THE RESULTS OF THE USE OF CLOUD TECHNOLOGIES IN THE EDUCATIONAL PROCESS OF PEDAGOGICAL UNIVERSITIES IN A PANDEMIC

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Abstract. *The research relevance ties with the necessity to form future teachers' digital competence under forced blended learning conditions due to COVID-19 preventive quarantine measures implementing. The purpose of the article is to reveal the content and analyze the results of the study on the experience in cloud technologies usage while teaching pedagogical courses to students in a modern pedagogical higher education institution. The methods are: theoretical analysis of the cloud technologies usage in higher education institutions, documentation analysis in the European Higher Education Area, information collection, questionnaires for students and lecturers, observation, evaluation, systematization of the results. The results are: the experience in cloud technologies usage while teaching pedagogical courses to future teachers is determined; issues with the information and communication technologies usage are identified: constant access to the network, poor service, lack of equipment. It has been clarified that students gained an enough experience in cloud technologies usage before the quarantine same as during it, identified the factors that contributed to it (inclusion in distance learning, studying the course "Digital Technologies", testing of cloud services and technologies). It has been established that the lecturers used to have small experience in cloud technologies usage before the quarantine because there was no special necessity, but during it, these indicators have changed (forced distance learning and the conditions for its implementation contributed to the rapid capture of cloud services, attending courses, testing the experience in cloud technologies usage). The most popular cloud technologies are Classroom, Zoom, Meet, Moodle have been lined out.*
Keywords: cloud technologies, future teachers, lecturers, teaching pedagogical courses.

Introduction

The concept of the digital economy and Ukrainian society development for 2018–2020 proclaims that in Ukraine the problems of society digital transformation are urgent today (Pro схвалення Концепції…, 2018). One of the main goals of the "Digital Agenda – 2020" project is the digital technologies' availability; creating new opportunities for the human capital

realization, development of innovative, creative and "digital" industries and businesses; development and global leadership in digital products and services exporting. This document grounds not only the basic principles on which Ukraine should develop in the digital environment, but also the necessarysteps on various fields of digitalization (Proekt "Cifrovoï adzhendi Ukraïni - 2020", 2016).

The New Ukrainian School Concept states that the digital division between teacher and student is widening. Many teachers do not know how to investigate problems with modern facilities, work with large data sets, make and present conclusions, collaborate online in educational, social and scientific projects etc. (Nova Ukraïns"ka shkola, 2016).

Higher pedagogical educational institutions play an important role in the context of this problem. Thus, the purpose of "The Concept of the Pedagogical Education Development" (executive order of the Ministry of Education and Science of Ukraine №776 of July 16, 2018) isto improve the system of pedagogical education to create a base for training new generation of teachers (Pro shvalennja Koncepcii .., 2018). The formation of key competencies, skills of independent work with information technology, especially the search, analysis and filtering of important and necessary information is possible only through the usage of new methods and elements of various modern educational technologies. The main aspect of theefficient future teachers training considering requests of "The New Ukrainian School" and modern educational challenges, as well as a guide to new promising specialties including "andragogue", "tutor", "moderator", "facilitator", "E-learning manager", "teacher's assistant",is a change in the approach to the educational process organization in higher education institutions. It can be possible by updating the content of education and training programs, improving educational forms and methods, using gamification, etc.. Therefore, the usage of information resources in the higher education pedagogical courses teaching becomes an urgent need. According to digital technology constant development emerges the necessity fora broader study of various aspects of the various cloud technologies and services usage (Canva, Padlet, Classroom, Zoom, Meet, Moodle, etc.) in future teachers training, which is possible through the active usage in future teachers training these technologies and resources.

Today there are digital technologies in education, which include information and pedagogical technologies. These technologies are inextricable, moreover, there is digital literacy of the society and digital competence of a teacher, which includes the skills that allow one to use in the classroom both types of technologies (DigCompEdu teacher digital competence); (Brolpito, 2018); (Aimaletdinov, Baimuratova, Zaitseva, Imaieva, & Spiridonov, 2019).

This means that it is important to involve pedagogical courses students in the digital technologies' usage, in particular, cloud technologies, and to apply modern pedagogical technologies in Computer science classes. However, the analysis of pedagogical courses lecturers' information technology awareness, including cloud technologies was not performed,so it is important to know how to help a modern

lecturer present and future teacher to acquire modern digital technology based on clarification of the digital pedagogical competence level, experience in cloud technologies usage as those that are available to everyone and have significant potential for application at all stages of learning and teaching.

Literature review

Note here that the problem of cloud-oriented resources implementation to educational institutions of different levels in Ukraine and is the subject of modern educational theory. Thus, the US National Standards Institute (The NIST Definition of Cloud Computing) has defined the concept of "cloud computing" (Cloud Computing), which should be understood as a model of convenient network access to a common fund of computing resources (for instance: networks, servers, data files, software and services), which can be provided quicklywith minimal management effort and interaction with the supplier (Yatsyshyn et al., 2019). Cloud technologies can be defined as a set of methods, tools and techniques used to collect, organize, store and processon remote servers, transmit through the network and submit through the client program all kinds of messages and data (Markova, Semerikov, & Striuk, 2015). We share the opinion of O. Markova, S. Semerikov, A. Striuk, according to whom cloud technologies are such information and communication technologies of training that involve the cloud technologies usage. The latter can be simply defined as network information and communication technologies that provide centralized network storage and processing of data (program execution), in which the user acts as a client(user of services), and "cloud" – a server (service provider). T. Vakaliuk, H. Prysiazhniuk alsoemphasize that the cloud technology usage stimulates professional growth of a teacher, prompts search for new forms, methods and means of training (Vakaliuk & Prysiazhniuk, 2016). Educators need to understand how digital technologies can support communication, collaboration, creativity andinnovation; understand their functional characteristics, limitations, consequences and risks of the usage in learning, while at different stages of assimilation and with the students of differentages, as well as general principles, mechanisms and logic that put in the basics of digital services that are constantly evolving; know the basics of operation and usage of various digitaldevices, computer programs and networks (Genseruk, Morze, & Ovcharuk, 2019).

Analyzing the domestic experience of cloud technologies usage in the higher educational process of higher, T. Vakaliuk considers that higher education has considerable prospects for development (Vakaliuk, 2014).

Scientific research of modern scientists, N. Bolshakova, Z. Mitchenko dedicated to the use of the platform Moodle in the teaching of humanities, which identified the advantages and disadvantages of using electronic resources in higher education (Bolshakova & Mitchenko, 2020, pp.414-425). In the study O. Granichina, S. Surikova outlined such problems of distance learning in

pedagogical universities of the Russian Federation in the training of future teachers, as: organization of the educational process, the use of special technical and programmable means of organizing distance learning, insufficient readiness of subjects for the educational process in distance form, etc. (Granichina & Surikova, 2021, pp.144-152). A. Radin, N. Shlat analyzed the online learning environment (synchronous and asynchronous modes) in higher education institutions in comparison with the traditional environment (Radin & Shlat, 2021, pp.524-536).

Authors note here that before the pandemic cloud technologies usage used to be teachers' private affair because according to the Law "On education" teacher chooses forms and methods of teaching. But during the quarantine, the question about the necessity of effective distance learning and the mandatory cloud technologies usage emerged, which not all lecturerswere ready for, especially of pedagogical courses, for which digital competencies are new andnot all have acquired them. On the other hand, not all higher pedagogical education students were ready for distance learning, especially non-humanity and mathematical specialties.

So interesting and not enough research is the cloud technologies usage by higher educational institutions lecturers, including pedagogical courses lecturers in the context of mastering thesetechnologies by future teachers.

Thus, the purpose of the article is to analyze the experience in cloud technologies usage whileteaching pedagogical courses to future teachers.

The aims of the article are:

1) to find out the experience in cloud technologies usage by pedagogical courses lecturers or future teachers while learning pedagogical courses;
2) to identify problems in cloud technologies usage by pedagogical courses lecturers or futureteachers (students), to identify the most popular cloud technologies.

Methodology

The study used theoretical analysis of sources on the cloud technologies usage in higher education institutions, analysis of documentation of the European Higher Education Area, information collection, questionnaires of students and lecturers (oral and written), observation,evaluation, analysis and systematization of the results.

Materials for the study were: the legal framework and government documents for professionaltraining at the current stage of national education development, the Concept of the New Ukrainian School, the Law of Ukraine "On Higher Education", the rules on innovative educational activities (ed. 31.10.2017), the Concept of teacher education development, the Concept of digital economy and Ukrainian society development for 2018-2020years, scientificsources on cloud technology usage by teachers (T. Zhornytska, S. Litvinova, D. Soga (Dosvid

uchiteliv Ukraïni …, 2016), the cloud technology usage by lecturers in higher education institutions (N. Gnedko, I. Deynega, E. Romanenko, A. Iatsyshyn N. Hnedko, 2018). The model of future teacher training for professional activity using cloud technology in educational institutions)), research on digital population literacy and digital pedagogical competence of Russian lecturers level determination (Aimaletdinov, Baimuratova, Zaitseva, Imaieva, & Spiridonov, 2019).

Authors consider necessary to define competence in the cloud technology usage as a kind of digital competence. Thus, the lecturer's digital competence must ensure numerous components' development: from media literacy to the information data processing and criticalevaluation, security and cooperation on the Internet to knowledge of various digital technologies and devices, the ability to use open resources and technologies for professional development, formation in students the skills to efficiently use digital technology and services in educational and life situations for solving various problems and tasks, to apply innovative techniques for evaluating the results of their training activities, understanding the concept of coding, elements of artificial intelligence, virtual and augmented reality and solving professional problems through the digital technologies' usage (Genseruk, Morze, & Ovcharuk, 2019). So, competences in cloud technologies' usage include the ability to organize and use within the learning process, filter, evaluate, project and distribute the variety of cloud technology to improve the quality of learning based on the letters' opportunities.

Research results

The research was conducted at H.S. Skovoroda Kharkiv National Pedagogical University during 2020 education year. The study involved 90students of the H.F. Kvitka-Osnovianenko Ukrainian Language and Literature School and 104students of the faculty Primary EducationSchool. The selected majors are related to the fact that the authors of the article directly teach the disciplines "Pedagogy", "Fundamentals of pedagogical skills", "Pedagogy of the New Ukrainian School" and others at these schools. It should also be noted that we have specially chosen the Primary Education School because future primary school teachers in their professional activities must not only be confident digital technologies users, but also use and modify cloud educational resources today in the New Ukrainian School. Selection of respondents studying at the H.F. Kvitka-Osnovianenko Ukrainian Language and Literature School can be grounded by the fact that according to the State Standard of Basic Secondary Education (the Cabinet of Ministers of Ukraine Resolution No. 898 of 30.09.2020) (Derzhavnij standart…, 2020) the first key competence is fluency in the state language, which includes a number of skills, including the skill to acquire and process information from various (print and digital, including audiovisual) sources in various educational fields and contexts, critically interpret it and use itfor communicating

orally and in writing, to defend their personal views, beliefs, social and national values. Teachers (starting with the pedagogical internship) will be able to form this competence in students, who themselves have sufficiently developed competencies in the state language and the cloud technologies usage. All the students study for a bachelor's degree on the major specialty "014 Secondary Education". Also, 53 lecturers of departments that teach pedagogical courses were interviewed.

The research methods were: survey of lecturers and higher education students through questionnaires, theoretical analysis of sources, interviews, synthesis, and generalization of the results. All the lecturers of pedagogical courses of H.S. Skovoroda Kharkiv National Pedagogical University and higher education students were asked to fill in the questionnaire anonymously. The questionnaire had monitoring nature to improve the educational process quality, was developed according to the regulations of the educational quality internal monitoring (required by the National Agency for Higher Education Quality Assurance for the higher educational institution accreditation, the Law on Higher Education, the Department of Education Quality Monitoring at H.S. Skovoroda Kharkiv National Pedagogical University). To monitor the level of lecturers' competence in the cloud technology use of while teaching pedagogical courses were given a questionnaire consisted of closed and semi-closed questions. We wondered to determine the competence of pedagogical courses lecturers before the quarantine and during it, as the pandemic significantly influenced educational process, transferred it into online mode and blend-learning and the main medium of instruction was the Internet and cloud technologies.

*Table 1 **Questionnaire for lecturers** (created by the authors)*

Question	Before the quarantine	After the beginning of the pandemic
Do you know what "cloud technology" is?	Yes	Yes
	No	No
	Partially	Partially
Do you have (did you have) an experience on cloud technologies usage?	Yes	Yes
	No	No
	Partially	Partially
What online forms of communication with do you use (have used) with your students while teaching pedagogical courses? (several options can be chosen)	Online lectures	Online lectures
	Online seminars	Online seminars
	Online consultations	Online consultations
	Online exams	Online exams
	Online tests	Online tests
How often do you use cloud technology?	Each lesson	Each lesson
	It depends on the topic of the lesson	It depends on the topic of the lesson
	I do not use	I do not use
	Other	Other

	Administrationrequirements	Administrationrequirements
What forced you to cloud technology usage?	Personal desire tobe modern	Personal desire tobe modern
	Material incentives	Material incentives
	Students' desire	Students' desire
	Other	Other
What exactly was difficult about using cloudtechnology?	Insufficient self-awareness	Insufficient self-awareness
	Insufficient awareness of students	Insufficient awareness of students
	Lack of information	Lack of information
	Lack of digital skills	Lack of digital skills
	Other	Other
How did you master digital competencies?(several options can be chosen)	Self-education	Self-education
	Training courses	Training courses
	There was no such anecessity	There was no such anecessity
	Other	Other
Do we need to improve our competence in thecloud technologies usage?	Yes	Yes
	No	No
	Difficult to answer	Difficult to answer
Which cloud services are appropriate for the study of pedagogical courses? (several optionscan be chosen)	Microsoft Excel	Microsoft Excel
	Microsoft Word	Microsoft Word
	Microsoft PowerPoint	Microsoft PowerPoint
	Zoom	Zoom
	Meet	Meet
	Google Drive	Google Drive
	Social Media	Social Media
	Moodle	Moodle
	Skype	Skype
	Kahoot!	Kahoot!
	Jamboard	Jamboard
	Classroom	Classroom
	Edpuzzle	Edpuzzle
	Canva	Canva
	Padlet	Padlet
	Flipgrid	Flipgrid
	iLearn	iLearn
	Coursera	Coursera
	Coursera forCampus	Coursera forCampus
Have higher pedagogical education studentsformed digital competencies?	Yes	Yes
	No	No
	Partially	Partially
Name the disadvantages of the cloud technologies usage.	Constant access tothe network	Constant access tothe network
	Poor service	Poor service
	Lack of technicalsupport	Lack of technicalsupport
	Time for classpreparing	Time for classpreparing
	Other	Other
Are the possibilities of cloud technologies usage at different stages of development known to you?	Yes	Yes
	No	No
	Partially	Partially

*Table 2 **Questionnaire for applicants*** *(created by the authors)*

Question	Before thequarantine	After the beginningof the pandemic
Do you know what "cloud technology" is?	Yes	Yes
	No	No
	Partially	Partially
Do you have (did you have) an experience on cloud technologies usage?	Yes	Yes
	No	No
	Partially	Partially
What online forms of communication do lecturers use (did use) while teaching pedagogical courses? (several options can be chosen)	Online lectures	Online lectures
	Online seminars	Online seminars
	Online consultations	Online consultations
	Online exams	Online exams
	Online tests	Online tests
How often do teachers of pedagogical courses use (did use) cloud technologies in the classroom?	Each lesson	Each lesson
	It depends on thetopic of the lesson	It depends on thetopic of the lesson
	They do not use	They do not use
	Other	Other
Do you consider it appropriate to use cloud technologies in the study of pedagogical courses?	Yes	Yes
	No	No
	Partially	Partially
What was difficult for you in cloud technologies?	Insufficient self-awareness	Insufficient self-awareness
	Insufficient awareness of students	Insufficient awareness of students
	Lack of information	Lack of information
	Lack of digitalskills	Lack of digitalskills
	Other	Other
How did you master digital competencies? (you can choose several answers)	Self-education	Self-education
	Courses in higher education institution	Courses in higher education institution
	There was no such a necessity	There was no such a necessity
	Other	Other
Do you need to improve your digital skills?	Yes	Yes
	No	No
	Difficult to answer	Difficult to answer
What cloud services are you already familiar with while studying pedagogical courses? (several options can be chosen)	Microsoft Excel	Microsoft Excel
	Microsoft Word	Microsoft Word
	Microsoft PowerPoint	Microsoft PowerPoint
	Microsoft Office	Microsoft Office
	Zoom	Zoom
	Meet	Meet

	Google Drive	Google Drive
	Social Media	Social Media
	Moodle	Moodle
	Skype	Skype
	Kahoot!	Kahoot!
	Jamboard	Jamboard
	Classroom	Classroom
	Edpuzzle	Edpuzzle
	Canva	Canva
	Padlet	Padlet
	Flipgrid	Flipgrid
	iLearn	iLearn
	Coursera	Coursera
	Coursera forCampus	Coursera forCampus
Have pedagogical courses lecturers formed digital competencies?	Yes	Yes
	No	No
	Partially	Partially
Name the disadvantages of cloud technologies usage.	Constant access tothe network	Constant access tothe network
	Poor service	Poor service
	Lack of technicalsupport	Lack of technicalsupport
	Time for classpreparing	Time for classpreparing
	Other	Other
Are you ready for cloud technologies usage on your own during your lessons?	Yes	Yes
	No	No
	Partially	Partially

Questionnaires were composed under various conditions of cloud technology usage: in a usualclassroom before the quarantine and during the quarantine as a result of the Coronavirus pandemic, when all higher education institutions shifted to the forced distance learning.

The results of the questionnaire on the first question show that the vast majority of both lecturers (67%) and students (44%) only partially knew what "cloud technology" is before thequarantine. After the pandemic, the answer "yes" was given by lecturers (94%) and students (100%). This can be explained by the forced transition to distance learning, which has led notonly to familiarization, but also the daily usage of cloud technologies.

Regarding the second question about the experience of cloud technologies usage, we have such results that before the quarantine pedagogical courses lecturers (98%) and students (99%) did not use cloud technologies. But the situation has changed, and we can say fundamentally,these technologies have been widely used be lecturers (89%) and students (96%). This generally indicates the flexibility and ability to adapt to new conditions in almost all lecturers and

students at a high level. Those who said they did not use cloud technology, have problems with technical support and therefore the inability to get out to the Internet.

The results of answers on the use of online communication forms of within the teachingpedagogical courses of are presented in Figure1.
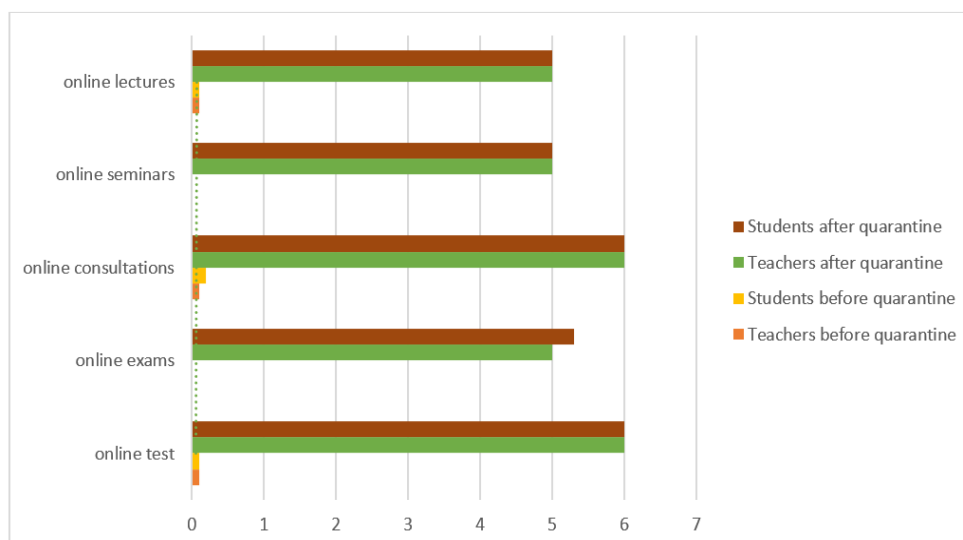

Figure 1 **Results about online communication forms** *(created by the authors)*

Thus, these results indicate that after the pandemics, unlike how it used to be before the quarantine became popular all online forms of communication between lecturers and studentsduring the pedagogical courses teaching that all respondents showed.

As to, how often faculty and higher pedagogical education students use cloud technology, theyclearly said that they had not used those before the quarantine. After the beginning of the pandemic 78% of lecturers and 86% of students used cloud technologies at every lesson. In our opinion, this is a fairly high indicator of the existing competence in the cloud technologiesusage. During the conversation with the lecturers, it was clarified that in a short period of timethey were forced to master modern information and communication technologies in order to quickly and efficiently become engaged with the educational process of distance format.

Having used cloud technologies while studying pedagogical courses and evaluating their potential, 87% of lecturers and 79% of students consider the current usage to be relevant.

The main difficulties in the cloud technologies usage pedagogical courses lecturers noted:78% - insufficient self-awareness; 64% - lack of information;81% - lack of digital skills. In the proposed option to indicate another reason, the following results were obtained: fear ofthe unknown, disbelief in their own strengths and capabilities, lack of practice, imperfect technical support.

Students identified the following difficulties: 36%- insufficient self-awareness; 24% - lack of information; 35% - lack of digital skills.

These figures in the responses of future teachers are explained by the fact that since the first year at all schools they study the course "Digital technology" which reveals the nature of information and digital competence of a future teacher, educational opportunities of network education technology, basic approaches to electronic educational resources' creation, basics of mobile, distance and blended learning, informational technologies in project activity of a future teacher. Therefore, the students have gotten much fewer difficulties with cloud technology usage than lecturers.

This can be seen in the answers to question whether digital competences have been formed by the students; when teachers have answered the following before the quarantine: yes (55%) no (29%), partially (65%), and after the pandemic: yes (87%)no (11%), partially (34%).

Teachers, in turn, mastered digital competencies mainly through non-formal education and self-education (65%) (webinars, refresher courses, trainings, educational marathons) and in the offered courses in higher education institutions (89%). According to the students, pedagogical courses lecturers have formed digital competencies before the quarantine: yes (17%), no (88%), partially (34%); after the beginning of the pandemic: yes (70%), no (22%), partially (45%).

With the fact that digital competences should continuously be improved agree (95%) of lecturers and (100%) of students. This is due to the understanding that information technology is rapidly evolving and changing rapidly, and this necessitates the mastery of the highest level of digital competencies for the successful pedagogical activities' implementation.

The results of the answers to the question "what cloud services are you already familiar with while studying pedagogical courses?" are presented in Table 3.

*Table 3 **The results of the cloud services usage within the study of pedagogical courses***
(created by the authors)

Services, technologies	Teachers before the quarantine %	Teachers after the beginning of the pandemic %	Students before the quarantine %	Students after the beginning of the pandemic %
Microsoft Excel	100	100	100	100
Microsoft Word	100	100	100	100
Microsoft Power Point	87	98	100	100
Microsoft Office	92	99	97	100
Zoom	0	87	1	97
Meet	1	95	1	99
Google Drive	5	65	56	89
Social Media	2	67	45	76
Moodle	35	98	38	100

Skype	57	93	86	99
Kahoot	17	95	87	100
Jamboard	12	76	58	86
Classroom	2	94	3	97
Edpuzzle	23	56	34	68
Canva	2	58	19	95
Padlet	18	89	100	100
iLearn	2	57	34	78
Flipgrig	1	46	3	88
Coursera	0	23	3	45
Coursera for Campus	0	21	2	34

Our analysis of the results showed that the lecturers before then quarantine slightly used mostpopular cloud services. And after the beginning of the pandemic during distance learning, theyhave not only got acquainted, but also mastered and used modern cloud technologies. In the answers of students there is a higher percentage of the information and communication technologies usage, which indicates the presence of prior knowledge. But the results show that since the beginning of the pandemic, the percentage of such students has also increased significantly. During the conversation with the lecturers it was found out that, carrying out the procedure of topical tests within pedagogical courses, they confidently organized the work of students using Moodle, Canva, Padlet, and Kahoot, the fact that teachers are aware of the cloudtechnologies usage possibility in various stages of comprehending, (78%) responded unequivocally that they are aware, (10%) – can use partially.

Regarding the results of students' answers on whether they are able to use cloud technologiesin different lessons, the following data were obtained before the quarantine: Yes - 47%;No - 12%; Partially - 41%. After the quarantine, the results are more confident:Yes - 84%; No - 0%; Partially - 16%.

This can be explained by the fact that during the period of the quarantine in lecturers and in students had created all the necessary conditions for the development of practical skills in thecloud technologies usage, namely: training sessions and consultations in the online mode, holding online lessons during the pedagogical internship, implementation of various forms ofeducational work in the online format both synchronously and asynchronously, passing tests, exams, etc.

It was quite interesting for us to find out what main disadvantages of cloud technologies usagewill be determined by lecturers and students. The results are presented in Table 4.

*Table 4. **The results of the lecturers and students survey on the disadvantages of the cloud technologies usage** (created by the authors)*

Disadvantages of cloud technologiesusage	Teachers before the quarantine %	Teachers after the beginning ofthe pandemic %	Students before the quarantine %	Students after the beginning of the pandemic %
Constant access tothe network	55	56	68	51
Poor service	45	57	56	43
Lack of technicalsupport	87	52	48	34
Time for classpreparing	-	-	-	-

Thus, the significant disadvantages, as can be seen from the results presented in the table, havenot changed much before the quarantine and after the pandemic.

Discussion

In terms of the discussion can say that all higher education institution lecturers in Ukraine forcibly mastered distance learning technologies, including cloud technology, as evidenced by the seminar Icon-MaSTEd 2020 (https://ichtml.org/icon-masted/2020/). It should be noted that the Coronavirus influenced the process of digital competences mastering by all lecturers,but still no one have compared the impact of the pandemic and distance learning on lecturers' and students' digital competences at the same time, no one have analyzed their problems anddifficulties.

Conclusions

The conducted study suggests that:
1. The chosen research topic is relevant in the context of solving the identified contradictionsand problems of the Ukrainian and world higher education theory and practice, is insufficiently studied scientific and pedagogical issue of the theory of pedagogy. The existed researches basically reveal the necessity to form digital competence and grounds for the cloud technologyusage in general by higher education institution lecturers, certain areas of training, but pedagogical courses lecturers were not trained as owners of digital competence and those whocan teach it based on their own working experience. In the paper, we revealed the content andanalysis of the results of the research at H. S. Skovoroda Kharkiv National Pedagogical University according to the experience in cloud technologies usage while teaching pedagogical courses to future teachers in modern pedagogical university.
2. Having measured the experience of lecturers' and future teachers' competence in cloud technologies usage while teaching pedagogical

courses, we have the following: the higher education students' experience in the cloud technology usage is at a high level as before the quarantine because of having studied the course "Digital Technology" and as during the quarantine, due to their inclusion in distance learning in all courses and testing various cloud services and technologies. Before the quarantine, the lecturers had little experience in cloud technologies usage, because there was no special necessity, but during the quarantine these indicators changed significantly for the better. Forced distance learning and the conditions for its implementation contributed to the rapid capture of cloud services, the passage of refreshertraining, approval of the experience within cloud technology usage in the classroom teachingdisciplines.

3. The most popular cloud services, which are used after the quarantine by pedagogical courseslecturers and future teachers, are: Canva, Padlet, Classroom, Zoom, Meet, and Moodle.

4. Common difficulties with information and communication technologies usage by pedagogical courses lecturers and future teachers during the quarantine and were the same andat the same level: constant network access, poor service, lack of proper technological support.This is a matter of state educational policy to create conditions for distance learning in the country.

Prospects for further research are the development of recommendations for changing acurricula based on the results of the study, familiarization and testing within pedagogical courses of other modern educational cloud services and technologies.

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