



COMMUNICATION AND COLLABORATION IN DISTANCE LEARNING

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Abstract: *The article deals with the analysis of communication and collaboration; the criteria of their effectiveness are described. Special attention is paid to distance learning, in the context of pandemic in particular. The role of communication and collaboration in distance learning has been studied. The experience of distance learning implementation in Borys Grinchenko Kyiv University has been described and the results of the students' survey on effectiveness of communication and collaboration with teachers and groupmates aimed at learning tasks fulfilment and problem solving during distance learning have been presented. IN addition, examples of communication and collaboration organization in distance learning have been provided.*

Keywords: communication, distance learning, types of communication, electronic communication, collaboration, electronic collaboration.

INTRODUCTION

Problem statement. Dynamic changes in the modern world require rethinking the current model of social communication and educational communication in particular. New sources of information, digital technologies development, different types of social network and artificial intelligence invention influence the choice of the means of communication and informational data transmission not only in everyday life, but also in the educational process. Modern worldwide challenges, including the Covid-19 pandemic, create a necessity for educational institutions to move to distance learning and set new tasks for all educational process participants, in particular to changes in learning interaction, communication and collaboration organization.

The aim of communication, especially in the learning process, is not only to transfer data from one person to another, but to render their meaning, which becomes information and knowledge itself. The result of correctly established communication must be an adequate understanding of received messages and data by those who are

involved in it. Therefore, the question of learning communication organization is important, in distance learning in particular, when the participants of the educational process have to choose correspondent methods and digital technologies for communication and collaboration to achieve learning goals when they are set correctly. The reality of distance learning during the pandemic showed that many teachers tended to avoid communication and collaboration with students and did not pay enough attention to organization of communication among students. Even if there have been tries to organize it, they could not direct it into necessary educational paths and estimate the contribution of each participant, as there was lack of experience in the organization of such learning activities and often also the rejection or often the refusal or misunderstanding of the use or digital technologies for communication and collaboration, their advantages and disadvantages.

In Borys Grinchenko Kyiv University a specialized system of teachers' qualification development was implemented which positively influenced the quality of distance learning organization during the quarantine period. That is why there is a need to share the results of learning communication and collaboration arrangement in distance learning.

Analysis of recent research and publications. In the formation of modern western theory of communication several stages or "generations" can be defined, which have some peculiarities in understanding of the communication phenomenon. In spite of the fact that there were researches carried out in the framework of different social sciences during the whole twentieth century (Shramm, 1997; Craig, 1999; Littlejohn, 2002), after World War II together with development of science and information technologies new approaches to communication phenomenon studies started to appear. It was specific for those approaches to consider communication as a way to transmit information, where the source of a message, the message itself, the recipient, the channel of transmission and noise were identified as necessary components. As an example the Shannon-Weaver mathematical model of communication (Shannon & Weaver, 1948) appropriated by communicative disciplines could be taken, where communication is described as a process of transmission and reception of information from one source to another (Craig, 1999). The model was modified in literature on communication and has become widespread as the information transmission model. This model is still widely used in communicative theory and practice, especially in public speaking and mass communication in spite of proven restrictions that accentuate linear and unidirectional character of communication (Craig, 1999; Miller, 2002; Griffin, 2003). Despite a wide range of directions in communication studies, the most important spots that are common in views on communication by different schools can be generalized. Communication is society constructing and meaning constructing process that runs in the defined context and with the help of using symbols, and during which community is created and self-perception is formed. These principles are applicable to digital and networked communication, as well as to the process that runs in an open digital social environment facilitated by verbal means of communication in most cases (texts, charts, audio and video files, digitized language text and images), which initiates the formation of internet society and a specific form of self-presentation.

Communication in education is experiencing changes due to the changes in learning objectives, implementation and utilization of new approaches to learning and rapidly changing requirements to graduates from educational institutions. Recent forced transition to distance learning has demonstrated it as the most effective way of providing equal access to education in the realities of modern life (the quarantine because of the Covid-19 pandemic), implementation of continuing education and lifelong learning, a way to democratization, humanization and variability, digitalization of the society. In Ukraine a number of scientists work in the distance learning field for many years, among them there are: V. Kukhareenko, T. Oleinik (2019), Morze, N., Varchenko-Trotsenko, L., Tiutiunnyk, A. (2018), M. Umryk (2009), O. Hlazunova, N. Morze (2008) and others. Most of their research is dedicated to study of theoretical notions of distance education, peculiarities of different LMS utilization and forms of didactic learning materials presentation. Only a few research is dedicated to the question of effective communication arrangement. Questions of distance learning as one of the directions of development of digital tools in education are addressed in research of such foreign scientists as L. Amhag, L. Hellström, M. Stigmar (2019), A. Saykili (2019), K. Harry, A. Khan (2000), A.P. Rovai (2004) and others.

Teachers' work in distance learning and by means of electronic interaction cannot be separated from communication. These two aspects are closely interconnected and interdependent. Communication and collaboration are connected in the same way. Communication is the process of messages exchange between two or more persons, interaction with the help of verbal and nonverbal means aimed at the transmission and reception of information. At the same time, collaboration assumes interconnected actions of individuals which are aimed at achieving common goals with mutual benefit for the parties involved. The question of collaboration, cooperation in education or "collaborative learning" was studied in works by famous Swiss psychologist and philosopher Jean Piaget who noted that collaboration in education plays an important role in constructive cognitive development of learners. His theory was extended in other scientific works, for example, Vygotsky's theory, where the importance of collaboration in supporting personal development is highlighted. An important contribution into modern pedagogic theory of joint learning was made by famous Ukrainian educationist A. Makarenko, who thought that the skill to communicate and collaborate with others plays the most important role in the process of socialization. The question of collaboration in learning development was studied by V. Dyachenko in the post-Soviet space (1991). However, collaboration in learning started getting real popularity only in the 1990s. Theoretical and practical background of collaboration in learning are studied in works by B. Smith, T. MacGregor (1992), M. McManus, R. Aiken (2016), L. El Hamamsy, W. Johal, T. Asselborn, J. Nasir, P. Dillenbourg (2019) and others.

In Borys Grinchenko Kyiv University, a number of scientists research the question of arrangement of educational communication and collaboration in distance learning (Morze N., Varchenko-Trotsenko L., Makhachashvili R. and others) and they are ready to share their experience of digital resources implementation as this question is not researched deeply enough including educational types of learning communi-

cation, defining its effectiveness, peculiarities of electronic communication and collaboration arrangement, etc.

The aim of the article is to analyze the ways of students and teachers' communication and collaboration skills formation in the process of distance learning, to describe the experience of digital communication and collaboration utilization in Borys Grinchenko Kyiv University, to research the results of the survey aimed at determination of needs, level of satisfaction and wishes concerning learning communication and collaboration arrangement in distance learning and at analysis of digital resources required for solution of the task. Solution of number of tasks contributed to achievement of the goal: analysis of different kinds of learning communication; utilization of digital instruments for communication and collaboration; determination of the criteria of estimation of effective students' communication in the learning process; determination of the ways to increase the positive motivation of teachers and students for electronic communication and collaboration.

1. THEORETICAL BACKGROUND

Distance learning has been implemented in Ukraine for about twenty years, starting in 2000 with state policy formation in "The concept of distance education development" and continuing with other legislative documents such as Regulations on distance education as revised in 2015 (the reading of the regulations renewal is being conducted at present) and recognition of distance education in the Higher Education Act as amended in 2019. However, distance learning has gained the highest relevance in the period of the pandemic. Distance learning is understood as individualized process of gaining knowledge, skills and ways of cognitive activity of a person, which is happening mostly by indirect interaction of remotely located participants of educational process in open environment which functions on the basis of modern psychological, pedagogical, information and communication technologies (<https://zakon.rada.gov.ua/laws/show/z0703-13#Text>).

Ukrainians have shown ten times higher interest in distance learning in the period of quarantine restrictions compared to the period before it according to the data of Google Trends:

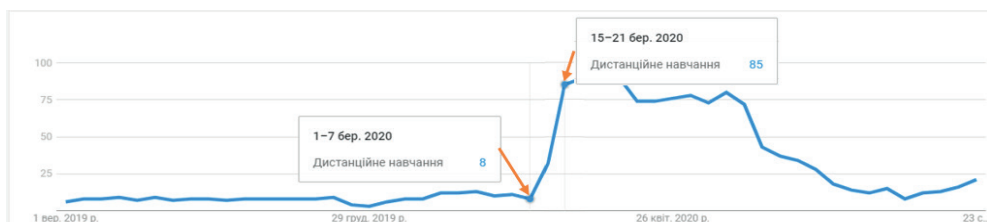


Figure 1. Interest of Ukrainians to distance learning according to the data of Google Trends

Source: <https://trends.google.com/trends/explore?geo=UA&q=%2Fm%2F02h32>.

Let us consider the models of distance learning organization according to Theories and Frameworks for Online Education (Picciano, 2017). Example of a teacher-led, fully online study. The course content is provided by a LMS (Learning Management System) or CMS (Content management system) along with other media and is used as needed by the teacher. The discussion board, blog, and wiki provide facilities for interaction among teachers and students, students and students, and students and content. In this course, the teacher could direct students to watch a fifteen-minute lecture available in the LMS database and then ask students to respond to a series of questions on the discussion board. Student responses can then be used as the basis for an interactive discussion board activity among students, guided by the teacher. The model also provides for reflection and collaborative activities (Figure 2). This model distinguishes students collaboration as a separate component.



Figure 2. Example of a Teacher-Led Fully Online Course

Source: Picciano, 2017

Requirements towards communication tools, according to the authors' estimation, comprise:

1. Type of communication (verbal)
2. Simple interface
3. Scheduling feature
4. File sharing
5. Timing
6. Environment
7. Technical architecture.

In pedagogical publication the standard types of interaction in the educational process are determined, which do not depend on the personality of a teacher, a subject, or the peculiarities of a group of students. They are: rendering knowledge by a teacher and perception (rejection) the knowledge by students; learning activities arrangement (joint search of answers to the questions in the plan by a teacher and students; arrangement of students' independent activity by a teacher, etc.); evaluation of students' level of training, readiness for exams, future professional activity.

In the educational process communication is tightly connected to collaboration as collaboration is aimed at achieving some result, but it is impossible without communication. Collaboration always involves work in groups or pairs. There does not have to be a product as a result of communication, but collaboration requires the creation of a joint product as an important criterion.

Collaboration includes coordination of efforts that is achieved by teaming-up. Important aspects of collaboration in the educational process are making common decisions and participation of everyone in achieving common goals. Joint decisions are the decisions that determine content, process or result (product) of students' activities. Working together students have to use their knowledge to make a joint decision that influences a common result, to plan their joint decisions according to the goal, that is they have to define what and when they are going to do, which instruments they are going to use, they have to define roles and responsibilities of each member of the group, to insure own contribution into making joint decision and receiving high quality joint product.

To the main components that define electronic collaboration of educational process participants belong (Morze, Varchenko, Smyrnova-Trybulska, 2015):

- Common task that can be divided into parts;
- A list of roles that help to fulfil separate parts of a common task;
- Digital instruments for the task fulfilment;
- People involved into implementation of the common task;
- Defined competences that people involved in collaboration have to possess.

The aim of joint activity is interdependence. The indicator of effective collaboration is a combination of the main criteria: work, common responsibility, common decision making, interdependent work.

Students' activities are interdependent when all the students take part in the group work to achieve the overall result. Most interdependent operating results involve two levels of responsibility:

- *Individual* responsibility: every member of the group (team) is responsible for the task they have to perform within the framework of the main task. The role of each student in the group is important.
- *Group* responsibility: students have to work together to achieve the final product or result. Students have to communicate, discuss and agree about the process, design, conclusions and results of their activity.

Distance learning implies electronic collaboration only, which we understand as a set of actions aimed at supporting the interaction of people, who work at solving the same common tasks, in an electronic way with the help of the internet.

Two following groups belong to the main types of communicative collaboration (Morze, Makhachashvili, Smyrnova-Trybulska, 2016):

1. Relationship oriented: Affinity networks, Learning communities
2. Task oriented: Communities of Practice, Project Communities.

Accordingly, communicative collaboration quality requirement can be identified as (Morze, Makhachashvili, Smyrnova-Trybulska, 2016):

Social Cooperation:

The cooperation sequences in the online course should especially focus on the integration of discursive course settings and controversial topics. Not the social aspect is emphasized here but the active knowledge creation in argumentative

Discursive Cooperation:

The cooperation sequences in the online course should especially focus on the integration of discursive course settings and controversial topics. Not the social aspect is emphasized here but the active knowledge creation is argumentative.

Participants activities in digital communication and collaboration can be described through the competences and digital skills described in «The Digital Competence Framework» (Carretero, Vuorikari, Punie, 2017) below for the sphere “Communication and collaboration” (Table 1).

Formation of above mentioned skills and competences is possible with the help of systematic use of digital instruments and services such as e-mail, social networks, blogs, wiki, common internet documents, messengers, web-conferences, etc. That allows distance learning participants to communicate and solve collective tasks at any time and irrespective of location.

The systematic use of digital technologies in Borys Grinchenko Kyiv University faced numerous challenges because of low level of teachers and students’ digital competence formation (Morze N., Vember V., Gladun M.). The received results showed that students were more interested in utilization of digital technologies than teachers (Morze N., Gladun M., Vasylenko S.). The system of teachers postgraduate education required to include studying electronic documents, instruments for scientific communication, messages exchange, learning process management, work arrangement and attention had to be concentrated on demonstration of mobile devices usability in the learning process. The model of teachers postgraduate education was designed for digital transformation of educational process (Figure 3).

Table 1

The competences and digital skills according to «The Digital Competence Framework»

Digital competences	Digital skills
Interaction with the help of digital technologies	Interact with the help of different digital technologies and understand the means of digital communication in certain context
Digital technologies exchange	Exchange data, information and digital content with other people with the help of digital technologies
Implementation of civic stance with the help of digital technologies	Take part in civil life by using state and private digital services; look for possibilities for own development and participation in citizenship with the help of digital technologies
Collaboration with the help of digital technologies	Use digital instruments and technologies for social processes, joint building and creation of resources and knowledge
Netiquette (Network etiquette)	Understand behaviour norms and know-how utilizing digital technologies and interacting in digital environments; adapt communicative strategies to definite audience and understand cultural and mental diversity in digital environments
Digital identity management	Create and manage one or several digital identities, be able to protect own reputation, work with data created with the help of several digital means, environments and services

Source: Own work based on Carretero, Vuorikari, Punie, 2017.

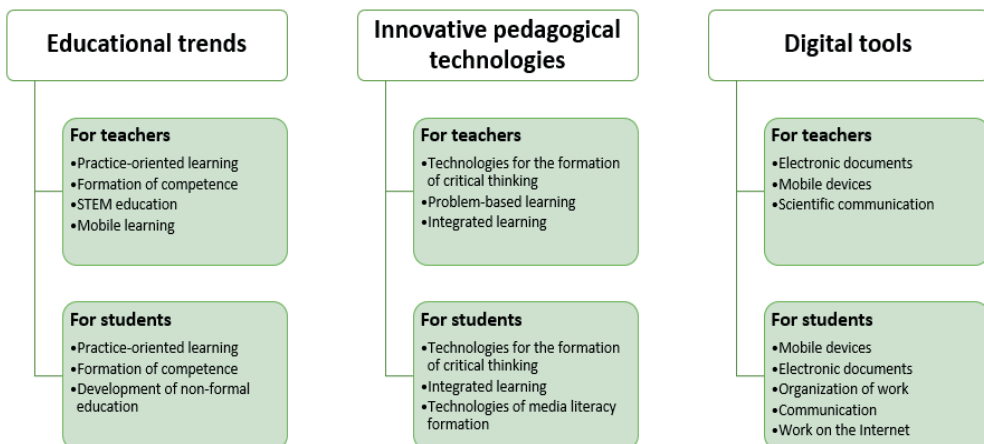


Figure 3. The model of teachers postgraduate education for digital competence development

Source: Own work.

Teachers of Borys Grinchenko Kyiv University have a series of trainings (ICT module in postgraduate education) to increase their level of digital competence. For example, advanced training of academic staff in the Digital Module is in the following modules: Topic 1. Modern educational trends and ways to implement innovative in the educational process technologies. 21st Century Skills and Digital Skills

Topic 2. Blended and online learning, E-learning technologies. Resources for creating content and criteria for its evaluation

Topic 3. Online services and digital technologies for effective communication

Topic 4. Online services and digital technologies for effective cooperation

Topic 5. Online services and digital technologies for formative assessment

First-year students take the course “University studios” at the beginning of their studies where one of the modules is dedicated to the work with e-resources of the university. The subject „University Studies“ contains one of the modules, which is devoted to the formation of digital competence. Lecture: Information environment of the university. Practical works: Work with information resources on the Internet. Creation of Smart University. Electronic resources of the university.

In particular, every subject has an e-course where teachers place theoretical information, tasks, create forums for discussions, place links for online interaction arrangement, etc.

All above mentioned approaches allow not only to increase digital competence of educational process participants, but also to implement learning communication and collaboration during distance learning, Its effectiveness was analysed and described in the article.

2. RESEARCH METHODS

To research the peculiarities of learning communication and collaboration arrangement in distance learning a complex of theoretical (analysis and synthesis of Ukrainian and foreign scientific, pedagogical and methodological sources on the article’s topic) and empirical (survey of students on learning communication and collaboration arrangement) methods and analysis of the received data. Students of Borys Grinchenko Kyiv University took part in the survey within the framework of the Modernization of Pedagogical Higher Education by Innovative Teaching Instruments. MoPED – KA2 CBHE – 586098-EPP-1-2017-1-UA-EPPKA2-CBHE-JP.

3. RESEARCH RESULTS

To define the needs, the level of satisfaction and wishes considering learning communication and collaboration arrangement in distance learning and analysis of digital instruments for educational goals achievement the survey of students was carried out (<https://docs.google.com/forms/d/1xotMSAWnC6cunWEeTIjKQE7kWZhBC7RM-Cpmdqn879-Y/edit#responses>). 57 respondents, who studied distantly, took part in the survey (73,7% Bachelor degree students and 26,3% Master degree students of Pedagogical Institute, Faculty of Information Technology and Management, Journalism Institute, Institute of Human Sciences). They were offered to evaluate the effect-

iveness of interpersonal, group and mass communication and collaboration, project work arrangement and digital instrument utilization to support the activities. The students noted a high level of effectiveness of communication with teachers in the period of distance learning during the quarantine (Figure 4).

In your opinion, was your communication with the teacher effective during the distance learning period during quarantine?

57 answers

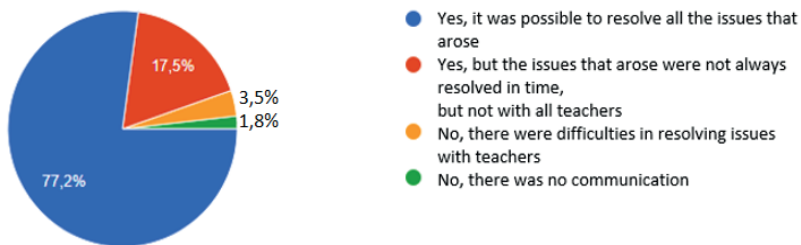


Figure 4. Results of the survey on effectiveness of communication with teachers

Source: Own work.

At the same time, in general the students did not have any difficulties in answering questions with groupmates (Figure 5).

In your opinion, was your communication with the teacher effective during the distance learning during quarantine?

57 answers

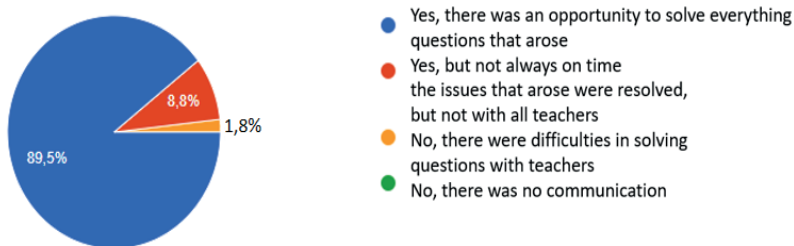


Figure 5. Results of the survey on effectiveness of communication among students

Source: Own work.

The survey showed that there was a high level of involvement students into instant interpersonal communication with groupmates (73%), group communication with teachers (56%), mass communication (49%) and delayed interpersonal communication with teachers (47%). We have to note low frequency of communication between students and representatives of (educational units (no communication – 11%, rare communication – 13%) (Figure 6).

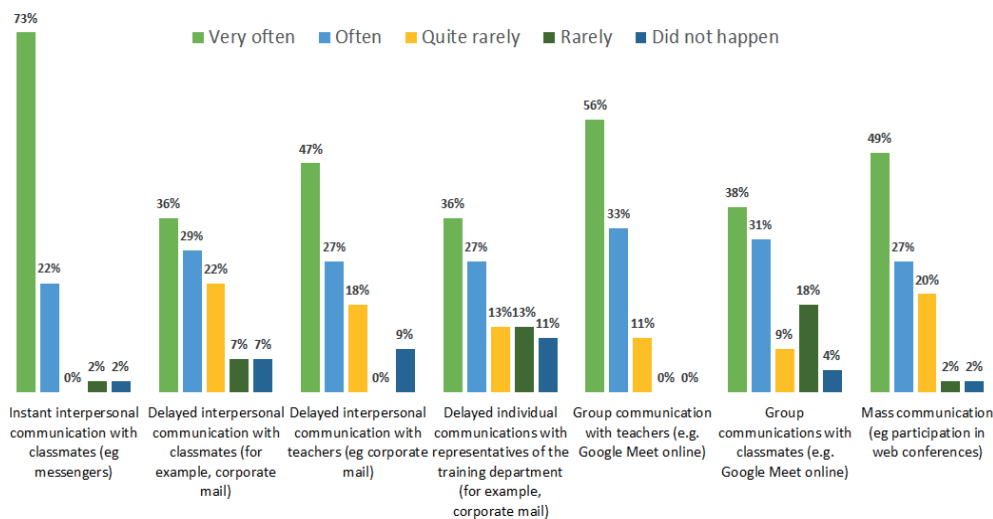


Figure 6. Frequency of different types of communication arrangements during distance education

Source: Own work.

The questionnaires analysis demonstrates even distribution of communication with teachers according to types of learning activities. The students had possibility to communicate with teachers not only during lectures, but also in the process of laboratory classes, practical work execution, summative and semester assessment (Figure 7). This option becomes available thanks to utilization of different groups of digital resources, which were used by teachers for distance learning during quarantine (Table 2).

During which types of educational activities was the most communication with the teacher?

57 answers

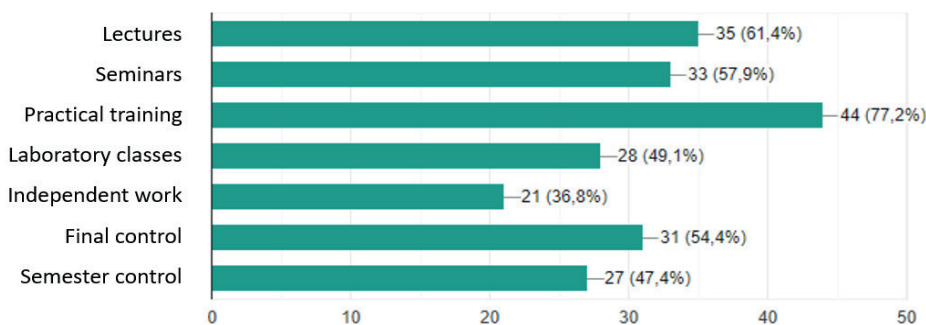


Figure 7. Results of the survey on educational activity with most communication with teachers

Source: Own work.

Table 2

Utilization of digital instruments for communication with teachers

Phone calls	31,6%
Mesengers	87,7%
Social networks	29,8%
Online Meetings	91,2%
Email	73,7%
Forums im = n e-course	56,1%

For collaboration arrangement students prefer online meetings (21%), collective documents, presentations, spreadsheets (18%) and social networks (14%) (Figure 8).

In your opinion, was your cooperation with classmates effective during the implementation of joint projects?

57 answers

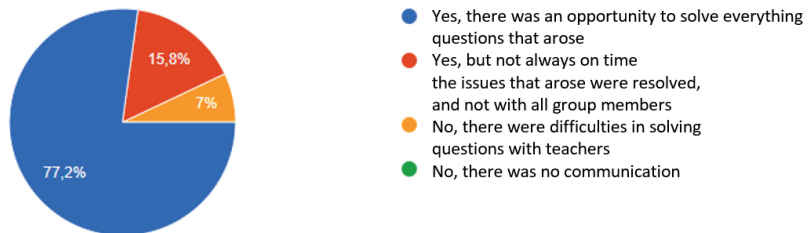


Figure 8. Digital instruments for collaboration

Source: Own work.

In the survey the students indicated the number of advantages and disadvantages of electronic communication. The main of them are listed below.

Advantages:

- Quick access at any time.
- All information is stored in digital form.
- All students receive information from teachers simultaneously, there is a possibility to ask questions and receive answers.
- Calm environment for the material perception and learning.
- Fast delivery of information of any volume and for different distances.
- Possibility to ask questions at any time, promptness of feedback.
- Possibility to choose the time for communication which is beneficial for multi-tasking.
- Skill to adapt quickly, communicate with the help of different means, keep in touch.
- No extra time and money expenses for commuting.
- Understandable and available for everybody volume of tasks, deadlines, which allow students to plan their time better.
- It is convenient to use and reproduce learning materials at the time comfortable for learning.

- Creation of virtual communities, involving everybody into collaboration, possibility to take into account individual peculiarities and learning styles of students.
- Absence of disturbing factors.

Disadvantages:

- Absence of direct personal contact, difficulties in exact rendering of information, interpretation of
- emotions and feelings.
- Technical problems.
- Distraction in the process of work with internet resources.
- More independent work.
- Many tasks.
- Not everything is understandable.
- Lack of computer literacy and psychological readiness.

CONCLUSIONS AND FURTHER RESEARCH PERSPECTIVES

The research of the problem of learning communication and collaboration arrangement in distance learning show that effective digital interaction of all learning process participants can be provided by:

1. Preparation of regulations at the university level to provide corresponding conditions for distance learning.
2. Existence of the university's educational policy on digital transformation of educational process.
3. Systematic teacher postgraduate training on using digital instruments for learning communication and collaboration arrangement in distance learning.
4. Availability of required software and hardware for all educational process participants, in particular, LMS and digital instruments for communication and collaboration.
5. Constant analysis and choice of digital instruments groups which would satisfy the needs of learning process participants.
6. Periodic analysis and quality evaluation of educational process to define strengths and weaknesses.

We consider that the perspectives of fruitful scientific, educational and personal communication of teachers and students, and among students are in utilizing chat bots, big data for the analysis of their interactions and the implementation of adaptive learning elements.

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