

The qualification improvement model for teachers of philology on the use of cloud technologies in pedagogical activity

O modelo de melhoria de qualificação de professores de filologia sobre o uso de tecnologias de nuvem na atividade pedagógica

El modelo de mejora de la cualificación para profesores de filología sobre el uso de tecnologías en la nube en la actividad pedagógica

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ABSTRACT

The use of information and communication technologies in education, including cloud technologies, has recently become an urgent issue. The main reasons for the growing interest in cloud technologies are the need to find alternative forms of learning to traditional ones, as well as the conformity of functional capabilities of cloud technologies to modern needs of optimisation of educational branch. Application of cloud technologies in educational process requires teachers to have appropriate qualification. The aim of this work was to develop a qualification improvement model for foreign language teachers, which could help them acquire the necessary theoretical knowledge, as well as practical skills and abilities to use cloud technologies in professional activities. This paper used methods of analysis of existing models of teacher training, as well as the survey and mathematical methods of processing the results of experimental research. The model of advanced training is created in the work, which helps teachers of Philology to acquire the necessary skills and abilities of productive use of cloud technologies. In addition, it allows you to gain new knowledge in

the field of foreign philology, pedagogy and psychology. According to this study, as a result of using such a model, foreign language teachers acquire the necessary skills and abilities to use cloud technologies in the educational process. They allow them to achieve didactic goals in professional activities. As this study showed, foreign language teachers can achieve didactic goals in professional activities using cloud technology through the proposed model. It was found that the developed model is highly efficient. The results of this study can be useful to scientists and educators who are engaged in finding and researching effective learning models that rely on modern technology. Prospects for future research may be to improve existing teacher training models and develop new ones in accordance with the state of digital technologies.

Keywords: Cloud storage. Digital literacy. Educational platform. Foreign language. Web classes.

RESUMO

O uso de tecnologias de informação e comunicação na educação, incluindo tecnologias em nuvem, tornou-se recentemente uma questão urgente. As principais razões para o crescente interesse pelas tecnologias da nuvem são a necessidade de encontrar formas alternativas de aprendizagem às tradicionais, bem como a conformidade das capacidades funcionais das tecnologias da nuvem às necessidades modernas de otimização do ramo educacional. A aplicação de tecnologias de nuvem no processo educacional exige que os professores tenham qualificação adequada. O objetivo deste trabalho foi desenvolver um modelo de melhoria de qualificação para professores de línguas estrangeiras, que pudesse ajudá-los a adquirir os conhecimentos teóricos necessários, bem como as competências práticas e habilidades para usar as tecnologias da nuvem na atividade profissional. Este artigo utilizou métodos de análise de modelos existentes de formação de professores, bem como o levantamento e métodos matemáticos de processamento de resultados de pesquisas experimentais. O modelo de formação avançada é criado no trabalho, que auxilia os professores de Filologia a adquirir as competências e habilidades necessárias ao uso produtivo das tecnologias da nuvem. Conforme este estudo mostrou, os professores de línguas estrangeiras podem atingir objetivos didáticos nas atividades profissionais utilizando a tecnologia em nuvem por meio do modelo proposto. Verificou-se que o modelo desenvolvido é altamente eficiente. Os resultados deste estudo podem ser úteis para cientistas e educadores que estão empenhados em encontrar e pesquisar modelos de aprendizagem eficazes que dependem de tecnologia moderna. As perspectivas para pesquisas futuras podem ser melhorar os modelos existentes de formação de professores e desenvolver novos de acordo com o estado das tecnologias digitais.

Palavras-chave: Alfabetização digital. Armazenamento em nuvem. Aulas na web. Língua estrangeira. Plataforma educacional.

RESUMEN

El uso de tecnologías de la información y la comunicación en la educación, incluidas las tecnologías en la nube, se ha convertido recientemente en un problema urgente. Las principales razones del creciente interés por las tecnologías en la nube son la necesidad de encontrar formas de aprendizaje alternativas a las tradicionales, así como la conformidad de las capacidades funcionales de las tecnologías en la nube a las necesidades modernas de optimización de la rama educativa. La aplicación de tecnologías en la nube en el proceso educativo requiere que los maestros tengan la calificación adecuada. El objetivo de este trabajo fue desarrollar un modelo de mejora de la cualificación de los profesores de lenguas extranjeras, que pudiera ayudarles a adquirir los conocimientos teóricos necesarios, así como las habilidades y habilidades prácticas para utilizar las tecnologías en la nube en actividades profesionales. En este artículo se utilizaron métodos de análisis de modelos existentes de formación docente, así como métodos de encuesta y matemáticos para procesar los resultados de la investigación experimental. En el trabajo se crea el modelo de formación avanzada, que ayuda a los profesores de Filología a adquirir las competencias y

habilidades necesarias de uso productivo de las tecnologías en la nube. Como mostró este estudio, los profesores de lenguas extranjeras pueden lograr objetivos didácticos en actividades profesionales utilizando tecnología en la nube a través del modelo propuesto. Se encontró que el modelo desarrollado es altamente eficiente. Los resultados de este estudio pueden ser útiles para los científicos y educadores que se dedican a encontrar e investigar modelos de aprendizaje eficaces que se basan en la tecnología moderna. Las perspectivas para la investigación futura pueden ser mejorar los modelos de formación docente existentes y desarrollar otros nuevos de acuerdo con el estado de las tecnologías digitales.

Palabras clave: Alfabetización digital. Almacenamiento en la nube. Clases web. Idioma extranjero. Plataforma educativa.

INTRODUCTION

Digital literacy is an important component necessary for the life and professional growth of modern man (Henseruk, 2021). Therefore, its improvement is a general trend of modernisation of teacher training, in particular, philological subjects (Tsiupak, 2020). Thanks to digital competence, the modern educator can radically change the educational process using methods that require the use of digital technologies instead of traditional teaching methods. They include, for example, diversification of the presentation of material, testing and assessment knowledge through more interesting forms that enhance the cognitive activity of students and require the use of ICT (Henseruk, 2021).

A number of methods have been developed for learning foreign languages (Shadiev & Yang, 2020). ICT (Gao, 2020), artificial intelligence and cloud technologies are widely used (Pokrivčáková, 2019; Li, 2020).

Although a pre-pandemic study (Korucu, 2017) found that cloud technologies were rarely used in education, they have gained popularity because they expand the boundaries of the classroom and allow studying anywhere anytime (Liu, 2021). They are considered promising in the field of education: they are able to expand and change the learning process, make it more interesting for pupils and students and thus increase its productivity (Shemshuchenko et al., 2020; Elhadi, 2019).

The advantage of cloud technologies, which is the ability to learn asynchronously and remotely, has made them an indispensable tool for learning during a pandemic, when there is a need for distance learning.

There are many different definitions of cloud technology. In this paper, cloud technologies will be (Bolanos-Garcia-Escribano, 2020) all information technology resources, which include repositories, databases, applications and application services, software, platforms, etc., which can be used remotely via the Internet.

The educational model will mean here the description of the system of using educational and didactic theories (Ababilova, 2020).

The aim of this study was to develop a qualification improvement model for teachers of Philology on the use of cloud technologies in professional activities and to study its effectiveness.

Achieving the aim involved the following objectives:

1) Synthesise a model that can be used to improve the skills of foreign language teachers, which involves the acquisition of skills and abilities for successful use of cloud technologies in professional activities;

2) Check the effectiveness of the proposed qualification improvement model for teachers of Philology on the application of cloud technologies in teaching.

LITERATURE REVIEW

Researchers Liu (2021), Taghizadeh and Adhami (2021) considered the advantages of learning foreign languages using cloud technologies and developed models of learning foreign languages using cloud technologies and the flipped classroom method.

It is shown that cloud technologies are used in the creation of language laboratories (Shi, 2021). Besides, cloud technologies have been shown to improve students' confidence in learning languages and increase their motivation to learn them (Coancă, 2019).

The speed of technology change places high demands on the teacher to keep up with these changes to be able to navigate in the virtual learning space, actively using new technologies to improve learning efficiency (Savelovaa et al., 2020). Therefore, the teacher must learn throughout life, engage in self-education (Banegas, 2020). Further training can also be realised in other ways, for example, through special courses, seminars, programmes, interaction of teachers from different educational institutions, etc. (Agwu, 2020).

This task is complicated for teachers of the Humanities, because the philologist (Hsu, 2020) must have not only knowledge of his/her subject and psychological and pedagogical foundations of teaching, but also knowledge and skills to use technical means and digital technologies (Savelovaa et al., 2020). Therefore, the model of training of teachers of Philology should include a combination of all these components, and should be designed for constant lifelong updating of knowledge in accordance with the current level of technology and changes in Philology (Savelovaa et al., 2020; Hsu, 2020).

Traditional learning involves the use of such forms of learning as lectures, practical and seminar classes, laboratory work, independent and scientific work, internship (Emine, 2019). However, cloud technologies are considered more promising (Constantinou, 2018). They allow the teacher to make these forms of learning more effective. For example, a skilful search allows to quickly find the required information, or ready-made software and methodological complexes. The teacher's task is to develop learning problems and practical assignments which will involve the active use of information technology, including the cloud environment, in accordance with the knowledge and skills of each individual student. This will increase the cognitive activity of students and improve learning outcomes (Kynal, 2017; Agwu, 2020).

The most common cloud technologies used in the educational process of the educational institutions are Google with all its components, such as Classroom, Mail, Drive, Calendar, Google Presentations, Google Spreadsheets (Constantinou, 2018), GoogleForms, etc., each performing different functions. LMS, cloud storage, mind maps, office software packages and Moodle platforms (Shemshuchenko et al., 2020), Wordpress (Vakaliuk et al., 2021), etc. are also used.

The ability to use cloud technologies opens up a number of new opportunities for teachers of Philology: access to information about foreign countries (in text, video, audio format, in languages studied), exchange of experience, visualisation of information that is difficult to perceive from the text, etc. (Kynal, 2017).

The use of cloud technologies allows supplementing the educational process with such forms of learning as chat sessions (synchronous communication of students with teachers or teachers with students on the Internet), teleconferences (distant communication of groups of participants), electronic courses (placement and storage of educational material in cloud storage with open access for participants of the educational process) and web classes (seminars, webinars, conferences, meetings, presentations, web quests, etc.) (Savelovaa et al., 2020; Vakaliuk et al., 2021). The following platforms Webinar.tw, Firmbook.ru, Webinar.ru, V-class.ru, SeeMedia. pro, Wiziq.com, Mirapolis.ru are used to conduct webinars (Savelovaa et al., 2020).

The following platforms can be used to study foreign languages: Ted-talk and Coursera (Zahorodna, 2020). In particular, Ted-talk contains 18-minute lectures or talks on current topics

created in the United States. The Ted-Ed platform provides video tutorials for teachers to help teachers find teaching methods that will increase teaching effectiveness. Coursera, in turn, is a platform designed for online learning, which can also be used, according to scientists (Zahorodna, 2020), in the study of foreign languages, including English. This platform is useful in terms of enabling students and pupils to have access to the space of international communication in English, as well as with its native speakers. This helps students to acquire communication skills in a foreign language, and helps to develop students' skills to allocate time, study independently, communicate with people from different cultures while showing tolerance (Zahorodna, 2020). Another educational platform is EdX, which hosts various online courses. There are also other platforms in the world that can be used to learn foreign languages, for example, Alison, FutureLearn, etc. Besides, there are online language courses designed and presented by the world's best universities, such as Harvard. Various applications for smartphones have been developed to promote foreign language learning, for example, LingvoLeo, Duolingo, PuzzleEnglish, MemRise, BuSuu, Babbel, LingQetc. Along with them, there are various tools for translation into foreign languages, which are based on the use of cloud technologies. These include, for example, Transifex, XTM Cloud, WordfastAnywhere, MemsourcesCloud, MateCAT, MemoQCloud, Smartcat, SDL Internet Editor, etc. (Bolanos-Garcia-Escribano, 2020; Malenova, 2019).

Cloud technologies are also used in such forms of assessing students' knowledge as formative and final; informal and formal; curricula-based; performance-based, etc. (Angus & Watson, 2021). They use the www.kahoot.com programmes and the www.whiteboard.fi platform to create tests and to solve other didactic problems (Angus & Watson, 2021).

The peculiarity of teaching foreign languages is the task of teaching students to read, listen and understand what is heard and read, speak, write, translate. This task is complicated by distance learning, but is greatly facilitated by the use of cloud technologies (Tao, 2021). The combination of distance and full-time forms of education is optimal.

The process of learning a foreign language requires time to practice. Cloud technologies allow communicating during lessons (conferences, webinars, etc.), in extracurricular time, using the method of flipped lesson (that is students get acquainted with new material independently, and then discuss it and apply it in practice during the lesson), as well as controlling the level of new knowledge (Tao, 2021). There has been a number of recent studies of teacher training models and the development of their information competence, in particular, in European educational institutions (Ababilova, 2020; Kynal, 2017), in the United States (Kynal, 2017), as well as in Ukraine (Ababilova, 2020). However, there is a need to develop a qualification improvement model for foreign language teachers, which would contribute to the development of skills and abilities of productive use of cloud technologies in professional activities.

METHODOLOGY

Design participants

The sample included 96 foreign language teachers who completed qualification improvement in the above educational institutions in 2020-2021 at the following departments: Department of Foreign Philology and Translation, Faculty of Trade and Marketing, Kyiv National University of Trade and Economics, Department of Romance Philology and Comparative Typological Linguistics, Institute of Philology, Borys Hrinchenko University of Kyiv, Department of Romance and Germanic Philology, State Institution "Luhansk Taras Shevchenko National University". The sample was divided into two groups: 47 teachers in the control group and 49 — in the experimental one, both groups included women and men of different ages (from 25 to 58). The level of qualification varied from a specialist teacher to a teacher of the highest category. They worked in comprehensive secondary educational institutions located in both urban and rural areas of Ukraine.

The experimental group used a qualification improvement model for teachers of Philology developed and proposed in this study. In the control group, qualification improvement was realised through traditional forms and methods of teaching. The directions of the training were identical for both the control and experimental groups. The tasks set for the teachers of qualification improvement courses were also identical for both groups. One of the tasks was to acquaint teachers of philology with the changes in foreign languages that have occurred recently in connection with their development. Another task was to report on the psychological changes that have taken place in schoolchildren under the influence of various factors, including the rapid development of information and the active use of means of its dissemination and processing. The next task was to acquaint teachers with the advanced pedagogical experience of the use of modern forms, methods and means of training. The last task was to develop skills and abilities necessary for the effective application of cloud technologies in the pedagogical activities of course participants.

Instruments

The method of analysis of experience of the introduction of training models is used in the work. The method of synthesis was used to build a qualification improvement model for foreign language teachers who seek to acquire skills and abilities to use cloud technologies in their teaching. A survey of the effectiveness of the created model was conducted by the questionnaire method. The results of two surveys conducted in both groups were processed by mathematical methods of statistical data processing using Statistica software.

Data collection

The questionnaire contained 18 questions (Table 1). The first four of them were to identify the respondent by gender, age, category, location of the educational institution where the teacher works. The next four questions were to determine the impact that, according to respondents, the qualification improvement model had on the professional skills and abilities of teachers to apply cloud technology in teaching. The next 10 questions were formulated in order to determine the initial level of practical skills and abilities to use cloud technologies in the educational process, which is formed by each of the teachers. Moreover, they were used both for teachers who were included in the control group and for teachers of the experimental group before the qualification improvement. The last 10 questions of the questionnaire were used at the last stage of the survey, which was conducted six months after the training of teachers. It was carried out electronically.

Table 1. Questionnaire to study the effectiveness of the qualification improvement model for teachers of Philology.

1. Please indicate your gender
- Male
- Female

2. Please indicate your age
-24-34
-35-44
-45-54
-55-64

3. Please indicate your category?
- Specialist Teacher
- Second Category Teacher
- First Category Teacher
- Highest Category Teacher
- Methodologist Teacher

-
4. In what area is the educational institution you work in located?
- Rural
 - Urban
-
5. Did the proposed qualification improvement model help you to enrich your knowledge about the possibilities of cloud technologies in education?
- Yes
 - No
-
6. Did the proposed qualification improvement model help you to enrich your knowledge of a foreign language?
- Yes
 - No
-
7. Did the proposed qualification improvement model help you to enrich your knowledge of Pedagogy and Psychology?
- Yes
 - No
-
8. Did the proposed qualification improvement model help you to enrich the knowledge and skills of assessing students' knowledge by means of cloud technologies?
- Yes
 - No
-
9. Do you use cloud technology to find learning resources in preparation for classes?
- Yes
 - No
-
10. Do you use cloud technologies to host educational complexes?
- Yes
 - No
-
11. Do you use cloud technology to simulate difficult-to-perceive concepts?
- Yes
 - No
-
12. Do you use cloud technologies in the process of developing students' reading skills in a foreign language?
- Yes
 - No
-
13. Do you use cloud technologies when developing students' ability to listen to texts in a foreign language?
- Yes
 - No
-
14. Do you use cloud technologies when developing students' ability to speak a foreign language?
- Yes
 - No
-
15. Do you use cloud technologies when developing students' writing skills?
- Yes
 - No
-
16. Do you use cloud technologies in assessing student learning outcomes?
- Yes
 - No
-
17. Do you use cloud technology to engage students in the global linguistic community through web conferencing, webinars, chats, etc.?
- Yes
 - No
-
18. Do you have enough knowledge of the functionality of cloud technologies to use them for achieving teaching goals?
- Yes
 - No
-

Ethical criteria

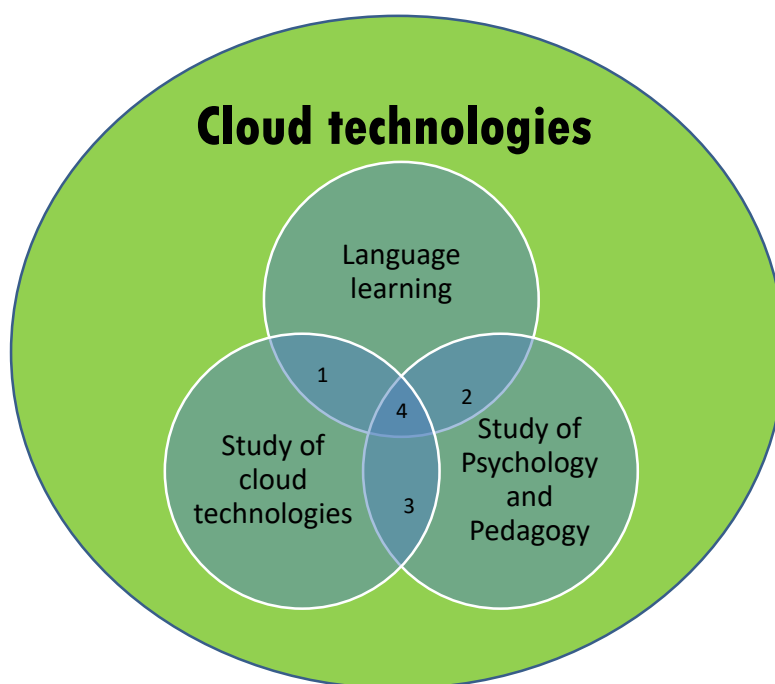
In particular, a closed questionnaire was developed that met the ethical standards of the study. Participation in the survey was voluntary and safe. Anonymity and confidentiality were observed.

RESULTS

The qualification improvement model developed and used in this study is called in pedagogy “a parallel learning model”. This model involves the simultaneous supplementing of linguistic knowledge with current changes in philology, advanced training in psychology and pedagogy, technology, including cloud technologies. Thus, theoretical and practical training is carried out simultaneously. That is, while teaching theoretical issues in Foreign Philology, Pedagogy and Psychology, the educational platform MOODLE (which belongs to cloud technologies) was used, so practical skills and skills of its application were acquired. In order to give teachers knowledge, skills and abilities so that they were able to use cloud technologies independently in teaching foreign languages, it is important to introduce a qualification improvement model which will be based on the active use of the latter in teaching. The conversations and consultations in both Philology and other areas of training were held/conducted in both Ukrainian and foreign languages.

Figure 1 presents a scheme of the qualification improvement model for foreign language teachers on the use of cloud technologies in professional activities developed in this paper.

Figure 1. Schematic representation of the qualification improvement model for foreign language teachers on the use of cloud technologies in professional activities.



The model provides a combination of three aspects of qualification improvement of teachers of Philology:

- language learning, that is improving language knowledge in accordance with its current state;
- study of Psychology and Pedagogy, that is acquaintance with psychological features of modern schoolboys and new pedagogical practices;
- study of cloud technologies, that is acquaintance with cloud technologies and their functions that can be used in language learning.

It is appropriate not to divide these three areas of qualification improvement of teachers of Philology, but to combine them. For example, when combining language learning with Psychology and Pedagogy (zone 2 in the scheme shown in Figure 1), you can simultaneously enrich the foreign language vocabulary on psychological and pedagogical topics, as well as better understand the psychological characteristics of modern youth and get acquainted with advanced world pedagogical

practices. This will allow optimising one's own learning process in teaching foreign languages to students, introducing the experience of the world best teachers.

When combining language learning with learning cloud technologies (zone 1 of the scheme, Figure 1), teachers get acquainted with the functionality of cloud technologies that can be used when learning foreign languages. So, it is possible to achieve optimisation of the process of acquiring knowledge in Foreign Philology and develop skills and abilities to use cloud technologies in the educational process in order to increase its efficiency.

Combining the study of Psychology and Pedagogy with the study of cloud technologies (zone 3 of the scheme, Figure 1) raises awareness of the role of cloud technologies in the education of modern youth. It also allows learning to select appropriate forms of work with cloud technologies in accordance with the didactic tasks, that will help each student to achieve the maximum possible learning outcomes. That is, the use of cloud technologies should personalise the learning process.

Training in all areas of qualification improvement of teachers of Philology (Philology, Pedagogy and Psychology, cloud technologies) should involve the use of cloud technologies. That is, qualification improvement classes are conducted using a training platform, cloud storage, webinars, web conferences, chats, and so on. Teachers can find methodological complexes in cloud storage, or the necessary links to dictionaries, encyclopaedias, reference books, manuals that contain exercises to develop reading, speaking, translating, listening, writing in a foreign language, as well as programmes for creating tests, as well as monitoring and assessment of students' knowledge.

As a result of qualification improvement according to this model (zone 4 of the scheme, Figure 1), the teacher should get acquainted with the updates of linguistics, learn to use cloud technologies in the process of learning the language so as to personalise the learning process and increase its efficiency compared with the results obtained through traditional forms and methods of teaching. Besides, teachers must learn to assess students' learning needs in the subject being studied and respond accordingly. This will not destroy the motivation of students to learn a foreign language. With this in mind, the teacher should build the language learning process in such a way that it is technologically attractive to students and supports student interaction in the group. It is important to take into account the level of knowledge of a foreign language of each student.

This qualification improvement model was introduced in educational institutions included in the sample of this study. A survey was conducted to assess its effectiveness, where the respondents were teachers who underwent qualification improvement according to this model (experimental group), as well as those who improved their skills through traditional forms of education (control group). Both groups answered the questionnaire twice: the first time before the training, the second time — upon completion. Table 2 provides the results of the questionnaire.

Table 2. The results of a survey conducted among teachers who underwent qualification improvement.

Item No.	Questions of the questionnaire	Number of "Yes" answers in the control group, %		Number of "Yes" answers in the experimental group, %	
		Before the qualification improvement	After the qualification improvement	Before the qualification improvement	After the qualification improvement
1.	Did the proposed qualification improvement model help you to enrich your knowledge about the possibilities of cloud technologies in education?	0	68 %	0	92%
2.	Did the proposed qualification improvement model help you to enrich	0	76 %	0	88 %

	your knowledge of a foreign language?				
3.	Did the proposed qualification improvement model help you to enrich your knowledge of Pedagogy and Psychology?	0	82 %	0	94 %
4.	Did the proposed qualification improvement model help you to enrich the knowledge and skills of assessing students' knowledge by means of cloud technologies?	0	72 %	0	96 %
5.	Do you use cloud technology to find learning resources in preparation for classes?	72 %	80 %	74 %	98 %
6.	Do you use cloud technologies to host educational complexes?	78 %	92 %	78 %	98 %
7.	Do you use cloud technology to simulate difficult-to-perceive concepts?	48 %	50 %	46 %	86 %
8.	Do you use cloud technologies in the process of developing students' reading skills in a foreign language?	52 %	64 %	54 %	92 %
9.	Do you use cloud technologies when developing students' ability to listen to texts in a foreign language?	66 %	82 %	70 %	98 %
10.	Do you use cloud technologies when developing students' ability to speak a foreign language?	54 %	76 %	56 %	88 %
11.	Do you use cloud technologies when developing students' writing skills?	56 %	68 %	56 %	90 %
12.	Do you use cloud technologies in assessing student learning outcomes?	54 %	70 %	56 %	98 %
13.	Do you use cloud technology to engage students in the global linguistic community through web conferencing, webinars, chats, etc.?	20 %	24 %	18 %	48 %
14.	Do you have enough knowledge of the functionality of cloud technologies to use them for achieving teaching goals?	56 %	74 %	54 %	88 %

According to the first survey, teachers who participated in this study and belonged to different groups (control and experimental) had on average approximately the same initial technical

training on the use of cloud technologies in the teaching of foreign languages. The deviation from the mean value for the two groups was not more than 2%, the average deviation was about 1.3%.

As Table 2 shows, training of foreign language teachers has led to improved dynamics of the use of cloud technologies in the teaching of foreign languages in both groups. It is due to qualification improvement that 22% of teachers in the control group and 32% in the experimental group gained confidence in using cloud technologies to achieve didactic goals.

The most difficult for both groups was the use of cloud technologies to involve students in communication with native speakers of the language being studied as a foreign language. However, the qualification improvement model proposed in this paper was more successful in this issue (the number of respondents increased by 30% in the experimental group against 4% in the control group). The students of qualification improvement courses achieved little success in the use of cloud technologies to simulate complex concepts and processes, to illustrate them in order to make them simpler (18% in the control group and 20% in the experimental one).

The intergroup variance d , which is a weighted sum of squares of deviations of group means from the general mean, is due to the heterogeneity of the sample, namely the introduction of a qualification improvement model in different educational institutions included in the sample, ranged from 321 to 1476.

It was also found that the standard deviation from the mean percentage of positive responses to the same questionnaire in different educational institutions of the sample was different. In this case, the intergroup variance, which describes the fluctuations of these groups, and intragroup, which describes the fluctuations caused by random factors not taken into account, are not equal, which indicates the invalidity of the null hypothesis.

According to Pearson's criterion, calculating the value of χ^2_1 when answering such questions of the questionnaire as "Did the proposed qualification improvement model help you to enrich your knowledge about the possibilities of cloud technologies in education?" and "Do you have enough knowledge of the functionality of cloud technologies to use them for achieving teaching goals?" in the experimental group ($\chi^2_1=3.4$), comparing with $\chi^2_2=0.4$ obtained in the control group, found that $\chi^2_1 > \chi^2_2$. This is a reason to believe that there is a certain connection between the model of professional development of teachers of philology in the application of cloud technologies in the educational process and the acquired skills of their use in teaching foreign languages.

In the studies conducted in the experimental group, Cohen's d was 1.0, which indicates the high size of the effect of using the model developed by the authors of this article. In the control group, which studied through traditional forms, $d=0.5$, corresponding to the average effect. This is evidence of the effectiveness of the model developed in this paper for qualification improvement of foreign language teachers on cloud technology in professional activities. Besides, it was found that the proposed model is highly effective for improving the skills of foreign language teachers on topical issues of Philology, Psychology and Pedagogy.

DISCUSSION

New technologies provide opportunities to change the education system. However, a necessary condition for the productive process of their introduction into teaching is teachers' appropriate knowledge, skills and abilities. Teachers can get them by improving their skills. The purpose of this work was to develop an effective model of professional development of teachers of philology, which involves the use of cloud technologies in education. In the course of the research it was revealed that the introduced model of professional development of teachers of philology in 92 cases out of 100 contributes to the development of the necessary skills for the use of cloud technologies in professional activities. This study introduced a qualification improvement model for

teachers of Philology, which in 92 cases out of 100 contributed to the development of the necessary skills and abilities for use of cloud technologies in professional activities. At the same time, its effectiveness in enriching knowledge of foreign languages, Psychology and Pedagogy has not been lost. Even in these areas, it has 12% better results than traditional methods of qualification improvement, and 24% more effective in the development of skills and abilities to assess knowledge through cloud technologies.

It is proved that qualification improvement of teachers affects the professional development of teachers and their further teaching practice. According to a survey of 125 teachers, their participation in the TPDP programme has contributed to the expansion of knowledge about modern digital technologies, including cloud ones. However, this is not enough for their active use in professional activities. Currently, teachers rarely use modern technologies due to low level of knowledge and insufficient experience in their use, despite the technical capabilities of their implementation (Agwu, 2020). However, after participating in qualification improvement training programmes the attitude of teachers to the use of technology in the educational process has changed for the better.

It is important that both teachers and students have digital literacy when learning to use cloud technologies. A questionnaire consisting of 24 questions was developed to determine the digital competence of students. A survey of 112 students studying foreign languages was conducted, and it was found that the level of digital literacy of philology students is insufficient (Henseruk, 2021).

A study conducted among 40 students of the university showed that in order to involve students in the active acquisition of knowledge it was not enough to present educational material, even if it uses modern technology. It is also necessary to involve students in the active creation of new knowledge (Pikhart & Klímová, 2020) (students should actively interact with each other (Hsu, 2020), for example, during trainings (Emine, 2019), discussions, debates, business and role games, brainstorming (Emine, 2019), using case methods (Zahorodna, 2020), flipped lessons (Tao, 2021), etc. The qualification improvement model developed in this study included familiarising teachers with non-traditional forms of teaching and learning in combination with the use of cloud technologies.

Scholars have analysed the changing of teaching styles from 1925 to the present day. Features of teaching of each period are considered. The modern period is characterised by the use of the Internet for both learning and entertainment. Therefore, the most effective way to achieve high learning outcomes today is to learn by playing, using digital technologies (Pikhart & Klímová, 2020). The current generation of students is eager to receive information quickly because they understand that it appears quickly and becomes outdated quickly. Therefore, traditional forms of gaining new knowledge from books or other printed sources are ineffective (Pikhart & Klímová, 2020). Besides, students today cannot stay out of technology for long. This is what teachers should take into account when organising the educational process.

The teacher has a task to select such content and apply such forms of work of students with its content to maximise productivity of the work (Pikhart & Klímová, 2020). For this purpose, digital technologies must be used not only to store data in the form of text, video or test tasks and provide access to them to students, but also to use various interactive teaching methods that involve the interaction of participants in the learning process. According to a study (Pikhart & Klímová, 2020), forms of learning that are based on the interaction of students with the Internet and other technologies can increase students' motivation to learn and improve vocabulary when learning foreign languages.

About 57% of teachers surveyed agreed that digital technologies have supplemented traditional teaching methods with new, more creative ones (Hsu, 2020). There were 77% of teachers who began to use them when presenting new material, while 33% began to use them in assessing

the level of knowledge of students. This study showed that more than 50% of philologists use cloud technology to assess knowledge.

The degree of use of information and communication technologies in the training of foreign language teachers was determined through empirical research, which was based on a survey and observation of 93 philology students of Kharkiv Academy of Humanities and Education (Vakaliuk et al., 2021). It was found that 67% of students use the Internet in preparation for classes and homework. There were 17% of respondents who also use a personal computer. It is established that educational opportunities that arise when using ICT, in particular, cloud technologies, complement and allow to create an environment for processing foreign documents, communicating in a foreign language, promote the development of reading, speaking, listening and writing in a foreign language (Vakaliuk, et al. 2021).

Vakaliuk et al. (2021) studied the impact of the use of ICT, including cloud technologies on the development of linguodidactic competence of foreign language teachers. It is proved that the linguodidactic component increased three times in the experimental group, compared with 1.5 times in the control group.

A study (Constantinou, 2018) showed that after students were taught with the use of cloud technologies, 89.7% of them expressed a positive attitude to this form of learning.

Tao (2021) studied an educational platform designed to develop applied English language skills that uses big data, including cloud technology. The study showed that in 90% of cases, the use of this platform in learning a foreign language improved learning outcomes.

The model proposed in this paper took into account previous research and experience in the effective use of cloud technologies in learning foreign languages. As a result, the developed model showed high efficiency.

However, this study to determine the effectiveness of the implemented model was limited to a survey of students of refresher courses. At the same time, there was no study of real changes in the professional activities of teachers under the influence of knowledge acquired during training courses.

CONCLUSION

The issue of finding new forms, methods and means of education has become urgent in light of recent events in the world, including the pandemic and the transition of educational institutions to distance learning. Such measures require the involvement of specialists of appropriate competence. Therefore, in order to meet modern educational needs, educators must engage in lifelong learning. This paper develops a qualification improvement model of foreign language teachers, which is based on the trinity principle of the areas of professional development of foreign language teachers and aims to provide them with the skills needed for effective use of cloud technologies in their teaching. The results of its use are also studied and it is established that such a model has a high level of efficiency in improving the skills of foreign language teachers in the application of cloud technologies in their professional activities.

The results of this study are of practical importance for teachers of qualification improvement courses, as well as for their students. They are especially important for scholars who are looking for or developing effective learning models through innovative learning tools, including cloud technologies.

The rapid development of information, which urges changing the forms of its presentation to students, leads to a constant search for new, effective and relevant models of teaching and qualification improvement of teachers. This may be the topic of further research.

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