The sample includes the following age groups of respondents: under 18 years old—0%, 18–25 years old—62%, 25–45 years old—22%, over 45 years old—16%.

Table 1. Personal data of respondents.

Indicators	Sechenov First Moscow State Medical University		Kuban State Technological University	
Status	**Students**	**Teachers**	**Students**	**Teachers**
Gender	Women—62% Men—38%	Women—51% Men—49%	Women—42% Men—58%	Women—41% Men—59%

Based on the total number of students at these universities, the acceptable sampling error does not exceed $p = 4.92$. Thus, the sample used can be considered representative enough for the purposes of the study in the context of the region under consideration.

3. Results

An open-ended question about social networks used by students showed that Instagram is the most popular social network among students (90%) followed by VKontakte

and Facebook, which are used by 81% and 49% of student respondents, respectively. The most popular social networks used by teachers are Facebook (69%), VKontakte (51%), and Instagram (37%).

The time spent on social media for entertainment purposes (Table 2) shows that the difference is based on the age of the respondent group (students and teachers): students spend more time on social networks (more than 3 h a day) compared to most teachers (less than 1 h a day).

Table 2. Total time of using social networks (daily data), %.

Indicators	Sechenov First Moscow State Medical University				Kuban State Technological University			
	Students		Teachers		Students		Teachers	
	F	M	F	M	F	M	F	M
Less than 1 h	11	13	41	48	12	9	52	50
1–3 h	15	31	35	31	16	26	26	31
More than 3 h	74	44	24	21	72	65	22	19

The analysis of the data on the amount of time that students and teachers spend on social networks for educational purposes on a daily basis shows that students are more likely to use social networks than teachers. The information received also demonstrates that male teachers more often resort to social networks in their teaching activities. The data are given in Table 3.

Table 3. Time spent on social networks in the context of university activities, %.

Indicators	Sechenov First Moscow State Medical University				Kuban State Technological University			
	Students		Teachers		Students		Teachers	
	F	M	F	M	F	M	F	M
Less than 1 h	24	20	78	64	47	37	68	52
1–3 h	52	48	20	24	41	51	25	33
More than 3 h	24	32	2	12	12	12	7	15

The analysis of the respondents' responses to Appendix A.2 shows that a much smaller proportion of teachers surveyed, compared to students, use social networking sites to exchange information and discuss and deliver lectures; 59% of teachers and 94% of students have public profiles on social media.

Most students and teachers surveyed believe that the use of social networks in teaching has a positive effect on their achievements and increases involvement and interest in the learning process, namely: teachers—51% (statements A = 4 and SA = 5), students—64% (statements A = 4 and SA = 5). The results of the second open-ended question in Appendix A.2 showed that, in the learning process, the respondents also use social networks for sharing additional learning resources and exchanging information, informing students about the issues related to the learning process, performing midpoint assessment (sending text or multimedia files to teachers), and making contacts with alumni and former students. The factor of regional difference between the students and teachers was minor, which makes it possible to conclude that age and status (student or teacher) have the greatest influence on the factors under consideration.

Based on the analysis of the respondents' responses in Appendix A.3, it can be noted that students are more loyal and friendly to social networks than teachers. Thus, 81% of students and 45% of teachers agreed that social networking sites are useful in education (statements A = 4 and SA = 5). It is worth noting that both students and teachers note the increasing role of social networks in the educational process with the onset of the pandemic;

61% of students are more satisfied with distance learning than classroom learning while among teachers this indicator is 37%. The negative impact of distance education is noted by 78% of teachers and 61% of students. According to 21% of teachers and 46% of students, distance learning has more advantages than disadvantages (A = 4 and SA = 5).

Three open-ended questions at the end of this section made it possible to identify the positive and negative influence of social networks on the educational process.

Additionally, some technical problems were described. These included communication interference and lack of high-speed Internet to ensure high-quality and uninterrupted contact between students and the teacher. There was a risk of deterioration in analytical skills, communication, and presentation skills, and a lack of hands-on classes (this refers to both teachers and students).

Most students and teachers surveyed believe that the use of social networks in teaching has a positive effect on their achievements and increases involvement and interest in the learning process, namely: teachers—51%, students—64%. The factor of regional difference between the students and teachers was minor, which makes it possible to conclude that age and status (student or teacher) have the greatest influence on the factors under consideration.

Students are more loyal and social media friendly than teachers. Thus, 81% of students and 45% of teachers agreed that social networking sites are useful in education. It is worth noting that both students and teachers note the increasing role of social networks in the educational process with the onset of the pandemic; 61% of students are more satisfied with distance learning than classroom learning while among teachers this indicator is 37%. The negative impact of distance education is noted by 78% of teachers and 61% of students.

According to the respondents, the negative factors include lack of face-to-face communication between people and valuable direct interaction; difficulties experienced by some educators when using social media; risk of superficiality; and lack of a reflective approach to teaching and "live conversation". To address these issues, academic administration should promote the use of social media by the teaching staff through training teachers to comfortably work with these networks, as well as provide high-quality resources and equipment. Teachers should take the initiative to communicate with students, be accessible, but at the same time clearly limit the scope of communication to avoid familiarity.

The students also noted unreliable Internet connection and a lack of direct contact with the teacher, who becomes unavailable at the end of the lecture, while in the classroom, the student has an opportunity to ask them questions in person. To minimize the occurrence of such situations, teachers should more clearly inform students about the methods of contacting them, be more open to communication, and encourage students to communicate.

The positive effect noted by both students and teachers was manifested in closer interpersonal contact, which would have been impossible offline; access to information at any time of the day; free and convenient exchange of data (information); as well as the opportunity to log on the network from a computer or mobile device. Many respondents reported that distance learning saved a lot of their time that they used to spend traveling to the university or the classroom.

The teachers noted the most frequent difficulties they faced: technical failures of the Internet, no signal, challenge of managing large groups of students (in particular, during lectures rather than hands-on classes); the relaxed attitude of students; and lack of motivation. There were also problems related to academic integrity of students (cheating and plagiarism).

At the same time, the analysis of social networks' influence in the context of distance learning using multilevel analysis determined that the significant correlation between the responses of the experiment participants is different (α = 0.005). In particular, this may indicate a divergence of views on the effectiveness and satisfaction with the format of distance learning between them.

Students most often faced social difficulties. Thus, the majority of them noted a lack of live communication with their classmates, which is a core of student life along with

the educational process. This can be done online through a social network, but in this case, there may be some difficulties: a teacher is not an active user of social networks, or a student is faced with the ethical issues of messaging, which is not always easy given the age and status differences, as well as a student's unwillingness to interfere with the private life of a teacher. In this case, teachers should more clearly inform students about the methods of contacting them, be more open to communication and encourage students to communicate.

Comparing the responses of students and teachers according to the corresponding correlation of the Spearman results, one can determine the disagreement of the respondents' (students and teachers) views on the use of social networks in the context of improving distance education (Table 4).

Table 4. Correlation of results between students and teachers according to Spearman criterion.

Students	1	0.7759
Teachers	0.7564	1

4. Discussion

These findings are valuable for scientists from around the world as they reflect general trends in innovative education in the context of the lockdown restrictions due to the COVID-19 pandemic. The survey results can be extrapolated to larger groups of teachers and students with their dynamics in terms of gender, age, Internet preferences, etc. It has been confirmed that there is a positive and negative influence of social networks on the educational process, which means that it is necessary to continue research on the use of social media in e-learning to develop a methodology, unique training systems and courses, as well as to improve the methods of communication between all participants in the educational process.

The data obtained in this study closely correlate with the results obtained in the research carried out in the Russian Federation, Azerbaijan, and Kazakhstan. According to this source, Instagram is the most popular social network followed by VKontakte and Facebook. The most popular social networks used by teachers are Facebook (66%), VKontakte (54%), and Instagram (33%). In Kazakhstan, there were similar results obtained: VKontakte (students—91%, teachers—61%), Instagram (students—83%, teachers—44%), and Facebook (students—28%, teachers—49%). In Azerbaijan, the following indicators were obtained: Instagram (students—87%, teachers—43%), VK (students—88%, teachers—51%), and Facebook (students—67%, teachers—57%) [32].

It is also important to analyze whether in different regions students and teachers face identical difficulties and what positive aspects they find in using social networks in distance education. According to some data, the negative attitude of teachers is due to the fact that not all of them are well aware of social media capabilities. Teachers who are positive about the use of social media for educational purposes find their use to be highly beneficial when they are exclusively created for educational purposes. When used wisely and properly, social media can improve the learning experience and the ability of students to collaborate with others. Additionally, according to this study, teachers believe that social networks help them communicate with students, develop a sense of community, share resources, and motivate students [11]. Based on the information received, it can be concluded that the difficulties faced by teachers are very similar regardless of the region.

It is also important that previous studies have not completely disclosed the use of social networks in the context of gender differences [34]. According to these studies, women are more active social media users compared to men, which has been confirmed by this study, in particular based on the sample of students. In post-Soviet countries, active research is being conducted on this issue. At the same time, gender inequality both in the context of the characteristics of higher education and in the use of social networks in the educational process is noted [35].

For example, a study that was conducted in China reports that students in this country believe that using social media improves their academic performance, and the Internet brings great benefits to their studies and life as it performs a social function, facilitates communication, and expands the boundaries of the information consumed. Thus, their intention to use social media is only getting stronger. These findings are partly confirmed by our research, which demonstrates a high level of student satisfaction with the use of social networks in the context of education. The realization of the fact that social media improve individual productivity influences the initiative of universities to use them. Social media provide university students with considerable benefits [8].

According to the results of a study that was conducted in the Republic of Cyprus, it was found that social networks and mobile applications used by students have a positive effect on student-student and student–teacher communication. Among the benefits of the use of social media and mobile apps, the exchange of information between students was the most notable one that contributed to collaboration [36].

At the moment, online learning platforms, for example, Uchi.ru, YaKlass, SberClass, Infourok, Russian Electronic School, and Spherum, are being introduced in the Russian Federation. Today these are implemented in secondary education, but they are likely to be introduced in higher educational institutions in the future [37].

5. Conclusions

Based on the results of the study, it can be concluded that it is students who initiate the use of social networks; the role of the academic staff in this process is relatively small, which is natural, and the most important factor of influence is age as many teachers experience difficulties in using social media.

According to the results, Instagram is the most popular social network among students (90%) followed by VKontakte and Facebook (81% and 49%, respectively). The most popular social networks used by teachers are Facebook (69%), VKontakte (51%) and Instagram (37%); 59% of teachers and 94% of students surveyed have public profiles on social media.

The analysis of the amount of time spent on social media for entertainment purposes (Table 2) shows that the difference is based on the age of the respondent group (students and teachers): students spend more time on social networks (more than 3 h a day) compared to most teachers (less than 1 h a day). The analysis of the data on the amount of time that students and teachers spend on social networks for educational purposes on a daily basis shows that students are more likely to use social networks than teachers.

The positive effect was manifested in closer interpersonal contact, which would have been impossible offline, access to information at any time of the day, free and convenient exchange of data (information), as well as the opportunity to log on the network from a computer or mobile device. Many respondents reported that distance learning saved them a lot of time that they used to spend to get to the university or the classroom.

The data of this study can be used in international practice to analyze which social networks are most popular among students and teachers in the Russian Federation. The information about the amount of time spent on social networks both for educational purposes and entertainment and communication purposes is valuable.

The research findings reflect the way students and teachers use social media to modernize learning approaches. The study results can be of interest to university educators to learn about the ways their colleagues use social media and develop ideas for the introduction of social networks in their own teaching activities.

Research Limitations

This study also has certain limitations. The research involved students and teachers from only two universities. No data representing the whole student and teacher population of the country were collected; thus, the results may not accurately reflect the attitude towards the use of social media in e-learning. Further research should focus on the educational institutions across the country to generalize the results more reliably.

It is also worth noting that the data obtained are relevant in the context of the Russian Federation, where VKontakte has the greatest impact due to its increased popularity in the Commonwealth of Independent States (CIS) countries. According to some reports, Facebook is the most preferred social network among both teachers and students [34]. Almost all the respondents in the study (97.4%) have a Facebook profile and 88% use it daily.

Appendix A. Questionnaire

Appendix A.1. Personal Data

1. What gender are you? ○ woman ○ man
2. How old are you? ○ under 18 ○ 18–25 ○ 25–45 ○ over 45
3. What is your status in the educational institution? ○ student ○ teacher
4. What university do you work/study at?
5. Are you knowledgeable about social media (e.g., Facebook, Twitter, VKontakte, Google+, etc.)? ○ Yes ○ Yes/No ○ No

Please agree or disagree with the statements from Appendices A.2 and A.3 on a five-point scale:

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

Appendix A.2. Impression of the Use of Social Media in Teaching

6. I often use social networks to communicate and consult with my colleagues/classmates.
   ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
7. I participate in a social media group/groups with my students/teachers to exchange information and discuss courses.
   ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
8. I participate in a social media group/groups with my students/teachers to organize lectures.
   ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
9. I use social networking sites during lessons.
   ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
10. I am a member of online groups interested in the use of social media for educational purposes.
    ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.

11. I have a public profile on some social networks where I can share my research interests and connect with a wide range of people with similar interests.
    ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
12. The use of social media in the educational process has a positive effect on my achievement as a student/teacher.
    ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
13. The use of social networks in teaching increases involvement and interest in the learning process.
    ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
14. What social networks do you use in learning/teaching?
15. Please indicate the ways you use social networking sites in learning/teaching if these have not been specified above.

Appendix A.3. Advantages and Disadvantages of Social Networks When Using Them

16. Social networking sites are useful tools in education.
    ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
17. The role of social media has increased during the pandemic.
    ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
18. I prefer distance learning to traditional classroom learning.
    ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
19. Distance learning with the use of social networks has had a significantly negative effect on the educational process.
    ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
20. There are more advantages than disadvantages of the use of social media in education.
    ○ 1. Strongly disagree ○ 2. Disagree ○ 3. Neutral ○ 4. Agree ○ 5. Strongly agree.
21. Do you think that the use of social networks for educational purposes has a negative effect? If so, specify.
22. Do you think that the use of social networks for educational purposes has a positive effect? If so, specify.
23. What difficulties did you face in distance learning when using social networks?
24. How much time, on average per day, do you spend on social networks?
    ○ less than an hour ○ 1–3 h ○ more than 3 h
25. How much time, on average per day, do you spend on social media for educational purposes in the context of university activities?
    ○ less than an hour ○ 1–3 h ○ more than 3 h

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