The Use of Modern Communication Platforms for the Organization of Online Education

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Abstract
The article presents information about the relevance of implementing online learning as one of the methods of organizing the educational process. The problem of organizing online education is described. An analysis of the foreign experience of higher education institutions, structures, and organizations was carried out. The substantiation of the definition of online education: purpose, tasks, objects was carried out. An overview of popular online platforms for training was conducted. The results of a survey of the target audience (students, parents, teachers and schoolchildren) to find the most convenient platform for organizing the educational process are given. Conclusions regarding the results of the conducted research are formulated.

Keywords 1
Learner, online education, educational process, teacher, parents, platforms, interaction.

1. Introduction

The direction of education continues to open up new opportunities for us. In addition to acquiring new knowledge, developing, and improving the qualification level, modern methods of organizing the learning process include many tools. These are platforms for video communication, communication, spaces for checking and performing tasks, etc. Accordingly, we face the task of researching modern communication tools to support online learning. That is, to determine the purpose of online learning, tasks, objects that directly participate in the learning process and present effective tools.

However, today the direction of providing educational services on the territory of Ukraine is still imperfect. Various mechanisms for improving the provision of educational services are being implemented. They are selected based on the needs of the modern acquirer. According to the assessment of the applicants' needs as of August 9, 2022 by the Ministry of Education and Science of Ukraine, which was formed based on the responses of 749 educational institutions from all regions of Ukraine. Except for the Autonomous Republic of Crimea, in particular, 252 institutions of higher education and 497 institutions of professional pre-higher education (Fig. 1). In the following areas [17]:

- the education process;
- the educational infrastructure;
- the needs of education seekers, teachers and researchers from among internally displaced persons;
- professional needs of teachers;
- needs for mental health support and psychosocial assistance;
- financial management.
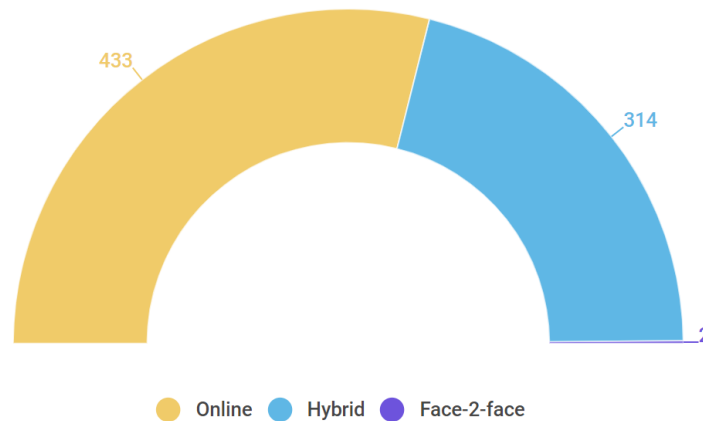
Figure 1. The results of the evaluation of educational institutions regarding the format of education

The obtained results tell us that most institutions switched to online education in connection with the unstable situation in Ukraine. Considering this, the need to research modern communication platforms for the organization of online forms of education is growing.

2. Related Works

Many specialists, scientists and teachers worked on finding mechanisms to improve online learning organization. An important task for them was to teach without additional costs and as close as possible to quality in an offline form. Some tried to overcome external factors, thus adapting the educational direction, the Covid-19 pandemic. Others tried to explain the problems that arose during the stages of its installation. Formed algorithms that could prevent the appearance of technical errors in educational systems. The competences of teachers, which they must possess in order to meet the modern challenges of the educational direction, were studied. Practiced new training courses, certificate programs, platforms, expert evaluations, motivational programs and much more on the territory of Ukraine and much more positive foreign practices. In the next part of the material, some of the scientific works will be presented.

Studying the attitudes of society in the regions of South Asia to adapt to quarantine restrictions due to the rapid spread of the Covid-19 pandemic, scientists have drawn attention to a very important problem. The essence of the problem lies in the lack of proper access to the developed platform for people living in remote regions. An analysis of published public information was carried out using the Drichlet, which is used in machine learning [16].

Regarding the unpreparedness of the organization of online education during the spread of Covid-19, one of the universities of Ukraine noted, in particular, attention was focused on the following problem areas:

- Virtual anxiety during the first and second wave of the spread of the virus;
- Incompetence in the use of information and communication technologies among students and teachers.

They also tried to reveal ways to overcome this anxiety, the need to introduce technological and psychological training [19].

The need for digital economy skills became a problem for economics students during the spread of the effects of the virus infection around the world. Accordingly, eight databases with various strategies, methods, and programs for preparing applicants for online learning (CINAHL, Education Research Complete, EMBASE, ERIC, MEDLINE, Scopus, Social Work Abstracts, and Web of Science) were among the sources of search for possible solutions to this task. After that, the course was created and its quality was evaluated: features of conducting video calls, assistance, exams, etc. The positive reviews of the acquirers confirmed its effectiveness [1].

Another approach to organizing the online learning process is to create an online exam. Having thus determined the needs of students by the survey method. Applying modeling methods, the necessary

connections were determined, and an alternative form of conducting a physical education lesson was formed [2].

MOOC (Massive open online course) is a new trend in the organization of mass education, which makes many useful tools available. A feature of the work is flexibility, lightness, environment for budgetary training.

The experience of the medical field of online education under the new system - massive open courses (MOOC). This practice was implemented using the unified theory of acceptance and use of technology (UTAUT). The results of the work were positive, as the participants appreciated the accessibility of the system, interactive methods, the possibility of working with the processing of materials that were regularly updated. Positive feedback contributed to the implementation of the future integration of mass open courses for medical workers [8].

Another discovery of foreign experience was the online course ARPIT (Annual Refresher Program In Teaching) from the field of library and information science based on the same MOOC technology. The Government of India created the SWAYAM (Study Webs of Active Learning for Young Aspiring Minds) platform to assist learners with professional development and development opportunities. With this in mind, a course was created, which is available on the educational platform and on the YouTube channel. Thus, giving the opportunity to specialists to develop their professional capabilities [10].

In foreign experience, the online education system also did not always meet all standards, for example in Spain. A set of measures was developed regarding competences, qualification level programs, and the relevant direction of education. Everything was developed taking into account the identified problems to provide information and communication to the educational process not only in the organization, but also to create an educational environment [12].

Online training for teachers is also needed. This is evidenced by the practice of the developed evaluation system of the certificate program of online pedagogical education. One of the educational institutions implemented the Moodle learning management system for certain courses. Teachers had to evaluate the possibilities of the environment, which are very valuable for other educational institutions [5].

The practice of implementing an online course in vocal direction using the capabilities of the Azure-PaaS platform. Scientists try to apply intelligent PPT based on WIFI technology combination with the platform. They provided an opportunity to try out the online course. After that, a student survey was conducted, which helped in the further integration of the course [11].

The teacher's competence is an important element in his educational activities. In order to work on increasing the level of competence, a teacher of any educational structure must work on his own development. After all, incompetence lowers his level of influence among applicants. Therefore, scientists of various fields are trying to investigate possible mechanisms for improving the qualifications of teachers, selecting various software tools, and creating trainings that would help them adapt to the modern world of information technologies [20].

Emphasizing the possibilities of online education, which are used in the provision of educational services, there is also self-assessment. It is interesting how students can independently analyze their learning activity. That is why the practice of online self-assessment was investigated in one of the educational practices. The test of the effectiveness of this method was the assessment of the students' writing skills. It was established that those students who underwent self-assessment improved their skills [2].

Online training does not exclude the content of the communication component. This is confirmed by the scientific work on determining the level of importance of online communication among master's level students of one of the universities. By creating a virtual community on the Facebook social network, students were united by common ideas, attitudes, and problems. They created a comfortable virtual environment of people united by a professional direction. However, they faced the problem of needing more people. This example confirms the importance of the communication component without which online learning cannot exist.

3. The justification of the definition of the concept of "online education"

Online learning is a process of acquiring knowledge to meet personal needs using modern software. That is, the need to improve the level of education in order to expand life opportunities in modern civilization. Since in different periods of the development of society, learning as a process of obtaining education was the key to solving problems, explaining phenomena that could not be explained by those who did not possess knowledge. Having substantiated the definition of the concept of "online education", we can formulate its following tasks:

1. The social interaction of a person with the surrounding world (formation of values, teamwork, cooperation with a teacher);
2. The possibility of choosing a direction that corresponds to a person's request;
3. Development of personality, competences, through knowledge, professional skills,
4. The use of modern educational methods, which are aimed at the ability to use additional tools and independently process the material;
5. Systematic of acquisition through the conduct of one's activities;
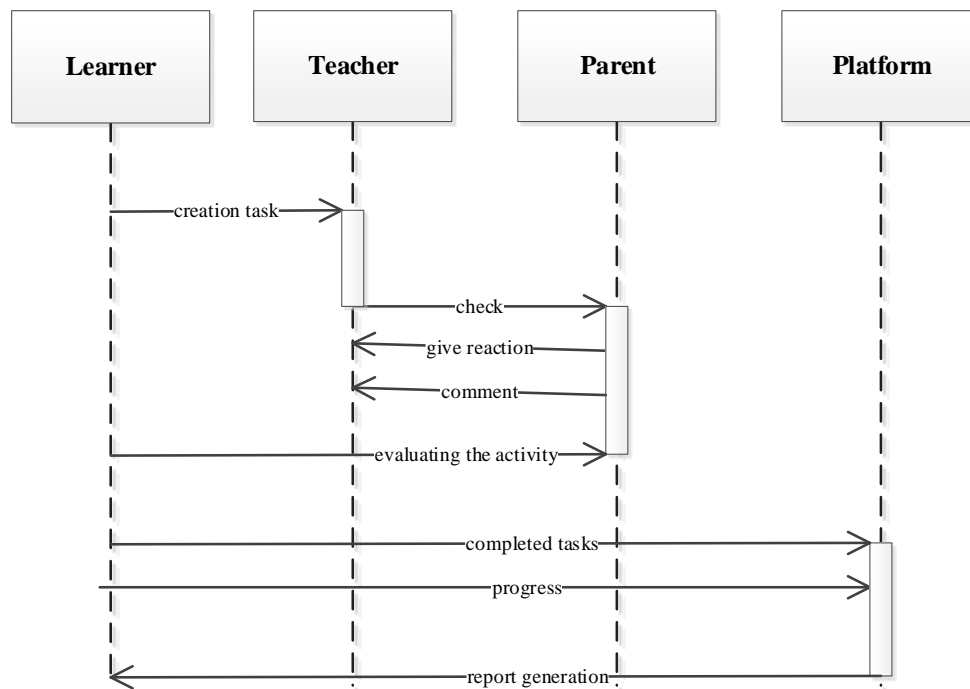6. Use of modern software.

3.1. Objects of online education

The learner, teacher and parents are the objects that participate in the learning process. The correctness of building interaction between these objects depends on how the learning process will be organized.

A learner is an object of the educational process who wants to gain knowledge in a certain direction, according to his needs. The applicant can decide the issues related to the training, namely the time, date, form, etc. How quickly he can learn that new material depends on the acquirer's skills. It should be noted that the age of the acquirer can be unlimited. The main thing is the desire to gain knowledge in the relevant field. If the applicant is self-sufficient, financial assistance from parents is not required. Education in this case is an opportunity to develop your personal skills in one direction or another.

The teacher is the object of the educational process, who is responsible for the quality of providing educational services to the student. In turn, he must possess the appropriate qualification level to confirm his knowledge of the field of teaching. He is engaged in the development of the presentation of the material and verification of its assimilation by the acquirer. He must also coordinate the training schedule. Regularly inform the applicant's parents about the applicant's success. To work closely with them to control the performance of tasks assigned to the learner.

Parents are the objects of the educational process, which create the need to provide educational services to the student in order to ensure him a worthy place in society with the appropriate qualification level. They are responsible for the control of the student in studying the educational material. In case of such necessity, they provide financial support for the educational obedience of the acquirer.

Figure 2. Algorithm of interaction of objects of the online learning process

The designed diagram shows how the objects described above can interact with each other using the features of the functionality of modern software tools (Fig. 2). The applicant must actively work on mastering new materials and perform homework that will be checked by the teacher. And parents will be able to control the entire learning process by monitoring their child's activity in the system.

4. Overview of modern communication platforms

The quality of the process depends on the means of optimizing the assimilation of new information by a person. Educational tools are elements that make the organization of teaching material easier, more accessible and more interesting for potential consumers. Considering this, today the learning process has no limitations, except for economic, political or state factors influencing society. Alternative solutions to such problems appear here, which allow you to receive or provide educational services continuously.

Mechanisms for providing educational services online include the following platforms, tools or information technologies that will become an auxiliary element in their organization.

Virtual communities are communities where members united by common interests interact with each other. The environment of virtual communities can help in building strong communication links between the objects of the educational process. By forming a kind of educational virtual community of a certain direction, institution or social group, participants can exchange useful information for them. Modern practitioners began to start educational communities of educational institutions to promote their services on the Internet. Given that, virtual communities are now the most popular space for finding a potential target audience.

The target audience of educational virtual communities are schoolchildren and students who express a desire to obtain additional knowledge in the direction they need. It is important for them to constantly maintain their attention with interesting information content. The possibility of issuing a subscription fee for advertising attracts the attention of millions of users of popular social networks (Facebook, Instagram, Twitter, etc.).

It is also possible to form such an educational community using built-in messaging systems. For this, it is enough to simply build interaction with users and include their "messenger". That is, here we can already mention various forms of activity within virtual communities: messengers, chatbots, blogs and forums.

A **chatbot** is a communication in the form of messages to which the recruiter cannot respond in the wrong form. Such a chat contains programmed responses, reminders, and links to relevant resources. Private online educational service organizations use chatbots to structure the learning process. When it is necessary to work individually with each participant and analyze his success. To participate in the chatbot, you need to go through the registration process or enter a keyword to start a conversation. Chatbots will be convenient for users who want to organize their time, want to have such a "friend" in their studies.

Analyzing the type of virtual blog community in the field of educational services, it is worth describing the specifics of its work. First of all this is a place for publishing information by a person who has pedagogical or scientific qualifications in the field of education. The blog owner forms a content plan that will attract the attention of the audience. Popular examples of blogs are personal pages of heads of educational organizations, where they talk about their work, advertise their services and simply share interesting offers. Such types of virtual ones will be useful for those who seek development and are ready to learn on their own.

A **forum** is a space for exchanging messages, taking into account the information request of the user. The advantage of using forums is the possibility of communication with a large number of people at the same time. These persons can be both experts and ordinary users competent in that matter. That is, the one who creates a topic for discussion wants to hear everyone's opinion and find an answer to his question based on their answers.

One example of the use of such technology is the Telegram channel created by the OkStudy platform, where the user can manage subscriptions to their channel, as well as limited free usage [14].

The **distance education school** allows students and teachers to acquire knowledge at a time convenient for them. Platforms publish ready-made video lessons, additional materials useful resources to meet the various needs of applicants. Among the list of institutions prepared by the Ministry of Education and Science of Ukraine that can provide such services, for example, "The Atmospherna School" provides access to educational materials of the "Listener" package not only for schoolchildren, but also for teachers. Using such initiatives, learning can take place from different parts of the world, as it is a member of the ICDE international association with headquarters in Oslo, Norway, which unites more than 200 educational institutions from more than 80 countries of the world. This opens up many opportunities for their students [7].

Another example of the distance school platform "Optima", which opened access to educational materials until the end of 2022 [9]:

- access to the educational platform in the "External with access to educational material" mode;
- the opportunity to use modern educational materials;
- free use of the demo version;
- try distance learning and continue studying; use your results for admission and continuing education;
- opportunity to participate and listen to webinars.

Video communication. This type of system is no less interesting to use. They are slightly different from the previous ones, as they require basic configuration skills. Nevertheless, with their use, the teacher can provide an explanation of the material for the acquirer, for this only an excellent quality of the network is necessary. Another advantage of using this type of software is the ability to communicate using a microphone or chat. Many different structures use them, because users who could not join in time can view the recording. For example, Platform "A+" created an online project of the opportunity to join the classes held by their school for children during the martial law in Ukraine [14].

Applications for education. The software is developed by companies to facilitate the organization of the learning process. They allow you to interact with schoolchildren: check and monitor assignments, discuss organizational and extracurricular issues, share useful materials, and much more. For example, Google Class from Google Apps for Education, which, in addition to the relationship between the teacher and the student, allows the use of all applications. It is also worth mentioning the tools designed to organize your study time. They allow you to optimize the child's time and use your time with benefit, for example, School.

Distance learning systems. They allow you to create a virtual learning environment with a convenient interface and a wide range of opportunities for organizing the learning process. The

convenience of such a system lies in the systematization of all materials, users and tasks. Reporting on the success of each user is convenient, it is only necessary to form the login parameters and add it to the specified community. An example of such a system is Moodle, the main purpose of which is to organize distance courses and support face-to-face learning. Contains many useful tools for computerization of educational processes. The training course is the main training unit of the system. It has a built-in course designer and supports, among other things, asynchronous and blended learning, gamification, mobile learning, SCORM standards, synchronous learning, video conferencing and much more. Many types of plugins are available [6].

The Lviv Polytechnic National University has experience using the Moodle learning management system. Each of the institutes has formed folders with a list of specialties. Each of them has a corresponding course of students. For each of them, an account linked to the university's corporate mail was created. The system is very convenient to use. Such types of systems as Moodle make it possible to qualitatively organize the work of such a large structure as a university, which is easily updated. Performance reporting can be maintained for each student. Also, student participants can use educational materials during the entire period of studying the discipline.

A great alternative for offline education today is a new Ukrainian school from the Ministry of Education and Science of Ukraine. The main difference from the schools we are used to is providing students with practical skills that are based on the knowledge they already receive. In accordance with this program, the certification of teaching staff was also launched as an incentive to work on improving their professional skills. Forming new approaches in an online course on the EdEra educational platform. Judging by this, we can observe that online education is more accessible even for teachers in this form [14].

Online education opens up many more possibilities:

- use of modern software;
- ability to acquire knowledge from several courses at the same time;
- balanced use of human resources;
- ability to interact at a distance;
- interactive classes are also possible online;
- availability from any corner of the world.

5. Data for analysis

Accordingly, we need to analyze the state of online learning provision as of today. For a better understanding of the needs of objects of the educational process, we will define their criteria, according to which the analysis will be carried out: self-learning, monitoring, communicativeness, analysis and innovativeness.

Self-learning is one of the criteria for evaluating software by online learning objects, which allows you to evaluate the capabilities of each of the tools for the self-organization of the learning process by the acquirer.

Monitoring is one of the criteria for evaluating software by online learning facilities, regarding the ability to track, analyze, add recommendations, etc. in the learning environment.

Communicability is one of the criteria for evaluating software by online learning objects, regarding compliance with the functional possibilities of interaction in the middle of the software intended for training.

Analysis is one of the criteria for evaluating the software by online learning objects, presented in the software and allowing to conduct research on each of the objects or subjects of learning.

Innovativeness is one of the criteria for evaluating the software of online learning facilities, which arises in accordance with the program on the organization of training and trends in the development of information technologies.

In particular, a sample survey of students of one of the schools, students of a higher education institution, their parents and teachers was conducted. Since they are participants in online training. The total number of respondents was 200 people, including 40 schoolchildren, 40 students, 40 parents of schoolchildren, 40 parents of students, 20 teachers of a higher education institution and 20 teachers of a secondary education institution. The questionnaire contained information about the participants,

namely: name, e-mail, proposed criteria of platforms for organizing online training and the opportunity to propose your own option.

Online learning organization platforms were determined to be suitable for each criterion (Fig. 3). Considering this, virtual communities and chat bots received the most evaluations for providing the communication criterion (60 responses). Distance school, according to the respondents, most closely meets the criterion of analysis (55 answers). Taking into account the criterion of self-study, the first position is occupied by distance learning applications (50 answers). According to the monitoring criterion, distance-learning systems (50 responses) are the most responsive. According to innovative criteria, respondents gave preference to distance learning applications (55 responses).
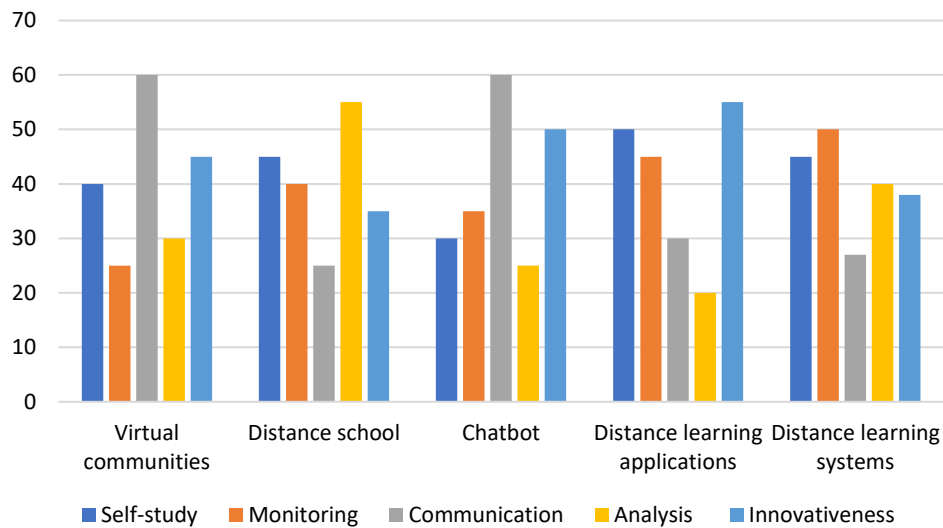
Figure 3. Survey results

In addition, based on the conducted survey, the preferences of the respondents regarding certain platforms for the organization of the learning process were determined. The results, which were formulated according to the theory of generations in the results of the materials.
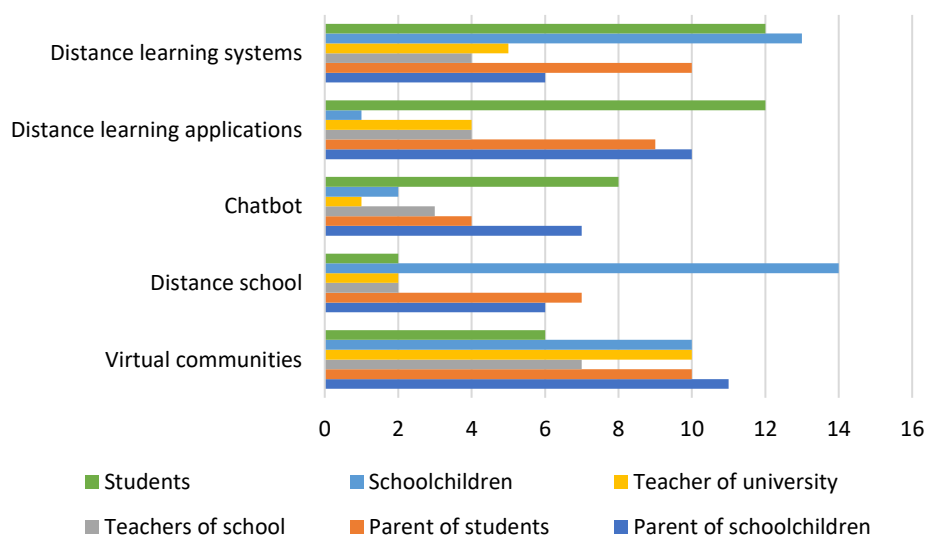
Figure 4. Survey results

From Fig. 4, we can see the readiness of the younger generation for innovative changes in the organization of online education, and in the older generation, slow adaptation to the new realities of information technologies.

6. Results/discussion

Based on the analysis of the organization's means by experts in the field of providing educational services, the following results were determined. The surveyed schoolchildren prefer to use innovative software that is proven, can work stably and organize the educational process. However, they do not trust modern virtual communities. Since the management of a large number of virtual communities does not meet the norms of the presentation of the educational direction. Students are more adapted to the realities of distance learning, as they have undergone such an adaptation process since the beginning of the Covid-19 pandemic. Studying in institutions of higher education in various fields of specialization, they perceive new implementations much easier, for them it is an interesting experience, new opportunities. The category of surveyed schoolchildren and students belongs to generation Z (1995-2013) according to their year of birth.

In contrast to generation Z, there is a category of people of generation X (1966-1976), who are not so easy to master the new information technologies offered by the world. The teachers and parents interviewed by us belong to this category. However, teachers try to implement modern teaching methods, attend advanced training courses, and visit environments where students spend most of their time. Parents are not quite ready to learn new skills, but a small number make an effort to be an example for their children (Fig. 3).

Regarding the criteria by which the survey was conducted, according to the respondents, virtual communities and chatbots will be the most effective means of communication. Since most people use them in their everyday life and they do not require additional learning skills. However, if we are talking about online training, then it must necessarily provide the possibility of self-learning, tracking of results (monitoring) and analysis. The fulfillment of these criteria for the use of virtual communities requires additional actions. And when we use distance learning systems, it will be easier to ensure such criteria. Accordingly, survey participants are convinced of the effectiveness of such platforms (Fig. 4).

The results of the survey confirm the relevance of the implementation of online education in Ukraine. It will be possible to implement these tasks through the introduction of new programs, courses, trainings, reference materials for objects of the educational process.

7. Conclusions

Summarizing the above, this article substantiated the essence, purpose, tasks, and objects of online learning as an opportunity to introduce an innovative component into the educational sphere. Attention is focused on the problems of introducing this form of education on the territory of Ukraine. An analysis of the scientific works of specialists working on improving the online process using modern information technologies was carried out. Accordingly, a model of the interaction of objects, which are important for its organization, was designed using the unified modeling language. It shows how they interact with each other and how modern software is important for online learning. The objects defined are acquirer, teacher, parent, and platform. An analysis of the most common platforms for improving the processes of obtaining, accessibility, flexibility in the implementation of training was presented. Platforms can be useful both for users of school age and for students of higher education institutions.

Based on the analysis, a survey of direct participants in the educational process was conducted according to the following criteria: self-study, monitoring, communication, analysis and innovativeness. Based on this analysis, it is possible to review who is most ready to implement new online learning platforms (Fig. 3). From the results, it was established that these are students and schoolchildren, as they belong to generation Z. Teachers need a little more time and motivation, but some of them have already decided to learn something new and interesting.

Taking into account the conducted analysis, it is possible to emphasize that for the organization of the online learning process between the acquirer-teacher objects, the determined criteria of the conducted analysis are important. After all, the most highly rated criteria by the respondents are: self-

learning, communicativeness and innovativeness. By applying the methodology of this research in selected educational institutions, the management will be able to address the main requests of the educational facilities and continue to develop new mechanisms for organizing the online learning process.

It should be noted that the obtained results of the survey analysis refer to a very narrow circle of respondents and are not universal. However, they allow us to understand the requests of online learning objects, to develop approaches, methods, and reforms that will contribute to its better organization. Based on the obtained results, we can formulate requirements, as well as develop research in this direction.

Accordingly, we see that the system of organizing online education still needs to be reformed. However, the positive results of the work of foreign structures already give good evaluations of potential users. Other structures of the educational sphere only need to work even more on improving the methods, platforms, and systems of organizing online education.

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