INFORMATION TECHNOLOGY IMPLEMENTATION IN ON-LINE TEACHING AND LEARNING: STAFF AND STUDENTS' ATTITUDE

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ABSTRACT

The problem of attitude of teachers and students to on-line teaching and learning during in and after lockdown is very topical today. The purpose of the manuscript is to find out and analyze attitude to on-line teaching and learning in the terms of pandemic 2019–2021. In order to achieve the stated purpose the following methods were used: empirical (discussion and observation) ones facilitated distinguishing advantages and challenges that academic staff as well as university students have faced; research (questionnaires and quantitative methods) helped to determine the attitude of respondents to the problem under research. All the surveys were anonymous and conducted on-line. The study was held in 2019–2021 on the basis of different universities. The target group became 50 university teachers and almost 200 students of these universities.

In the research we come to the conclusion that at the beginning of the lockdown in 2019–2020, on-line teaching was a great challenge, especially for university teachers. They were not ready for on-line teaching as they used to have the traditional teaching methods with live communication. The low computer and digital literacy of most teachers was the challenge as well. However, later, in 2020–2021, with teachers' technical, digital, methodical support for the teaching process, it became slowly clear that on-line teaching is not temporary for universities, in the nearest future blended learning will be the basic form. It has become obvious that on-line teaching expand many educational opportunities.

As for the students' opinions, it became clear that they did not accept on-line learning as tragically as teachers. In 2020–2021 they were depressed only of the lack of live social life. Later on-line learning required students to be more self-organized, self-disciplined and self-motivated. The students realized that they had to take more responsibility for their own learning results.

Keywords: *On-line, Distance, Teaching, Learning, Technology*

1. INTRODUCTION

It is the second year already when the world is living in Covid pandemic [1]. It has affected significantly all countries and all spheres of life from economy to ordinary person's lifestyle. So, naturally, that the usual course of human being has transformed greatly.

Although people knew from history about severe plague, Spanish flu and other epidemics in the past, they had never faced any similar challenges and they were tremendously suffering emotionally from long quarantine measures and necessity of social distancing and all related to them restrictions.

During the previous year people all over the world were changing their attitude to what was happening from fear and misunderstanding through mistrust and then despair to fatigue and indifference. However all this time, despite those trials, higher schools continued to provide educational services using distance on-line forms of teaching and learning, which became available at the present stage of development of computer technology. It allowed teachers and students to interact at a distance.

Speaking about distance learning, it has become popular with the advent of the Internet, which gave the ability to directly access various resources on the network and opened up new development opportunities for residents of remote settlements and business people with a busy work schedule.

Although first distance learning was perceived only as an additional way of acquiring knowledge or preparing for exams, now everyone can take full-fledged distance courses and advanced training programs from prestigious universities, commercial and non-profit companies from different countries from anywhere in the world.

Thus, the use of Internet technologies and distance learning is not something new now. Never-the-less during the pandemic, the potential of information technology began to unfold most fully in the educational sphere.

And if at the beginning of pandemic academic staff of universities experienced a lot of technical difficulties while applying distance on-line forms of teaching and learning not as some additional not regularly used forms and methods of teaching but as the only or at least main form of education [2] that made, on the one hand, to learn to use modern information and telecommunication technologies freely enough, and on the other hand, to look at the education process from the other side.

A year later a large number of higher school teachers not only received sufficient technical skills but also could see certain advantages of implementation of informational technologies in on-line distance teaching and learning.

Though problems associated with the use of information technology in the educational process

continue to be very significant now. Members of the academic staff are sure that despite the rapidly developing information technology any distance learning cannot replace personal face-to-face teaching, communication and interaction, those teachers believe that the best results in learning can be reached through combination of virtual and real training in a classroom.

As the global situation with Corona virus is not changing for the best (despite active vaccination population of the Earth is still in danger because of the new virus strains that appear rather quickly and are very aggressive), the problem of attitude of teachers and students to on-line teaching and learning during pandemic is very topical today.

2. LITERATURE REVIEW

Since Covid pandemic broke down scientific interest to distance learning as well as on-line teaching and learning has increased significantly. It is natural that most studies are written from the teachers' position.

The literature selection criteria are based on the last researches of 2020-2021 to find out the data of distance learning attitude because of the world lockdown.

So, some of existing researches consider advantages that could be found for teaching theoretical subjects and share certain positive experience of academic staff such as use of "cloud computing, application of different cloud services (Zoom, Skype, Hangouts Meet, Google Classroom, Google Forms, Quizlet) with University students during quarantine" [3].

Some other issues are analyzed in the papers such as "managing education in a peculiar environment" as the Response to Covid [4], perspectives on "distance learning and livelihood status" [5], "informal education practices act as a means of mobile satisfaction of educational needs" [6], "step-by-step development of mental actions to develop individualized distance learning" [7].

A number of manuscripts discuss the problems and challenges they have faced during on-line education such as "written in online forums by teachers" as "a social need for the training of education professionals" [8], "faculty perception toward online education in a state college" that shows "the majority of faculty had intermediate computer competency and had no training in online teaching" and "faculty considered online education to result in more academic dishonesty, impersonal and lack feeling compared to face-to-face classes" [9].

Many aspects of using on-line platforms are discussed by researchers, for example, "the indicators (the effectiveness, the accessibility, the resource intensity, the promptness, the democracy in communication, the integrative software) of the quality assessment of the distance learning within the platform Moodle" [10], "teachers' perception toward the use of Mobile Assisted Language Learning" [11], "the washback effect of Quizzes assessment platform on students' learning" [12].

There are also papers that deliberate both positive and negative aspects of distance learning in pandemic: "the common problems faced by the higher educational institutions and the possible measures which can be initiated in the present situation for uninterrupted learning to occur" [13].

The problem of students' attitude to on-line learning has also become the subject of scientific investigations in Turkey as for "attitudes of the students of higher education programs towards distance education; knowledge of the materials and tools of distance education; highlighting the positive and negative aspects of distance education; how well distance education is implemented in a total examination of the student experience in distance education" [14].

The problem of students' attitude from different countries are also discussed by scholars: in South Korea as for "relevant teaching and learning methodologies and strategies" [15], Indonesia as for "the effectiveness of distance practice learning and factors affect distance learning conducted in vocational high schools" [16], Canada, the United States, and France as for "the concept of distance learning …, its main current trends and challenges" [17], Ukraine as for "the personal learning systems and their levels, practical examples of the content of personal learning systems" [18] and other countries.

So, to sum up the literature review, we can state that the pandemic impact to on-line higher education system is specific in different parts of the world and differs from country to country.

However, the general issue of the changes can be highlighted: all universities in the world were required to adapt on-line changes in the shortest possible time, spend university teachers, staff and other human resources to go digitalization faster, and often make decisions without taking into account the possible consequences.

On-line distance learning, the types of technical means for its implementation, the assessment of teachers and students' adaptation to on-line means, tools, knowledge, skills, testing, final exams turned out to be the challenge that required immediate solutions.

The literature review shows that the pandemic has revealed that on-line distance education can compete well with traditional education. Moreover, it has become a driver of a worldwide shift towards on-line teaching and learning.

It is found out in the literature that despite the fact that distance education was not so popular until 2019, it is already a necessity. However, the previous researches have not studied thoroughly both teachers and students' attitude to on-line learning during Corona pandemic.

In solving the problems of both teachers and students' attitude to on-line learning we state that regular questioning of students and teaching staff's satisfaction with the quality of on-line education is needed. The results of questionnaires help universities to make changes in education in general and on-line education in particular, and improve the education quality.

So, **the purpose** of the manuscript is to find out and analyze attitude to on-line teachers' teaching and students' learning in the terms of pandemic 2019-2021.

3. METHODS AND MATERIALS

In order to achieve the stated purpose the following methods were used:

1) empirical (discussion and observation) ones facilitated distinguishing advantages and challenges that academic staff as well as university students have faced;

2) research (questionnaires and quantitative methods) helped to determine the attitude of respondents to the problem under research. All the surveys were anonymous and conducted on-line.

4. PARTICIPANTS

The study was held in 2019-2021 on the basis of Yaroslav Mudryi National Law University (Kharkiv, Ukraine), H. S. Skovoroda Kharkiv National Pedagogical University (Kharkiv, Ukraine), and other Ukrainian universities. The target group became 50 teachers from different public higher educational institutions and almost 200 students of the mentioned universities.

5. PROCEDURE

The authors' questionnaire as for university teachers' investigation consisted of 3 questions groups. The first group of questions (fourteen questions) is a group of general questions that allowed us to find out university teachers' gender, age, work experience, specialization, place of residence and financial situation of university teachers.

The second group of questions (eight questions) helps to identify university teachers' readiness to use new on-line methods to teach and experience availability of such a work. The third group of questions (five questions) determines the priority in the choice of university teachers' methods, and indicates how much time university teachers spent to organize and conduct on-line lectures and practical classes.

The university teachers took part in the questionnaire on-line, so we received all the data on-line. A general Excel spreadsheet was created based on the results of the questionnaire. All calculations were also performed using Excel tools.

Initially, we considered only the answers to the questions of the first group and analyzed the composition of university teachers' age, gender and experience of teaching. Next, our investigation aimed to summarize the answers to the second and third groups of questions.

Having created a summary table of answers to the questions of these groups (sorting), we decided to investigate the answers patterns to these questions depending on the experience of teaching. Thus, in the table we sorted the answers of certain defined groups, performed calculations using Excel and created charts based on the results.

The authors' questionnaire as for students' investigation consisted of 2 basic questions with four options. The first question was about the reasons to continue distance learning. The second question was about the reasons not to continue distance learning.

The students took part in the questionnaire on-line too, so we received all the data on-line too. A general Excel spreadsheet was created based on the results of the questionnaire. All calculations were also performed using Excel tools too.

The hypothesis is teachers' attitude to on-line teaching is more challenging and confusing; students' attitude to on-line learning is more adaptive, conventional.

6. RESULTS

6.1. Staff's Attitude to On-line Teaching

Let's analyze the data of the staff. Considering the academic staff, the biggest part of the respondents is women (87.8%) and men are only 12.2%. The majority of the adult respondents (43%,) were people of the age category from 42 to 49 years old; 10% of all, who took part in the survey are people over 57; 6% are people of the age category 50-57; 29% are people aged from 34 to 41; 12% are young professionals aged 26-33. As we can see academic staff's age composition varies widely, so it is demonstrated in Figure 1.
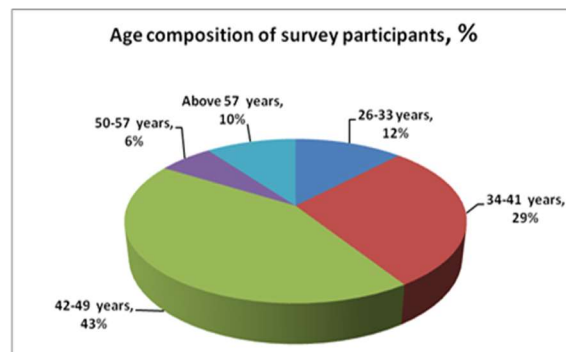

Figure 1. Academic Staff's Age Composition

Moreover, we have tracked the work experience of the survey teachers. So, 55% of survey participants have over 17 years of work experience in higher educational institutions; 21% have a teaching experience of 13-17 years; 14% have a teaching experience of 8-12 yeas; 10% have a teaching experience of up to 7 years.

The described above demonstrates that the teaching experience of academic staff participating in the survey is ranging widely. It is presented in Figure 2.
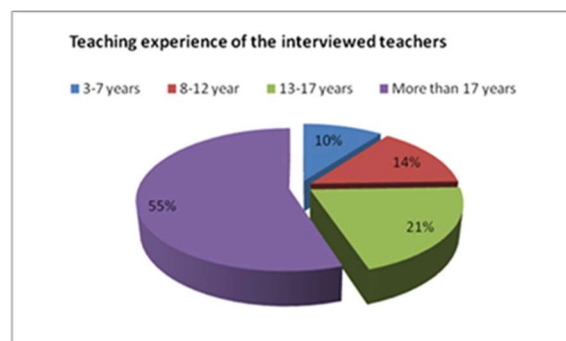

Figure 2. Teaching Experience of the Survey Academic Staff

With regard to the qualitative composition of the survey participants, it should be noted that 67.4% of the participants have a Philosophy Doctor (PhD) Degree in various fields of scientific knowledge; 14.3% have a Doctor of Science Degree; 18.4% of those surveyed have Master's Degree. It is presented in Figure 3.
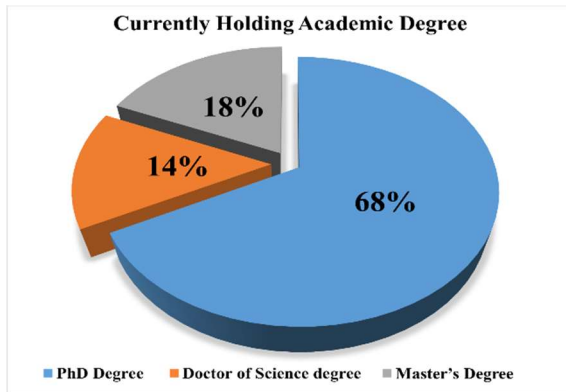

Figure 3. Qualitative Composition in Scientific Degrees of the Survey Participants

Most of the teachers who took part in our survey, 83.7%, are teachers of Humanities and related fields of disciplines, 4.1 % are teachers of mathematical disciplines; 6.1% are teachers of management and social sciences; and 2.04% are the representatives of medical disciplines. It is presented in Figure 4.
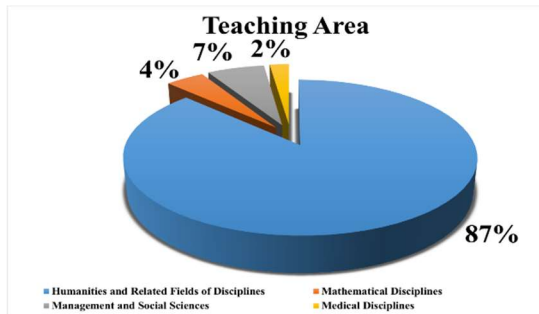

Figure 4. Qualitative Composition in the Teaching Different Fields of the Survey Participants

And 77.5% of all respondents teach students at the Bachelor's Degree level; and only 18.4% teach Master's Degree level students, and 6.1% teach the future PhD Degree level. It is presented in Figure 5.
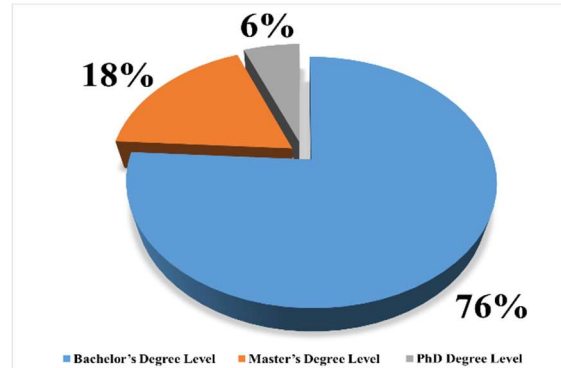

Figure 5. Qualitative Composition in Teaching Bachelor or Master Students for the Survey Participants

Exploring the positive and negative aspects of the current situation in the educational environment associated with the transition to distance learning (on-line learning) we stated and investigated issues related to the impact of a new pandemic of the 21th century, such as the Covid infection, on academic staff and their professional activities, in particular, on the choice or search for new educational technologies, we got the results presenting in Table 1.

Table 1. Academic Staff's Attitude to Teach On-Line

Question / statement	Teaching Experience	Agree, %	Neutral, %	Disagree, %
I am capable of using online teaching methods to deliver courses' contents	3-7 years	100		
	8-12 year	100		
	13-17 years	80		20,0
	More than 17 years	88,9	11,1	
I am able to use the online teaching methods to deliver courses' contents	3-7 years	100		
	8-12 year	100		
	13-17 years	80		20
	More than 17 years	81,5	3,7	7,4
I have the technical backgrounds to understand and use the online teaching methods	3-7 years	100,0		
	8-12 year	57,1		42,9
	13-17 years	70,0	10,0	20,0
	More than 17 years	70,4	22,2	7,4
I possess the technical skills to use the online teaching methods	3-7 years	100,0		
	8-12 year	100,0		
	13-17 years	80,0		20,0
	More than 17 years	66,7	22,2	11,1
I own the intellectual capabilities to understand, learn, or use online teaching methods	3-7 years	100,0		
	8-12 year	100,0		
	13-17 years	90,0		10,0
	More than 17 years	88,9	7,4	3,7
I possess the patience to get acquainted with using the new digital methods to deliver course's content to my students	3-7 years	60,0	20,0	20,0
	8-12 year	42,9	42,9	14,3
	13-17 years	70,0		30,0
	More than 17 years	81,5	7,4	11,1
I have the indomitable and iron will to understand, learn, or practice the new digital methods in delivering courses' contents to the students	3-7 years	60,0	20,0	20,0
	8-12 year	28,6	14,3	57,1
	13-17 years	70,0		30,0
	More than 17 years	51,9	29,6	18,5

Thus, younger teachers feel more confident in applying informational technologies, which are necessary for on-line distance teaching. Meanwhile, considering volitional characteristics of respondents, it is difficult to state whether they depend on age or work experience.

However, probably older generation of teachers have more developed personal characteristics needed for getting acquaintance with the new digital methods required for delivering courses' contents to their students.

Moreover, in order to get data about other aspects of teachers' attitude to information technology implementation for on-line distance teaching and learning different questionnaires were used, as survey method, which is a subjective quantitative research method and serves as a means of feedback between respondents and researchers, despite all its apparent simplicity, allowed us to quickly reach a fairly wide audience and quantify the results obtained.

Consequently, based on the survey results, conclusions could be drawn about the problems and specific needs of teachers faced the necessity to provide education in distance form, as well as develop recommendations for improving the quality of teaching on-line.

So, analyzing the data of additional questionnaires we found out that 89.8 % of the survey participants noted changes in teaching methods (connected with implementation of information technologies), 2.04 % of the teachers do not see changes in teaching methods and 8.2 % of the surveyed teachers have a neutral opinion on this issue.

In our opinion, these data depend on whether teachers had to apply information technology in their daily practice before the pandemic. At the same time, 69.4% of teachers agreed that Covid made them learn and use new skills to convey educational material to students.

So, 38.2 % of them absolutely agree with this; and only 4.08% of our interviewers disagree or have a neutral opinion. 97.96 % of the interviewed participants believe that the current situation made them to increase their efforts in preparing the courses' content digitally.

Thus, the data suggested above confirm our assumption about the absence or presence of a habit of using information technologies in their work.

Also, 77.6 % of the surveyed teachers agreed that Covid created the dire need to upgrade their technical skills to cope with the new demand of digitizing education, and 6.1% of our poll participants expressed their disagreement with this, while 28.9% of them are absolutely sure of this, and 16.3% indicated their neutral opinion.

Thus, we can understand that most of our respondents used to apply traditional forms and methods of teaching at their lessons mostly ignoring innovative information technologies.

Another indirect confirmation of our assumption that teachers do not have the habit of making extensive use of the capabilities of modern computer technologies in their everyday practice are the following.

According to the obtained answers of 8.2 % of respondents, the relationship between teacher and student became virtual not by the current pandemic, and, 79.6 % of respondents consider that Covid is the cause of their virtual relationship with educational process participants.

Certain part of questions investigated problems relating to such personal characteristic as responsibility in its different aspects. This quality was chosen because it is one of fundamental features for teacher.

So, 83.7 % of respondents evidenced that Covid raised the burden and responsibility towards their family; while 10.2 % teachers have a neutral position, and 6.1 % interviewed participants disagree with this statement. 77.5 % interviewees agreed on the statement that Covid increased the responsibility towards their students though 18.4 % respondents maintain neutral opinions and 4.08 % respondents have opposite points of view.

Considering quality and results of interaction between teacher and students, 71.4 % of respondents emphasize that the statement that the pandemic has made the assessment of a student-teacher interaction more effective is not correct, although 14.3 % of our respondents expressed their agreement with this statement and 14.3 % of respondents had the ambiguous position regarding to this statement.

Raising the problem of material support of the teaching staff during the pandemic, we have found out that 6.1 % of respondents considered that Covid can be reason to implement a new policy aimed at reducing teacher staff's salaries, although 16.3 % of our interviewers expressed doubts and they are vague about it.

Also 77.6 % of respondents are confident that the pandemic will not be the reason for the decrease in teachers' salaries, while 50 % of them are absolutely confident in this.

So, 12.2 % of interviewed teachers declare their disagreement with the fact that Covid will cause to reduce the teachers' monthly salary by universities; however, they expressed concerns about changes in contracts with the teachers or their interruption (that is, it may lead to their firing). 61.2 % of surveyed teachers doubt about a financial future and their plans, seeing the reason of this is the pandemic, while 30.6 % of respondents are neutral.

Moreover, we have discovered that 40.8 % of respondents envisioned losing their job and financial burden, 30.6 %of interviewed teacher staffs said that they are not ready to the similar difficulties, at the same time, there were 28.6 % of respondents who did not have a clear position on this issue.

Speaking about changes in control methods caused by distance online forms of teaching and learning, according to 55.1 % of the interviewed teachers, the situation with Covid made them substitute the mid-term and/or final exams into assignments/project papers for scoring purposes (as usual examination forms are considered to be not effective in online communication), while 24.5 % of respondents disagreed with this and 18.4 % of respondents stated that they neither agree nor disagree.

So, investigating the issue of methods of control in online teaching and learning (while the students are in the conditions of access to wide technological possibilities and very often do not have strong motivation for self-control and academic honesty), which seems to us very urgent, we have revealed that, 79.6 % of the interviewers don't think that evaluating students by only on-line teaching methods is efficient and 36.8 % of them strongly disagree with it; 12.2 % of all participants have a neutral position and only 8.2 % of teachers agree that on-line learning technologies are an effective way of an education including distance control methods.

Since distance online teaching and learning in specialties that require a large number of practical lessons is very difficult and even the most modern technologies cannot replace real practice, using only on-line teaching methods due to the current

pandemic situation for student assessment is not considered fair by 65.3 % of teachers, moreover, 25 % of them are quite categorical about it; 16,3 % of teachers have an opposite view and 18.4 % of teachers have not defined their position, that is, they doubt. So,

- 6.1 % of interviewed participants believe that evaluating students by only on-line teaching methods is sufficient, 51.02 % of teachers disagree with it.

- 73.5 % don't believe that using the on-line teaching methods to evaluating students are enough. 14.3 % of teachers have an opposite opinion.

- 53.06 % agree that totally digitizing education would be compulsory around the globe; 26.5 % have neutral opinion, 2.04 % disagree.

- digitizing education would be per se an educational authorities' requirement: 59.2 % agree; 28.6 % neutral; 12.2 % disagree.

- digitizing education would be the common trend of the education institutes: 65,.3 % agree; 16.3 % neutral; 18.4 % disagree.

- digitizing education would facilitate the recognition of distance-learning academic.

- 87.8 % respondents noted the conditional movement control by the universities inviting teachers to take courses on-line or uploading them to institutes' portal.

According to 30.6 % of interviewed participants in our study, distance learning could be recognized and generally accepted by ministries of education / authorities or bodies that recruit in educational institutions, however, 26.5 % of interviewed participants do not share this point of view and 40.8 % of participants have an undefined position.

Since in the modern world where it would seem that only the lazy is not familiar with the computer there are still people for whom work with a computer causes great difficulties especially if to take into account that it is not enough just to have some basic knowledge about a personal computer, it is also important to be able to work on the Internet and process the available information, we have investigated technical skills of teaching staff which are necessary for providing distance online education.

So, 89.9 % of respondents feel that they are capable of using on-line teaching methods to deliver courses' contents, and they are able to use

them, while only 10.2 % of all teachers don't feel such an ability.

However, teachers, who have the technical backgrounds to understand and use the on-line teaching method, are 71.4 % of all participants, and, it is 97.4 % of teachers who could do on-line teaching. 14.3 % of our respondents said that they don't have the appropriate technical opportunities.

Thus, 77.6 % of surveyed teachers remarked that they possess the technical skills to use the on-line teaching methods; 22.4 % of respondents declared their lack of confidence in their abilities or complete absence of them. 91.8 % of surveyed teachers declared their confidence in their intellectual capabilities to understand, learn, or use on-line teaching methods.

And 73.5 % of teachers declared their readiness to master new digital methods to deliver course's, only 14.3 % of all participants don't have possess the patience to get acquainted with using the new digital technologies; 12.2 % have some doubts about their capacities.

However, only 48.9 % (it is 63.8 % of teacher who declared their readiness to master new digital methods) of all considered that they have the indomitable and iron will to understand, learn, or practice the new digital methods

6.2. Students' Attitude to On-line Learning

Students' opinions regarding on-line (distance) learning also were divided between supporters and opponents of distance learning. Communication with students of Yaroslav Mudryi National Law University (Kharkiv, Ukraine) and H.S. Skovoroda Kharkiv State Pedagogical University (Kharkiv, Ukraine) helped us to identify the most common students' thoughts in favour of distance forms of on-line learning and those, which were against them.

Let's analyze the students' data. The gender distribution among students is 55.0% male and 45.0 % female participants. As for the students' age, it is ranging from 18 to 20. In general, there are 534 answers; these are 100% of all answers.

And 338 answers, these are 63%, the majority of all students, support continuing distance on-line learning with application of information technology, 196 answers, these are 37%, against distance learning of any forms.

So, speaking about ideas that support continuing distance on-line learning based on computing

technologies, the students oftener then others named the following ones:

1) on-line distance learning is quite satisfactory and there are no reasons to complain about it (all the classes: lectures, seminars, workshops are conducted on-line; academic staff give individual consultations, organize extra classes activities for students, take credits and exams, are always in touch with the student group and ready to help practically at any moment; all the necessary literature on academic subjects are available on-line at the University departments or its library);

2) on-line distance learning is really good at preventing Corona virus infection, which is really very dangerous for the students and their relatives (the students are afraid to get ill or to infect their family and understand that as they do not have to use public transport, keep social distancing in a classroom, the student café or library reading room, there is possibility to reduce contacts greatly so they can prevent infection);

3) on-line distance learning facilitates optimal use of time (students do not have to waste time on the way to their University and to return home; they have enough time to have lunch during breaks as can eat at home without long lines at the student café; saved time (nearly 2-3 hours a day) can be used for attending additional courses hobbies or just home routine);

4) on-line distance learning helps save money (students do not have to spend money for transportation costs, payment of accommodation in a student's hostel or in a rented apartment, pay for meals in the café and so on); see Figure 6.
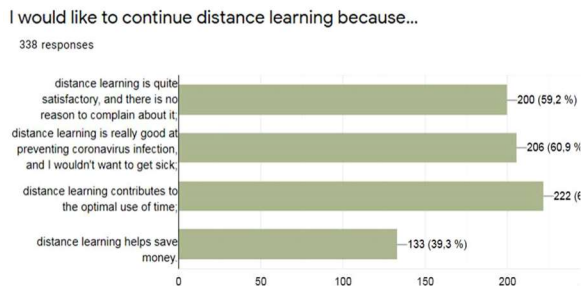

Figure 6. Students' Support Continuing Distance Learning

The students, who expressed their thoughts against distance learning of any forms, mentioned the following:

1) distance learning is unsatisfactory and there are a number of reasons for it (the Internet connection is not always proper; from time to time

there may appear some problems with devises necessary for on-line learning; sometimes their questions stay without answer of a teacher just because the teacher did not notice their wish to ask; the students do not feel psychological satisfaction while studying before a computer screen it is more convenient and habitual for them to be in a classroom);

2) distance learning limits social contacts (sitting at home does not give possibility for face-to-face communication or real interaction with peers and teachers, which are very important for young people; they do not want to waste better years of their life without socialization). Moreover, such education is not suitable for the development of communication skills; this is due to the fact that during distance on-line learning, the contact of students is minimal not only with the teacher, but also with each other. Therefore, this form of education is not able to develop such a skill as teamwork.);

3) distance learning facilitates limitation of students' independence (it is natural for young people that they want to feel adult and independent. Student life gives them possibility to learn to be adult as young people leave home and begin being really responsible for their decisions and actions. But in situation when they have to return home they have to restrict their independency in some way since their parents got used to making decisions instead of them);

4) distance learning cannot stop pandemic (the students are not sure that Corona virus is a real threat to their life or life of their relatives either those students do not think that they may infect others and launch the chain of infections or stop it); see Figure 7.
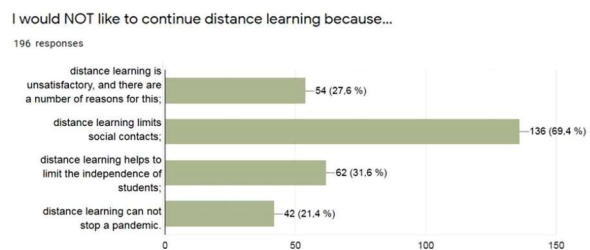

Figure 7. Students' Answers Against Distance Learning

7. DISCUSSION

To discuss our research results, we point that in 2021 the scholars have presented some results about on-line teaching and learning: teachers'

perceptions to different aspects such as Internet connection, adapting to unfamiliar technology, limited resources, especially "teachers' understanding of teaching and their relationship with their engagement to learning" [19] and students' acceptance to on-line in time and after the lockdown, students' attitude to web-based learning platform, Moodle platform etc, as students "accept using the technology but as a complementary part in the education process, not as the alternative of the face to face educational process" [20].

So, some results may consider the similar. The scholars' results correlate our results in some points, especially in the problems of technical and human on-line teaching and learning.

All procedures performed in the investigation involving human participants were in accordance with the ethical standards of Yaroslav Mudryi National Law University (Kharkiv, Ukraine) and H. S. Skovoroda Kharkiv National Pedagogical University (Kharkiv, Ukraine), which are based on the 1964 Helsinki declaration and its later amendments. All participants have given consent for their data to be used in this research.

The limitations of the research are the time (2019-2020, the eastern part of the country, the country Ukraine). According to the limitations, we can consider that other researchers' results may be different. So, the discussion shows the difficulty of the researched issues.

The conflicting perspectives on the topic may be as for the correlation between on-line and face-to-face teaching and learning. Strange as it may seem a traditional, face-to-face education importance is decreasing gradually, it is being replaced by on-line or blended education.

8. CONCLUSIONS

So, making the conclusions of the research data, we can state that the hypothesis is right, really teachers' attitude to on-line teaching is more challenging and confusing; students' attitude to on-line learning is more adaptive, conventional.

1) At the beginning of the lockdown in 2019-2020, on-line teaching was a great challenge, especially for university teachers. They were not ready for on-line teaching as they used to have the traditional teaching methods with live communication. The low computer and digital literacy of most teachers was the challenge as well.

However, later, in 2020-2021, with teachers' technical, digital, methodical support for the teaching process, it became slowly clear that on-line teaching is not temporary for universities. It is the today reality; tomorrow it will be the part of the education, not only during the quarantine, but also in the future. It has become clear that on-line teaching and learning expand educational opportunities; such a form will be a stable part of today and tomorrow blended learning.

2) As for the students' opinions, it became clear that they did not accept on-line learning as tragically as teachers. In 2020-2021 they were depressed only of the lack of live social life. Later this form of education required students to be more self-organized self-disciplined and self-motivated. The students realized that they had to take more responsibility for their own learning results.

So, we can state clearly that we have identified different attitude of teachers and students to on-line teaching and learning during in and after lockdown in the research.

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