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## Effects of SARS-CoV-2 Pandemic on computer communication: delayed consequences and new behavioral standards

### Воздействие пандемии SARS-CoV-2 на компьютерную коммуникацию: отсроченные последствия и новые стандарты поведения

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#### Abstract


The relevance of this study is revealed in a selection of online communication tools with the forced consequences of the spread of SARS-CoV-2 in the world, revealing the effectiveness of distance learning. Objective: to trace the transformation of the speech and behavioral standard depending on the internal understanding of their own knowledge about computer-mediated communication in comparison with traditional methods of communication; to evaluate the effectiveness of virtual communication based on the analysis of the needs of communicants in the process of online communication. The presented analysis of the form of communication demonstrates the processes of transformation of the speech and behavioral profile of communicants, which allows for additional research for a wide range of readers who practice online interaction on an observable basis. The material was data from an online questionnaire in which 261 respondents from Kazakhstan took part. The methodology is


#### Абстракт


Актуальность данного исследования раскрывается в подборке средств онлайн-коммуникации с вынужденными последствиями распространения SARS-CoV-2 в мире, выявлении эффективности дистантного обучения. Цель: проследить трансформацию речеповеденческого стандарта в зависимости от внутреннего понимания собственных знаний о компьютерно-опосредованной коммуникации в сравнении с традиционными способами коммуникации; оценить эффективность виртуального общения на основе анализа потребностей коммуникантов в процессе онлайн-общения. Представленный анализ формы коммуникации демонстрирует процессы трансформации речеповеденческого профиля коммуникантов, что позволяет провести дополнительные исследования для широкого круга читателей, которые практикуют онлайн-взаимодействие на наблюдаемой основе. Материалом послужили данные из онлайн-анкетирования, в котором

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based on the psychological verbal-communicative method of anonymous online questioning using Google Forms via social networks. Results: online communicants identified the ZOOM platform as an important tool for online communication as an important factor in maintaining stable interaction in a professional environment, training and social communication. Effective computer communication poses the problem of compliance with the norms of online communication for successful interaction. Further study of qualitative and quantitative indicators of various online software tools is of interest for improving the linguistic modeling of educational online discourse with the prediction of the result.

**Key words:** computer-mediated communication, online interaction, remote technologies, various communication tasks, SARS-CoV-2.

## Introduction

The speech and behavioral standard of communication was developed during the traditional human practice of interaction, assuming the contact of communicants. This study examines the forms of computer-mediated communication for organizing effective online interaction and their advantages over traditional forms of communication from the point of view of respondents. The situation of heightened perception in isolation during the covid pandemic actualized interest in research on persistence (Wheatley, 2002), manipulation (Słomski & Czarnecki, 2018), destruction (Karabulatova & Kopnina 2022), machine learning and artificial intelligence in a synergetic way to find effective techniques of modern communication and communicology (Andrushchenko, et al., 2022; Kussepova et al., 2023; Okolyshch et al., 2022). Accordingly, this cannot but affect not only the processes of communication in the natural human language, but also the processes of interaction between artificial intelligence and humans (Flores Borjabad, 2023; Karabulatova et al., 2021; Pukas et al., 2023).

As part of the study, the needs for using online communication tools to perform various tasks were studied. A sample of the study was

принял участие 261 респондент из Казахстана. Методология базируется на психологическом вербально-коммуникативном методе анонимного онлайн-анкетирования с помощью Google Forms через социальные сети.

Результаты: онлайн-коммуниканты определили платформу ZOOM как важный инструмент для онлайн-общения как важного фактора поддержания стабильного взаимодействия в профессиональной среде, обучении и социальном общении. Эффективная компьютерная коммуникация ставит проблему соблюдения норм онлайн-коммуникации для успешного взаимодействия. Дальнейшее изучение качественных и количественных показателей различных онлайн-программных инструментов представляет интерес для улучшения лингвомоделирования образовательного онлайн-дискурса с прогнозированием результата.

**Ключевые слова:** компьютерно-опосредованная коммуникация, онлайн-взаимодействие, удаленные технологии, вариативные коммуникационные задачи, SARS-CoV-2.

conducted in Kazakhstan with the participation of 261 respondents. The study used an online survey based on Google Forms to collect data. Quantitative, qualitative and frequency analysis were used in the analysis of the study data. This kind of research helps to trace the dynamics of the influence of online communication on the educational process (Aipova et al., 2021; Koval-Mazyuta et al., 2023; Zhang et al., 2023; Temirgalinova et al., 2021).

The study was also aimed at studying the online communication skills of representatives of various fields of activity, since the SARS-CoV-2 virus pandemic, which began in 2019, radically changed the lives of all mankind. The restrictions affected all spheres of society and also affected the sphere of communication. The outbreak of the pandemic has become a serious challenge for the entire world community. The COVID-19 emergency has revealed the role of digital online technologies.

Humanity for the first time faced such a global problem when traditional forms of communication became impossible. In these difficult conditions, we were forced to communicate using remote technologies (Zhang et al., 2023; Zhylin et al., 2023).

A certain number of difficulties in using remote technologies are associated with issues of communication in the virtual space, and it is the problem of non-verbal communication that comes to the fore. It should be noted that the methods of communication in remote communication are of interest to many linguist researchers.

The role of verbal and nonverbal communication in the process of remote communication and the factors affecting the effectiveness of the communication process have become the subject of our next consideration. To ensure the effectiveness of the communication process, it is necessary to combine various forms of interaction in order to compensate for the lack of personal contact through virtual communication.

The study also sought to find out how respondents used interactive strategies to organize effective interaction via the Internet. The survey results showed that online communicants identified the ZOOM platform as an important tool for online communication. Online interaction, in particular, was pointed out as an important factor influencing the preservation of stable interaction for professional activity, training and social communication, user engagement and positively influencing their satisfaction with the communication process in general.

The data collected during the survey conducted with different categories of respondents demonstrated that interactive online interaction is used on a regular basis. The research is important for a wide range of users who are interested in finding ways to participate in a virtual society for self-realization and the realization of other goals, despite the restrictions and circumstances that arise from time to time.

### Literature review

The pandemic has revealed both new opportunities and new challenges in the use of online communication in the educational process in all countries of the world. The growth of social interactivity on the Internet has been accelerated by social distancing (Seynhaeve et al., 2022; Muir et al., 2022; Arvanitis, 2019) has adverse consequences from- for physical and emotional isolation. Transformational processes in online learning and the subsequent changes in the thought processes of online communicants become the object of close attention of researchers (Karabulatova et al., 2021). They

cause linguo-cognitive distortions in the speed of information processing and presentation, which has been designated by researchers as a pseudo-patho-psycholinguistic phenomenon of online communication (Karabulatova et al., 2021: 1521).

Remote communication can be carried out with the greatest efficiency using qualitatively different means (Divakova, 2020; Grushevskaya et al., 2018; Barros del Río et al., 2021). One of the types of communication tools that have a different nature from the language is the means of non-verbal communication (Kusseпова et al., 2023).

In studies of the mechanisms and sign composition of non-verbal communication, along with an understanding of the importance of eloquence, great importance is attached to the melodic, acoustic design of speech, gestures and facial expressions.

A common working name that is used among people is non-verbal or "body language". Psychologists believe that the correct interpretation of non-verbal signals is the most important condition for effective communication.

Body language plays a central role in social interactions, and its role is clearly decreasing when going online, but the relevance of this change is still not clear. According to the scientific results presented in the work "Difference Between Face-to-Face Communication and Online Communication" (Diffzy, 2023) and the research of the authors Paradisi P, Raglianti M, Sebastiani L. (2021) this transition to online can affect the well-being of people, especially population groups with special vulnerabilities, such as youth and the elderly people.

If we take into account the fact that non-verbal communication is the interaction between individuals in the act of communication without the use of words and the transfer of information is carried out through images, intonations, gestures, facial expressions, pantomime, etc., without speech and language means presented in direct or any sign form, then the body of a person becomes an instrument of non-verbal communication, which has a wide range of means and methods of transmitting information or exchanging it, which includes all forms of human self-expression (Polivara & Karabulatova, 2018).

The relationship of non-verbal means of communication, in particular, the nuances of facial expressions, all body postures, called kinemes in linguistics, and their interpretation by listeners plays an important role in online communication.

Khlystova V.G. (2008) defines: "A kineme is a unit through which real communication of people takes place. Kinemes are combined into larger units — kinemorphs, kinemorphems and kinesintagmas. A nonverbal message consists of kinemes in the same way as human speech consists of a sequence of words." Other researchers also emphasize the importance of kinesic language for the verification of communicative types, which is crucial for understanding information in online communication (Kussepoova et al., 2023: 139).

In the process of remote communication, amplifying and pointing kinemes showed particular effectiveness.

Reinforcing kinemes are rhythmic hand movements, index kinemes are palm movements. Illustrative kinemes are those that constantly accompany certain syntactic configurations of speech; they are effectively used as methods of semantization of vocabulary and grammar.

S. Jolly following R. Birdswistell (Jolly, 2000) developed a whole catalog of elementary gestures that make up non-verbal communication and demonstrated the statistics actively used in subsequent scientific research about the ratio of 30% of verbal communication to 70% of non-verbal signals in the process of communication, which is quite applicable to online interaction.

When people communicate over the Internet, the geometric distance separating the screen image and the real interlocutor is several tens of centimeters, which is less than the distance between people participating in a social / public conversation face to face. For example, such physical proximity suggests closeness between people and a mutual predisposition to the potential use of a tactile channel (handshake, hug, pat on the shoulder). However, despite this virtual closeness, we cannot touch.

The most typical gestures in online communication are: 1) gestural stresses synchronous with speech; 2) accompanying speech; 3) spatial markers; 4) temporary markers; 5) ideographic markers by which a person's condition can be determined.

Movements that establish, maintain and regulate dialogue can be both verbal and non-verbal and are classified into three types.

The first include: points - movements of the head, neck, eyes, hands, postures. To the second positions - gestural configurations and complexes - denote various relationships that have arisen in the dialogue. The third are representations that form complex complexes of movements, including positions, distances between interlocutors, postures that indicate the social status and orientation of bodies that determine the nature and type of communicative interaction.

Especially it should be noted the importance of communicants' possession of acoustic signals (phonation, intonation). At the same time, the communicative role of the gaze changes. The eye contact of the interacting participants and the meaning it conveys cannot be conveyed by the camera.

Thus, the questions discussed above suggest that the transition from face-to-face to online communication is complex, since the direct proportion between apparent geometric distance and interpersonal familiarity changes profoundly both quantitatively and qualitatively.

With the help of non-verbal communication in the process of remote communication, we can:

- replace or supplement your speech;
- to express one's emotional state or to read the emotional state of participants in a remote act of communication;
- correct understanding of the content of verbal communication;
- maintain an optimal level of emotional aspect;
- strengthen the impact of verbal means of online communication.

In remote communication, communication building strategies play an important role. Non-verbal signals (intonation, looks, postures, distance, facial expressions, gestures) allow the recipient to receive 70% of the information, while verbal conveys only 30%. Effective communication in a remote format begins with building an interaction strategy.

In online communication, we interact in a limited format, and given that a person perceives a large amount of information by exchanging emotions, it is possible that the recipient's emotionality can have both positive and negative consequences.

That is, remote interaction can bring discomfort into communication, a sense of loss of contact (Lin et al., 2017; Boatwright & Freberg, 2023).

The analysis of the necessary competencies and skills showed that with direct interaction, communication participants have the opportunity to influence the perception of information by receiving feedback through various channels, perceiving all the variety of signals and changing the conversation strategy (Kurebaeva et al, 2014; Yerahmetkyzy et al., 2022; Zhibek et al., 2022).

Usually, in the communication space, the participants in communication first touch with emotions, and only after that they move on to specific, factual information, discussion of plans, goals, tasks, teamwork.

Practice shows that some forms of online communication do not provide immediate feedback. Therefore, in order to achieve a communicative goal, it is important to use, along with verbal, non-verbal means of communication to enhance the effect of interaction.

In the process of remote communication, it is recommended to observe certain rules of communication. There are a number of useful online communication skills that will allow communicators to avoid situations of misunderstanding, for example:

- observe the framework of generally accepted communication norms, in particular, such as the culture of speech, respect for the individuality of the interlocutor, privacy, appealing with verified information and prompt response to messages from the addressee;
- pay attention to lexical-stylistic, grammatical, prosodic and spelling aspects when writing content;
- be able to use non-verbal cues, such as facial expressions, gestures and tone of voice, when necessary, given that some forms of online communication differ from face-to-face meetings;
- be ready to quickly and effectively answer the questions presented to you and predict subsequent questions in the course of online interaction;
- try to maintain a high level of professionalism in the online environment in order to establish mutual understanding in order to maintain structured communication and induce goodwill among communicants (Aipova et al., 2021; Divakova, 2020; Grushevskaya et al., 2018; Pukas et al.,

2023; Rotondi et al., 2017; Zhang et al., 2023).

## Materials and methods

The study was created and implemented in the second or third quarter of 2022. In order to find out the effectiveness of communication based on the use of online platforms for social interaction, data was collected through a cross-sectional study based on an online questionnaire between 23.05.2022. until 06/16/2022, which was attended by 261 respondents who are specialists in various fields of activity and students of various educational organizations. Questioning is one of the modern informative research methods and provides ample opportunities for obtaining reliable results. The questionnaire was created using the online tool Google Forms and was conducted as a voluntary anonymous survey, which was sent via a link through social networks.

The purpose of the survey of the presented study was to identify the current situation in the successful use of online interaction tools in the framework of solving various communication tasks; studying the opinions of different categories of respondents on the use of online platforms.

Based on the objectives of our study, the following types of surveys were organized:

- according to the number of respondents – mass questioning;
- in terms of completeness of coverage - continuous;
- according to the type of contacts with the respondent – absentee – mailing of questionnaires in chats of social networks.

During the survey, data were collected to evaluate the effectiveness of using the ZOOM platform as one of the opportunities for online communication.

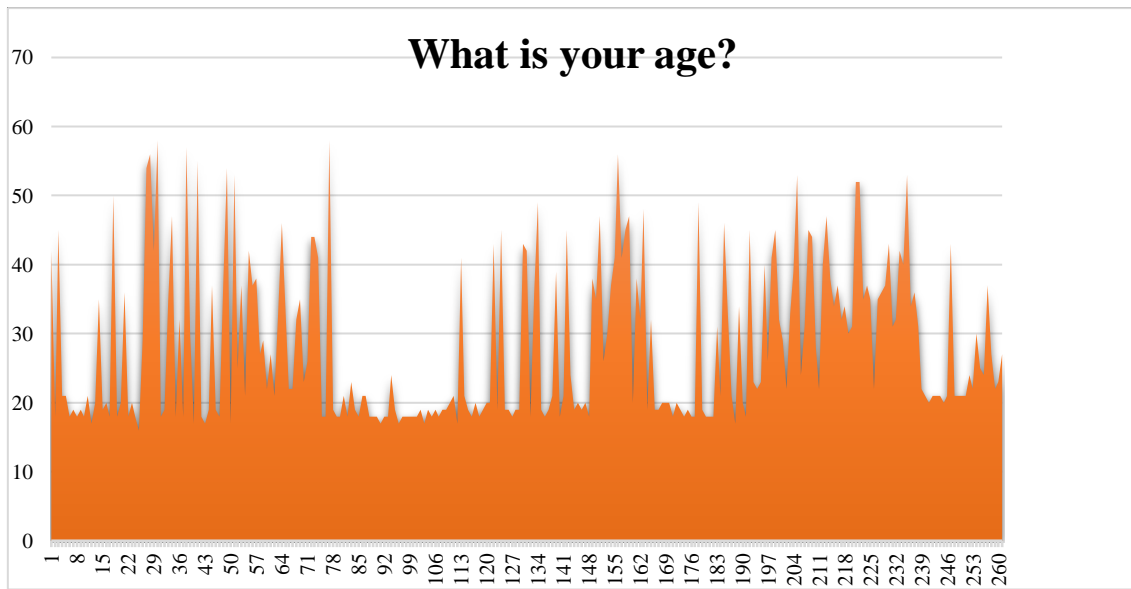
The data collection tool used in the study was delivered and collected by an online method. A spontaneous sample was used for the study. When interpreting the study data, quantitative, qualitative and frequency analyzes were used. The method of quantitative analysis is presented in the study in figures in the survey results. The survey consisted of a list of questions with multivariate answers. Qualitative data are presented in the article in the form of graphs and diagrams.

**Results**

The results of the study demonstrated the effectiveness and popularity of the ZOOM platform among our survey respondents. The online communication skills of the respondents were average, the knowledge of their functionality was at a high level, and the quality

of access and communication in the virtual environment was at a low level.

A total of 261 respondents aged 16 to 58 took part in the survey. Respondents aged 16 to 58 years took part in the survey. The survey revealed that the average age of the respondents is 27.9 years (Figure 1). Of these, the majority, namely 74%, are female (Figure 2).

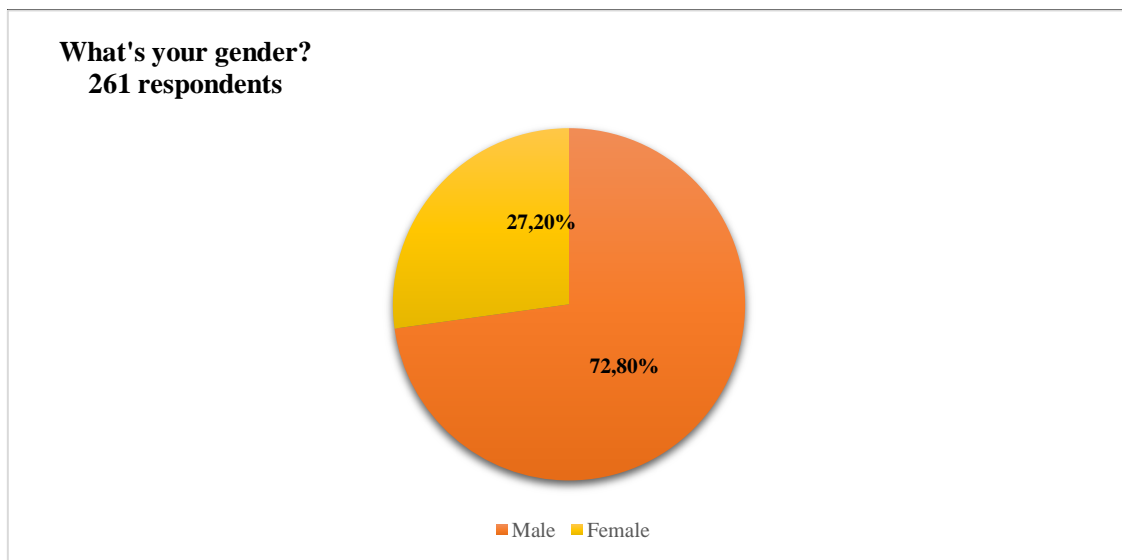


**Figure 1.** Average age of respondents

The dynamic curve of the respondents surveyed (Fig. 1) demonstrates fluctuations in cohort groups by age. Although the scope of respondents seems to be quite wide, covering several generations, it can be seen that young people showed maximum interest in participating in the survey.

The participation of representatives of the older generation (up to 58 years old) shows that older respondents are also involved in indirect online communication.

The diagram shown in Fig. 2 illustrates the gender identity of the respondents.



**Figure 2.** What's your gender? (Gender identity of the respondents)

The skills of using online resources do not differ depending on the gender, field of activity and age of the respondents.

The diagram in Fig.3 shows the distribution of respondents by social status. Among the respondents there were 54% of students, 43.7%

of employed and 2.3% of self-employed people (Figure 3).

Almost half, namely 43% of employed respondents are active users of the ZOOM platform for virtual communication.

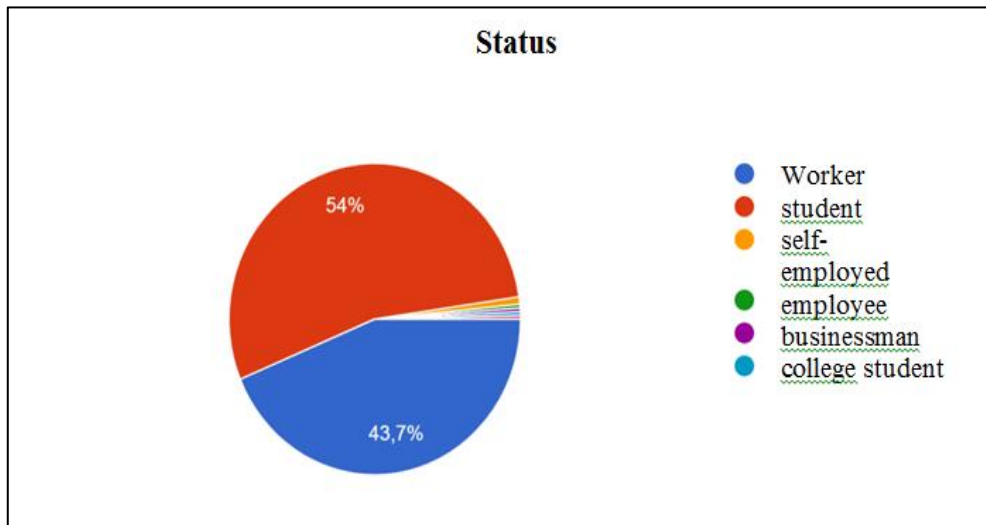


Figure 3. Distribution of respondents by social status

Thanks to virtual technologies, communication participants can be in any part of the world and communicate with another person, even if he is on the other side of the globe. There are many software tools such as Google Meet, Zoom Cloud, and Webex Meetings that offer online communication where a large number of people can be connected at the same time. Some applications, in particular WhatsApp, Viber, Facebook Messenger, FaceTime, communicate asynchronously.

The frequency of respondents' responses to the question about the purpose of using the Zoom platform is shown in Figure 4.

Analysis of the results showed that only 20% of users use the ZOOM platform for communication, 94% for study (Figure 4).

Given the fact that 54% of respondents are students, this figure is not surprising, since the learning process both online and offline implies communication between the teacher and students.

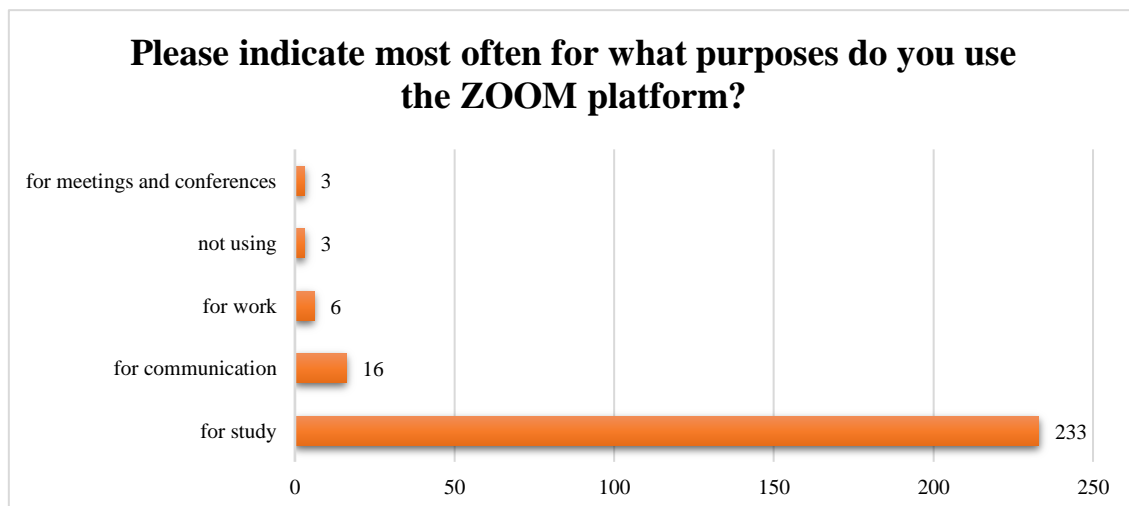


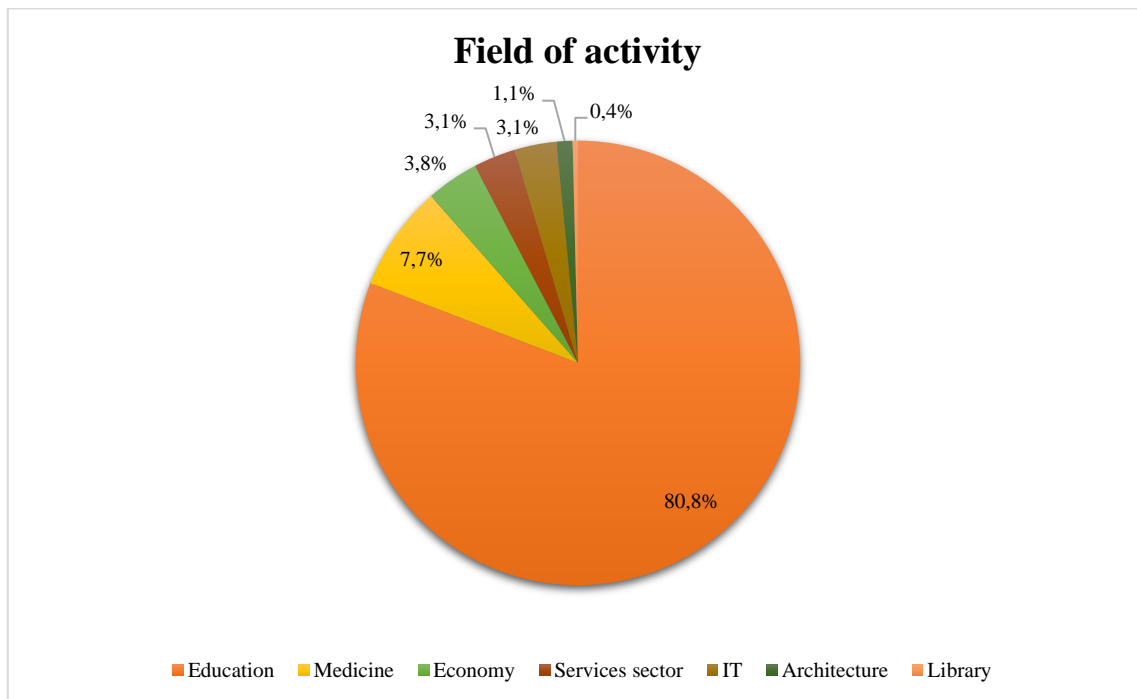
Figure 4. The frequency of respondents' responses about the purpose of using the Zoom platform.

The results of the analysis of the representation of employment areas in online communication are reflected in the diagram in Fig. 5. The diagram shows an imbalance in the use of digital platforms in communication, where a large degree of manifestation belongs only to the field of education.

An analysis of the sphere of employment of employees showed that the main part of the

respondents is employed in the field of education - 80.8%, 7.7% - in medicine, 3.8% - in the economic sphere, about 7% - in the service sector and other areas of activity (Figure 5).

Insignificant correlations were found between the frequency of use of the platform and the field of activity.



**Figure 5.** Analysis of the employment sphere of respondents who actively use online communication

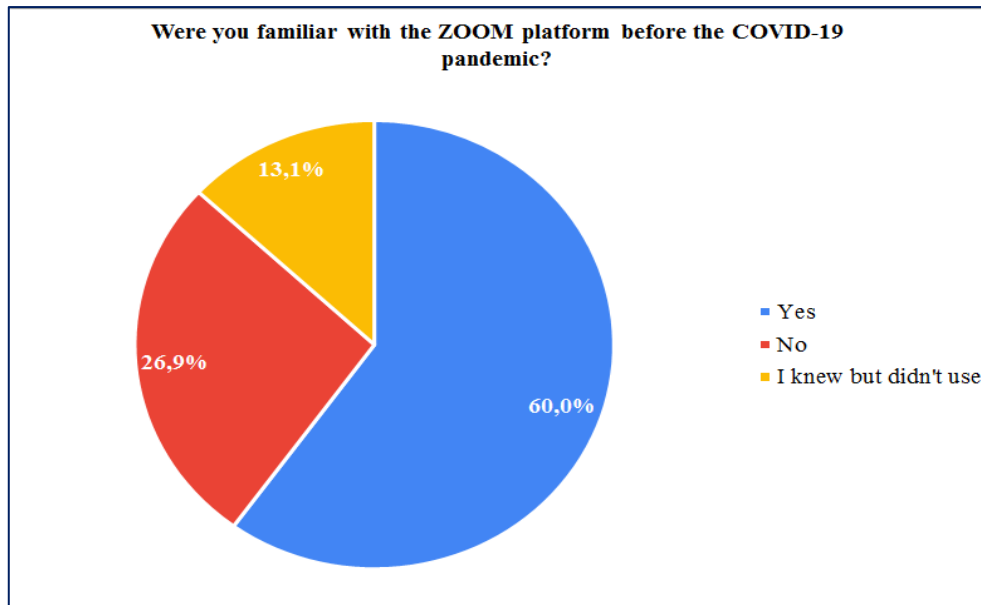
The new form of communication has greatly improved communication capabilities, overcoming the limitations of time and space. However, mediatized communication has also been modified by communication rules, such as those associated with proxemics. Proxemics implies a direct proportionality between the geometric peripersonal/extrapersonal space and various types of interpersonal acquaintance: intimate, personal, social and public. (Paradisi et al., 2021; Temirgalinova et al., 2021)

Many people still ignore communication in the online world, but digital skills are necessary to ensure the timely exchange of information, as

much of our daily life involves the use of computer-mediated interaction.

The dynamics of respondents' responses about using the Zoom platform before the COVID-19 pandemic is shown in Fig.6, illustrating the degree of ownership of the digital platform tool for communication. An interesting fact was revealed that 60% of the participants in the experiment were familiar with the ZOOM platform before the pandemic, 13.1% knew about the platform, but did not use it before the pandemic, and only 26.9% did not have information about the services of this platform (Figure 6).

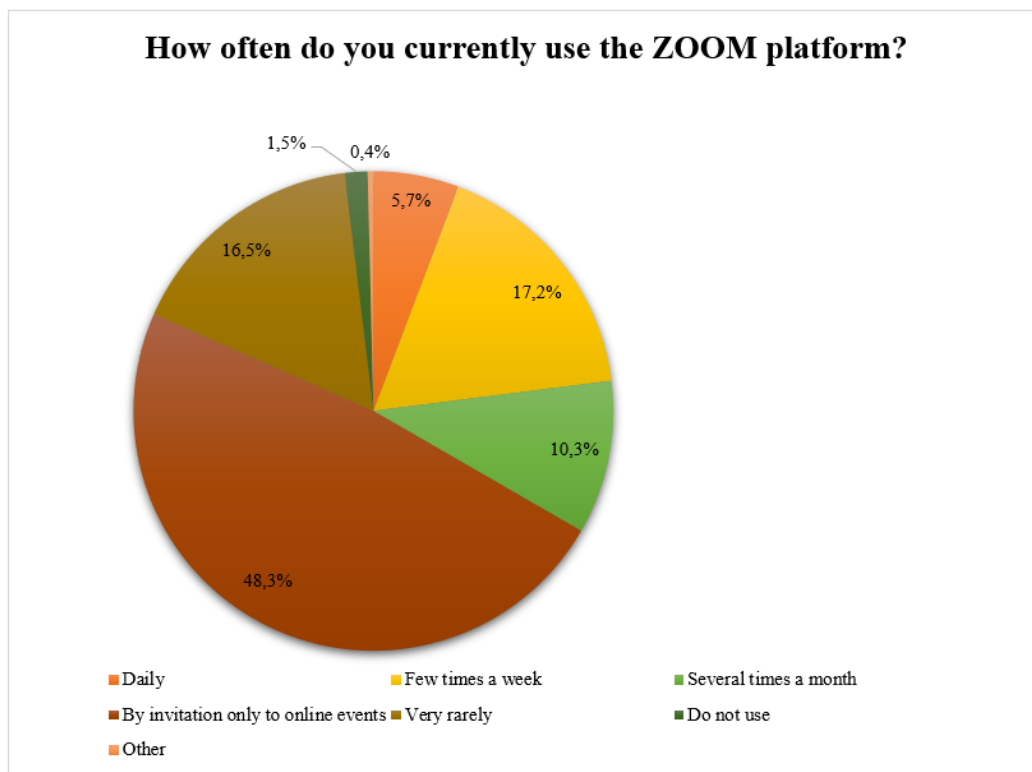




**Figure 6.** Dynamics of respondents' responses about using the Zoom platform before the COVID-19 pandemic

The following chart shows that the platform is in demand by respondents, despite the transition to normal operation and traditional forms of education. So, 5.7% use daily, 17.2% - several

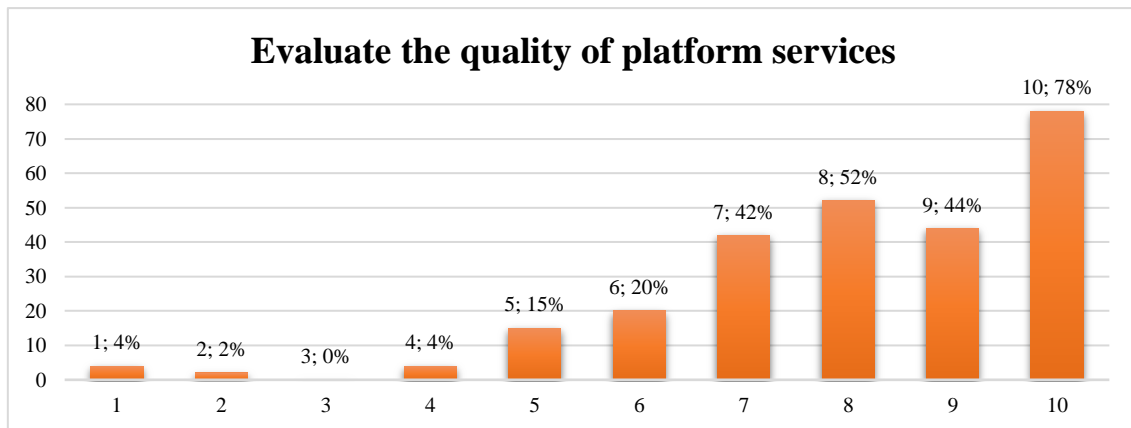
times a week, 10.3% - several times a month, 48.3% - if necessary, participate in online events, 16.5% of respondents use very rarely. And only 1.5% do not use the services at all. (Figure 7)



**Figure 7.** Active use of the digital platform for communication and work in the post-covid time

Consequently, the ZOOM platform does not lose its relevance even after the pandemic, and the

platform's online services are in demand by more than 90% of respondents.



**Figure 8.** Assessment of the quality of service of the platform

According to the survey participants, the average platform service quality score is 8.07 points, which is a good indicator in the presence of other competing platforms (Figure 8). Let's analyze the tools thanks to which the platform was able to establish itself so highly.

Considering that online communication is oral or written visualized interaction between people that takes place over the Internet, it can sometimes be difficult to choose the most appropriate communication media. Although there are plenty of tools for online communication.

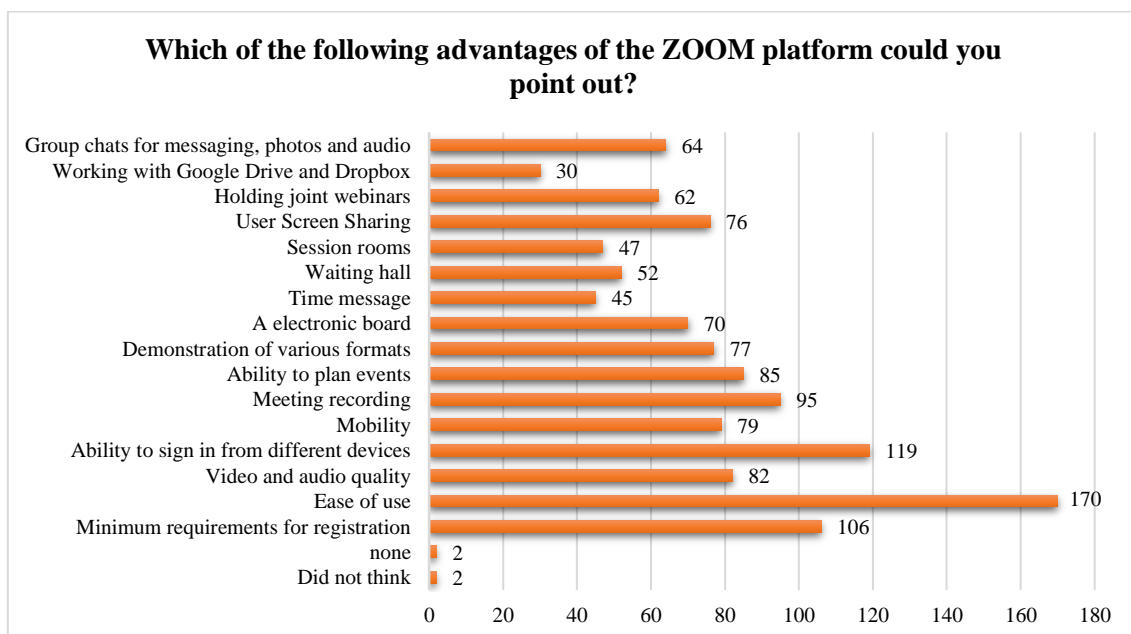
During the survey, respondents identified a number of obvious advantages of online communication that should be considered when planning an online interaction strategy.

According to the respondents, the ease of use of the ZOOM platform (clear interface, navigation, etc.) attracts them first of all (Figure 9).

The second criterion was the ability to log in from different devices, which is very important in the era of smartphone addiction. Compared to installing and downloading other applications, users can quickly access the platform with a minimum of registration requirements, which is a very attractive advantage.

Respondents also highlighted the possibility of recording online events, which allows archiving important information and sharing it in a convenient format.

Less attractive, but nevertheless important, respondents noted such advantages of the program as the quality of communication and sound, mobility, the possibility of scheduling meetings and sharing the screens of all participants.



**Figure 9.** Dynamics of respondents' responses about the gradation of the advantages of the Zoom platform

When asked what platform you would recommend for effective online communication, 11% of respondents indicated MS Teams, Discord, Google Meet. Based on the above, we can conclude that today the ZOOM platform is popular among respondents.

ZOOM provides a wide range of functionalities that meet the needs of users at a high level.

### Discussion

Advances in digital technology are having a profound impact on interpersonal communication. The natural face-to-face modality is now often replaced by interaction through video-mediated online communication platforms (Zhang et al., 2023). In addition, the duration of the restrictions associated with the COVID-19 emergency determines the acceleration of the spread and intensification of the use of media communication in a very short time (Karabulatova et al., 2021).

In fact, mediated communication is now ubiquitous for meetings and courses in various contexts such as work environments, education and, in general, for any activity involving social interaction, thereby defining rapid changes in people's daily lives (Andrushchenko, 2022; Kussepova et al., 2023; Okolyshev et al., 2022; Paradisi et al., 2021).

To implement effective communication and achieve your goals, it is important to choose the right tool. Using a tool that matches your communicative intention will help improve the quality of virtual communication (Yu, 2022). To build effective online communication, you need to make sure you choose the right type of tool (Yucedal, 2023; Zubanova et al., 2021).

Despite its popularity in recent years, online communication is considered an innovation in both educational and social contexts. Obviously, online communication cannot replace the face-to-face interaction process. However, online communication offers many benefits, making it a very powerful medium for communication among members of society.

They are the following:

- Flexible access to participation at any time and in any convenient place (Zubanova et al., 2021);
- In the online environment, communicants enjoy equal and varied opportunities to share thoughts and ideas, such as commenting on

posts, videos or participating in discussion forums (Zhylin et al., 2023);

- The ability to save video recordings of online discussions for reuse and deeper understanding (Zhang et al., 2023);
- Advantage of transparency due to posting, archiving and accessibility of comments to discussions (Temirgalinova et al., 2021);
- Online communication provides a place for the exchange of experience, as it allows you to demonstrate examples that are not far from the reality of everyday life (Grushevskaya et al., 2018; Yu, 2022);
- Online communication allows each participant to make a choice regarding the quality and quantity of their participation, equally possible a quick question or comment, as well as a long report for reflection (Karabulatova et al., 2021);
- Internet communication, based on a well-thought-out and proven strategy, can meet the expectations of communicators and move into the status of a traditional form of communication with permanent and temporary participants (Aipova et al., 2021);
- Online communication can smoothly move to learning and solving the pressing problems of society (Kussepova et al., 2023).

The psycholinguistic impact of online educational communication is based on the latent emotive evaluation of verbal, nonverbal and paraverbal means used by communicants. The combination of these components allows you to "juggle" meanings, directing the perception vector in a given direction towards ensuring the effectiveness of the educational process in the situation of online education.

### Conclusions

The possibility of organizing computer-mediated communication confirms the fact that we now live in a unique time that allows us to modify the forms and means of communicative interaction with society and the surrounding reality, as a result of which the language is also undergoing significant changes.

Effective computer communication requires adherence to online communication norms that guarantee the success of the interaction. Such norms make virtual communication certain and predictable. Also, norms can be set at the individual level and take into account, say, the preferred response time, style and tone of communication.

In this context, in the period of globalization and integration, it is important to consider various strategies for influencing communication participants.

Therefore, further study of the qualitative and quantitative indicators of various online software tools is of interest.

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