

RESULTS OF DIGITAL COMPETENCE DEVELOPMENT FOR PHILOLOGY STUDENTS WITHIN BLENDED LEARNING

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ABSTRACT

The relevance of the problem is due to dynamic changes in digital society. The study **aims** to determine and compare the levels of digital competence development for future philologists-teachers before and after studying the module "Digital Training Tools".

The research **methodology** provided consideration of the target, content and procedural aspects of digital competence development for future philologists within limits of competence, activity and technological approaches. The methods of comparative analysis of scientific publications and documents on the topic, practical survey methods using Google forms, analysis of received empirical data, generalization of scientific and pedagogical workers' experience at Ukrainian Language and Literature Faculty named after H. F. Kvitka-Osnovianenko, who ensure the implementation of educational programs in the specialty «Philology».

The comparison is conducted with the help of pedagogical methods and appropriate extracurricular activities. It has been found out that the majority of philology students (90 students) of Bachelor Degree qualification in the

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program subject area «Philology» at the Ukrainian Language and Literature Faculty named after H. F. Kvitka-Osnovianenko and the Faculty of Foreign Philology are at the average level of digital competence development before studying the module “Digital Training Tools”.

The **results** of the study have shown that the number of students at the average level of communication and interaction in the digital society has decreased, it is completely absent at the basic level, and it has increased at the high level. The obtained and compared results after studying the module and conducting extracurricular activities are provided: the number of students at the high level of computer literacy has increased by 17% and the number of those ones at the average level has decreased by 15%. The statistics on the levels of information literacy and ability to work with digital data are given. The results indicate the effectiveness of the offered module and activities.

Conclusions. The basics for the digital competence development are defined. They are motivation and awareness of the digital competence necessity by all students in different subjects; availability of technical tools and free digital content with the native-language interface. The prospects for further research are outlined.

KEYWORDS: Digitalization, Digital Competence, Blended Learning, Teacher’s Training, Philology Students.

INTRODUCTION

In the digital age, life is permeated by digitization. Today there is a need to master all levels of digital competence. The Ukrainian digital competence experts have taken a step forward, namely, based on the European conceptual and reference model of digital competences for citizens DigComp 2.1 and recommendations from international and European institutions, developed a Digital Competence Framework for Ukrainian citizens in 2021, which is adapted to Ukraine and includes 4 dimensions, 6 areas, 30 competencies and 6 levels of digital skills (Description ..., 2021).

Another step forward was the Order of the Cabinet of Ministers of Ukraine № 167-r. “On approval of the Concept of digital competencies development and approval of the action plan for its implementation” dated March 3, 2021 (Order ..., 2021), which raises a number of issues that “need

immediate solution, including the lack of uniform requirements, approaches, indicators of digital competence, etc.” (Order, 2021). Given the action plan for the development of digital competence, the government has organized a number of activities. Thus, “the strategic goal of the Ministry of Digital Education was to teach 6 million Ukrainians digital literacy in three years” (Description ..., 2021).

This was planned to be done through the online platform “Action. Digital Education” (Online Platform, n.d.), which was created in 2020. This platform hosts more than fifty educational series for parents, teachers, civil servants, schoolchildren, coaches, active citizens, youth, etc.

Regarding the description of digital competence of a pedagogical worker, the project was developed to implement the order of the Ministry of Education and Science of Ukraine № 38 dated January 15, 2019 (Description, 2019), which covers the structure and description of levels of

digital competence in the following areas: teacher in digital society; professional development; use of digital resources; student learning and assessment; formation of digital competencies of students.

Regarding the introduction of a blended form of education in institutions of professional higher and higher education, the Ministry of Education and Science of Ukraine issued recommendations defining the benefits of blended learning: "the possibility of harmonizing the content of educational programs". The definition of blended and distance learning is also provided. Thus, distance learning in the Law of Ukraine "On Education" is defined as "a separate form of education" (Law, 2017). Blended learning is defined as an approach, as a pedagogical or technological model, or as the methodology.

This is a direct interaction between students and teachers in the classroom using online technologies (Recommendations ..., 2020). The transition to a blended form of higher education has increased the need and importance of forming the level of digital competence of future teachers. This issue is especially acute in the training of future teachers of philology, as their training has certain specifics.

Given the urgency of the chosen problem, it should be noted that the formation of digital competence of future teachers has been the subject of research by many Ukrainian scholars. For example, N. Morse and A. Kocharian in their study considered "the interdependence of the quality of the educational environment of a modern higher education institution with the level of ICT competence of its research and teaching staff, and described the model of corporate standard ICT competence of research and teaching staff" (Morze, &

Kocharian, 2014). Subsequently, N. Morse and A. Kocharyan joined the working group to develop the project "Description of digital competence of a teacher" (Description..., 2019).

We analyzed the work of A. Tomashevskaya, O. Popova, S. Tkachev, N. Tkachova, O. Grechanyk and V. Grygorash (2020), I. Kostikova, O. Honcharova, V. Vorozhbit-Horbatyuk, N. Soloshenko-Zadniprovskaya, O. Marmaza, and Y. Lushchik (2020). The authors prove that distance learning can provide students with additional opportunities to gain new knowledge and skills, and teachers can offer new forms and methods of learning.

I. Trubavina, S. Dotsenko, O. Naboka, M. Chaikovskiy and H. Meshko (2021) considered the formation of digital competence of teachers of humanitarian institutions of higher education in quarantine. The researchers noted that the development of digital competencies in teachers of humanities specialties depends on their age, work experience and teaching experience, self-awareness and self-motivation, moral and psychological, material incentives to master these competencies, many conditions for education at home and at work, attention to their formation at the state level (Trubavina, et. al., 2021).

For her part, H. Henseruk, identifying digital competence as one of the main components of professional competence of future teachers, analyzed European standards for defining digital competence, the European Commission's Digital Competence Framework for Citizens (DigComp) and identified the following standards of digital competence: information management, cooperation, communication, content and knowledge, ethics and responsibility, evaluation and

problem solving, technical operation (Henseruk, 2019).

T. Sobchenko highlighted the practical aspects of “the implementation of blended learning of future teachers of philology, namely the use of information and communication and cloud technologies in the study of pedagogical disciplines by applicants for humanities in higher pedagogical education” (Sobchenko, 2020).

All the above issues relate to the disclosure of the essence of digital competence, its structure and the need to form in future teachers. The problem of developing a model for the formation of digital competence of students of philology in the context of blended learning remains relevant and unresolved, as it has not been the subject of study by scientists.

Therefore, the **aim of the article** is to identify and compare the levels of digital competence development for future teachers in Philology before and after studying the content module “Digital Training Tools”, to determine the conditions that affect the quality of digital competence development.

The methodology was also designed by conclusions from publications N. Balyk and H. Shmyher (2018), M. Kelentrić, K. Helland, and A.T. Arstorp (2018), Vorozhbit-Gorbatyuk, V.V. (2021).

METHODOLOGY

The study was conducted on the basis of H. S. Skovoroda Kharkiv National Pedagogical University during the 2020-2021 academic year. The study involved 90 students of the Ukrainian Language and Literature Faculty named after H. F. Kvitka-Osnovianenko. The selection of respondents studying at the Ukrainian Language and Literature Faculty named after H. F. Kvitka-Osnovianenko can be explained by the fact that the authors

teach directly at the Faculty. All students study in order to obtain a Bachelor's degree in specialty 035 'Philology'.

Lecturers of different departments (the Department of Information Technologies, the Department of Education and Innovative Pedagogy, the Department of the Ukrainian Language, the Department of Ukrainian Studies and Linguistic Didactics, the Professor Leonid Ushkalov Department of Ukrainian Literature and Journalism, the Department of Foreign Literature and Slavic Literature, the Department of English Philology, the Department of Practices of English Oral and Writing, the Department of English Phonetics and Grammar, the Department of Oriental Languages, the Department of German Philology, the Department of Romance Philology) took part in the survey. The purpose of the survey was to identify and compare the level of digital competence for future teachers of philology before and after studying the content module “Digital Training Tools” of the academic discipline “Pedagogy”.

As the level of digital competence of future Philology teachers determines the conditions that affect the quality of blended learning, the following research methods were used: theoretical analysis of pedagogical literature, regulations, interviews, testing, synthesis and generalization of the results of education.

The Ukrainian normative documents were considered during studying. They are: Law of Ukraine “On Higher Education” (as amended in 2017) (Law, 2014); Law of Ukraine “On the National Informatization Program” (as amended in 2020) (Law, 1998); the Concept of Development of Digital Competencies and Approval of the Action Plan for Its Implementation (Order, 2021); State Strategy for Regional Development for 2021–2027 (Resolution, 2020); Order of the Ministry of Education

and Science “On approval of the Regulations on distance learning” (as amended in 2020) (Order, 2013, April); Order of the Ministry of Education and Science “On approval of requirements for higher education and postgraduate education, scientific, educational and scientific institutions that provide educational services in the form of distance learning for training and retraining of specialists in accredited areas and specialties” (Order, 2013, October); Order of the Ministry of Education and Science of Ukraine “On approval of the Conditions of admission to higher education institutions of Ukraine in 2021” (Order ..., 2020).

The research took place in the following stages: analysis of scientific and pedagogical literature, study of normative documents; generalization and systematization of the obtained results; testing to determine the digital literacy of "Tools", and the issuance of certificates to students; study of the module "Digital Training Tools" by students of philology and conducting extracurricular activities; repeated test "Tools"; comparison of test results; identification of conditions that affect the quality of competence formation.

RESULTS

Determining the general level of digital literacy

Students have different levels of digital competence due to the age component, as well as the forced transition to distance (or blended) learning. To test this assumption, the first national test for digital literacy "Tools" was used, which was created on the basis of the European framework of digital competences for citizens DigComp 2.1. and adapted to the Ukrainian space by experts (Order, 2021). The figure was implemented "with the

support of the United States Agency for International Development (USAID), the Swiss-Ukrainian EGAP Program, funded by the Swiss Agency for Development and Cooperation and implemented by the Eastern Europe Foundation and the Innovabridge Foundation" (Online platform, n.d.).

The beta version of the Numerical Chart contains 90 questions to test basic knowledge and skills in digital literacy. All questions are classified into 6 blocks. The first block includes basics of computer literacy. The second block tests information and media literacy and ability to work with data. The third block includes the creation of digital content. The fourth block tests communication and interaction in the digital space. The fifth block includes security in the digital space. The sixth block tests learning resources through research.

We describe each of these blocks (Online platform ..., n.d.).

The first block "Fundamentals of Computer Literacy" provides a test of knowledge and skills in working with computers and mobile devices; use of basic programs and applications, as well as use of the Internet. The second block "Information literacy, ability to work with data" is aimed at testing knowledge, skills and abilities to view, search and filter content; critical evaluation of information, verification of sources and facts. The tasks of the third block "Creating digital content" allow you to diagnose knowledge, skills and abilities to create, edit and integrate digital content, compliance with copyright and licenses; primary programming skills.

The questions of the fourth block "Communication and interaction in the digital society" determine the readiness of the individual to distribute content and

exchange data using digital technologies; ability to communicate in a digital environment and knowledge of the rules of network etiquette. The fifth block "Security in the digital environment" helps to analyze the availability of knowledge on the protection of devices and secure connection to the network, security of personal data and their privacy, protection against fraud and manipulation. The sixth block "Solving problems in the digital environment and lifelong learning" aims to test knowledge, skills and abilities to search for information and services to solve technical problems; use of Internet resources for training, professional skills development and self-development.

A comprehensive approach was used during the test development. This approach identified 30 digital competencies. These competencies are

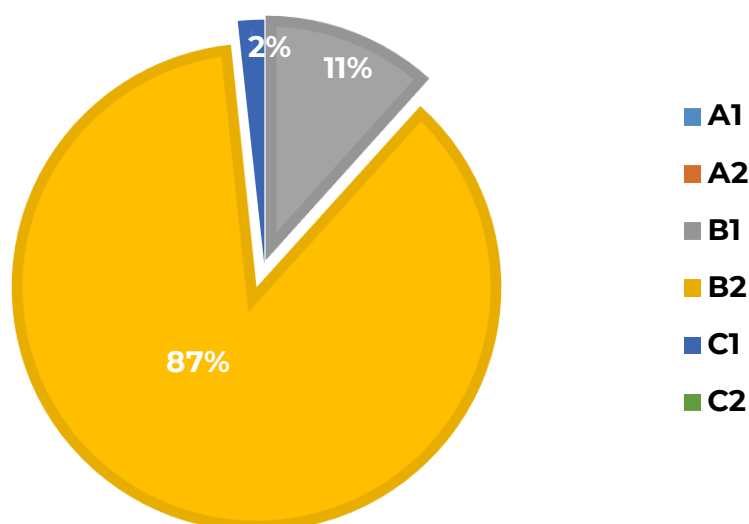
measured at three levels (basic (A), intermediate (B) and high (C)) and six sublevels, respectively (A1, A2, B1, B2, C1, C2). Passing the test "Tools" was offered to first-year students of the Ukrainian language and Literature faculty named after H. F. Kvitka-Osnovianenko and the Faculty of Foreign Philology at the first lesson of the module "Digital Training Tools".

A total of 90 students were involved in the testing. After successfully passing the test, each student received an electronic certificate. This certificate certifies the general level of digital literacy, the total number of points scored, the level and number of points in accordance with the six blocks. All certificates are stored on the virtual disk of the IT department. The test results are reproduced in Figure 1.

Figure 1

The results of the test "Tools" at the beginning of the study of the module "Digital Training Tools"

THE GENERAL LEVEL OF DIGITAL LITERACY OF STUDENTS OF PHILOLOGY



The data in the figure show that the majority of students (87%) at the beginning of the module have an average level of B2. Only 2% of students have a high level (C1). The module "Digital Training

Tools" is part of the compulsory academic discipline Pedagogy, which is compiled in accordance with the educational-professional (educational-scientific) training program of Bachelor degree, field

of knowledge 01 Education / Pedagogy, specialty 035 Philology. The total number of hours of the academic discipline Pedagogy is 7 credits (210 hours).

Description of the content module “Digital Training Tools”

The academic discipline Pedagogy is integrated and consists of five content modules, namely: “Digital Training Tools” (the Department of Information Technology), “General Fundamentals of Pedagogy”, “Theory of Education”, “Didactics” and “Fundamentals of Pedagogical Skills” (the Department of Educology and Innovative Pedagogy). The purpose of teaching the content module “Digital Training Tools” is the formation of digital competencies of future teachers in accordance with state and European requirements for IT competencies of pedagogical specialists.

The content module provides awareness of the essence of basic concepts and theories of information and communication technologies for their further use in teaching, the formation of the ability to understand the informational pedagogical reality, to teach effective pedagogical decisions by ICT, the formation of skills and organization of self-learning and ICT.

In the process of studying the module “Digital Training Tools” students will get acquainted with modern forms of e-learning, distance and blended learning, and after graduation will be ready to freely, responsibly and safely use information technology and digital devices, as well as master new ones; create informational educational products, working individually or in a team, critically evaluate information and its impact on people and society, the benefits and risks of using IT for themselves, society and environment.

Content of the module “Digital Training Tools” includes such topics as information and digital competence of the future teacher, network educational technologies, a single information educational environment, models of blended learning, educational resources for joint work on projects.

Describe each of the topics of the module. Topic 1 “Information and digital competence of the future teacher” includes the study of such concepts as “information society”, “informatization of education”, “digital literacy”, “digital competence”, acquaintance with the means of informatization of education, digital technologies in education, study of educational opportunities of information technologies, objects of computerization of educational process, and also studying of possibilities of open educational information space, electronic educational resources.

While studying topic 2 “Network educational technologies”, students get acquainted with the structure and modern servers of the Internet, search tools, learn the basics of information security, data protection in computer systems, intellectual property requirements and copyright. The purpose of topic 3 “Unified information educational environment” is to learn the concepts of “e-pedagogy”, “e-learning”, “mobile learning”, “e-textbook”, “information-educational environment”, as well as the principles of creating a single information educational environment, visualization of educational material (infographics, mental maps, word clouds, etc.).

Students create a personal learning environment, which is then tested in pedagogical practice in general secondary education. Topic 4 “Mobile, distance and blended learning” includes the study of the principles of mobile, distance and

blended learning, familiarization with the creation and requirements for distance learning courses on the Moodle platform. The organization of project activities is the task of topic 5 “Educational resources for collaborative work on projects”, which involves the creation of projects using Google services.

Most of the discipline is devoted to independent work of students. For this purpose, a distance course “Digital Training Tools” was created on the Moodle platform of H. S. Skovoroda Kharkiv National Pedagogical University (the Course “Pedagogy”, n.d.). The following topics are submitted for independent study: “Review of information technologies and their application in pedagogical activities”, “Network etiquette for discussions by means of web

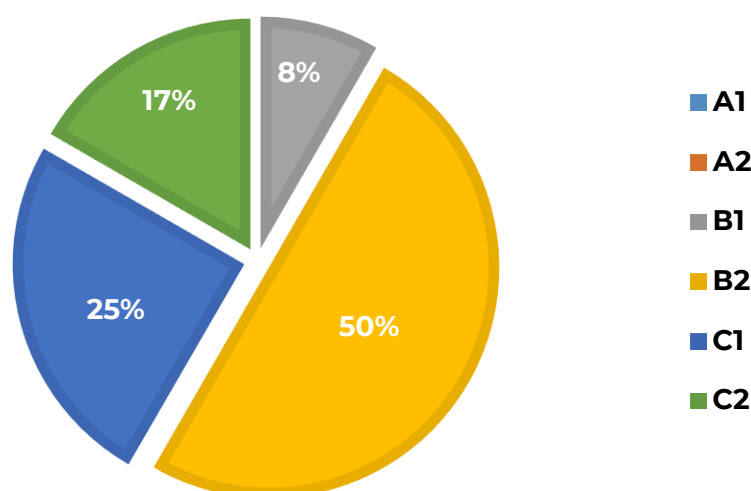
communication within the training course and / or knowledge sharing community”, “Development of educational multimedia resources (audio, video), animations, text and tabular information)”, “Web 2.0 services in the organization of the educational process”, “Collaborate on Google Docs” etc. In extracurricular classes, online consultations were held for students (“Code Time”, “Science Night”), webinars on digital technologies were organized. A competition for the best e-portfolio was held. In addition, students participated in student conferences and seminars on digital competence.

After completing the study of the module “Digital Training Tools”, students again passed the test “Tools”. The results are shown in Figure 2.

Figure 2

The results of “Tools” after studying the module “Digital Training Tools”

THE GENERAL LEVEL OF DIGITAL LITERACY OF STUDENTS OF PHILOLOGY

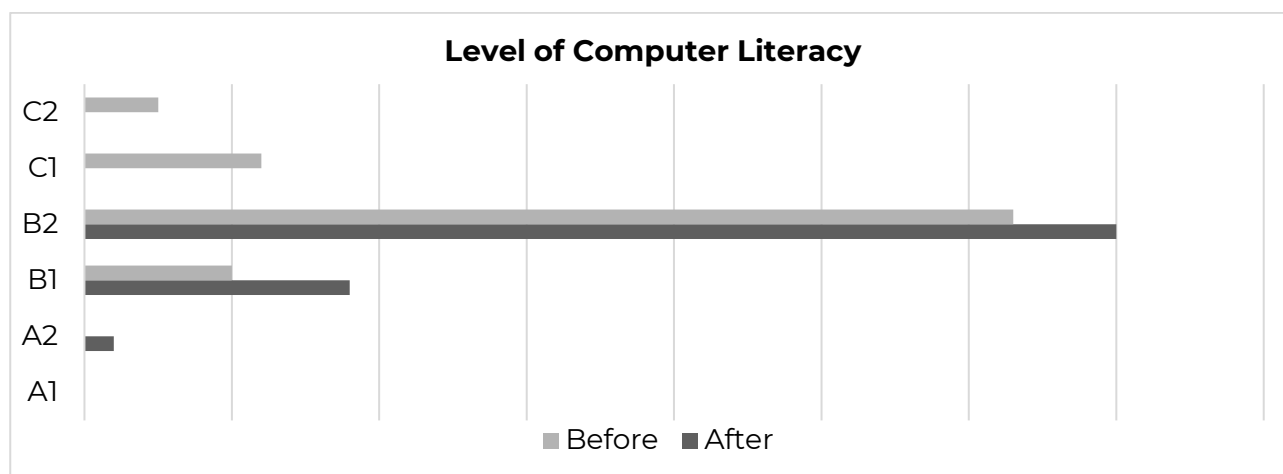


A comparison of the data in Figures 3 and 6 shows significant positive changes in the levels of formation of students' digital literacy. Thus, 17% of students have a high level (C2), 25% of students have C1 level. The number of students at the average level decreased: 8% at B1 level and 50% at

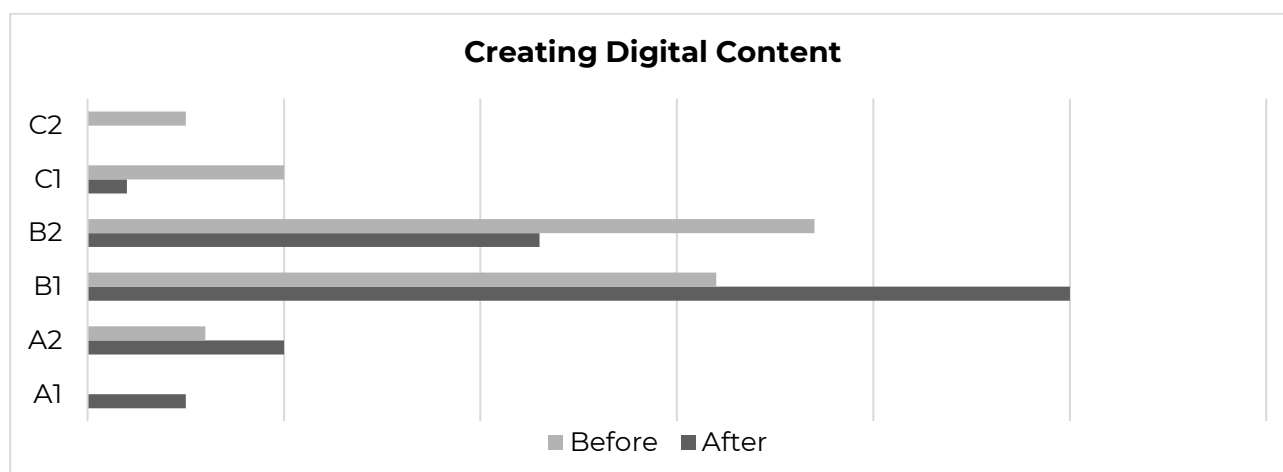
B2 level. The results of the comparative analysis of the levels of digital competence of students of philology before and after the study of the module “Digital Training Tools” and extracurricular activities in digital technologies are shown in Figures 2-6.

Figure 3

Comparison of the levels of students' computer literacy development before and after the study

**Figure 4**

Comparison of the levels of creating digital content before and after the study

**Figure 5**

Comparison of the levels of students' information literacy development and ability to work with digital data before and after the study

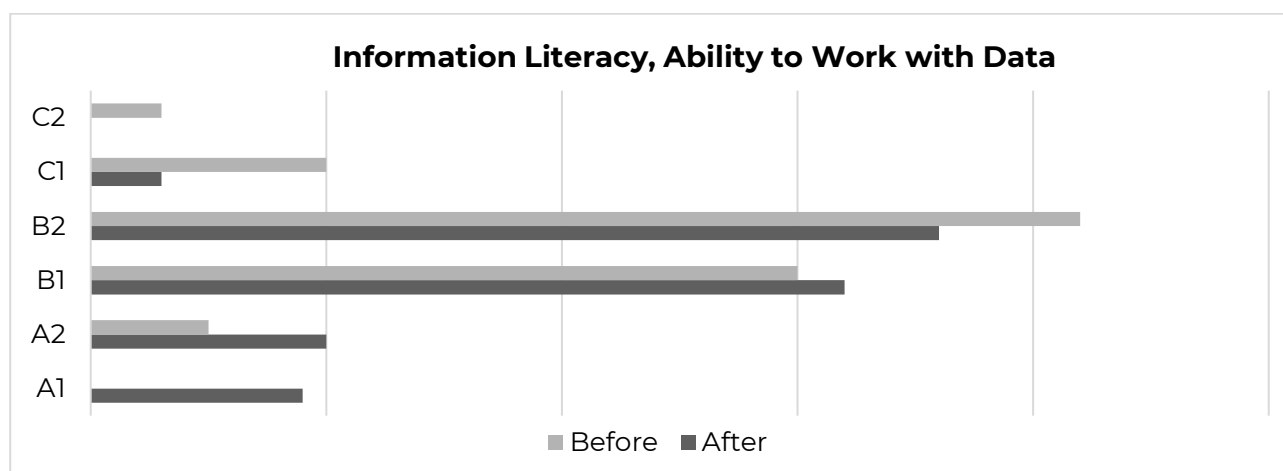
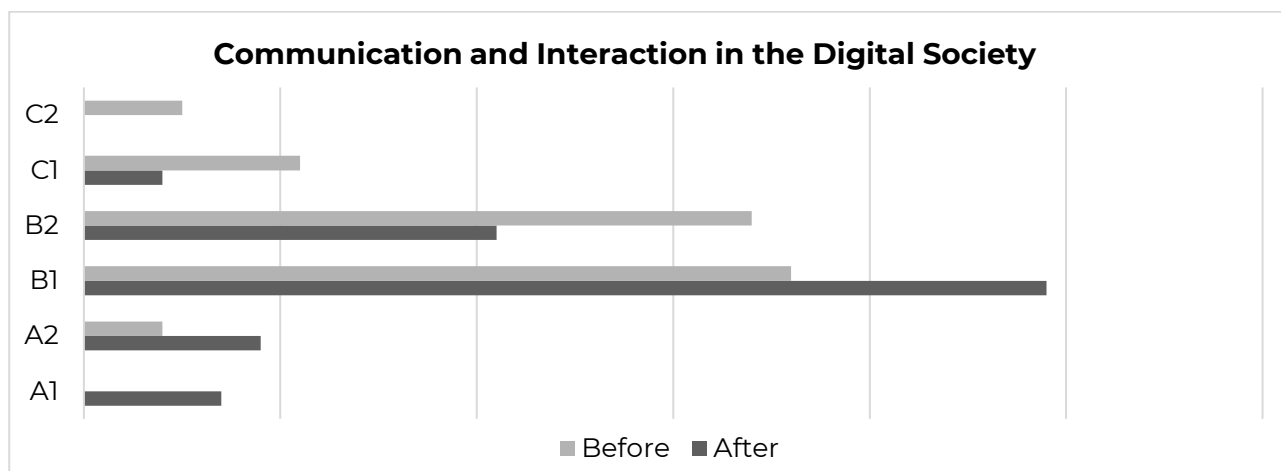


Figure 6

Comparison of the levels for students' communication and interaction in the digital society before and after the study



The comparison of the results allows us to assert the effectiveness of the module "Digital Training Tools" and the relevant extracurricular activities. Thus, the number of students with a high level of computer literacy increased by 17% (C1 and C2) and decreased by 15% at the average level (B1 and B2). Changes in the creation of digital content were as follows: +5% C2, +8% C1, -14% B2, -18% B1, -9% A1 and A2. The changes in the levels of information literacy and ability to work with data are positive: +3% C2, +7% C1, -6% B2, -2% B1, -14% A1 and A2.

The number of students at the average level in terms of communication and interaction in the digital society has decreased (-13% B1, -13% B2) and is completely absent at the basic level A1. But the number of students at a high level increased (+5% C2, +7% C1). There have been significant changes in security in the digital environment. Thus, the number of students at the basic level decreased (-7% A1, -6% A2) and increased by 6% at the high level. In terms of solving problems in the digital environment and lifelong learning, we have the following changes: -15% at the

A1 level, -7% - at the A2 level, -9% at the B1 level and +4% at the high level.

Studying made it possible to determine the conditions that affect the quality of competence formation. These competencies are consistent with the content of the national digital literacy test "Tools". The first condition is the motivation and awareness of the need for digital competence by participants in the educational process. The second condition involves the provision of personal gadgets with the necessary software and office equipment. The third is content developed and open for access, which has the Ukrainian interface.

Based on the results of the work we carried out the methodological recommendations for students of higher education (Sobchenko et al., 2021).

DISCUSSION

The problem of computer literacy development of future teachers in the process of education involves the study of international experience. It is defined as a strategic for the national educational systems development (Description of digital competence of the teacher (2019).

The results of this study emphasize the role of educational disciplines of practical direction. In this study, practical training with elements of modeling professional situations was chosen as the driving condition for effective learning. This is to some extent expands the results outlined in the authors' publications (Kostikova et al., 2020).

CONCLUSIONS

The effectiveness of the module "Digital Training Tools" and the following extracurricular activities such as online consultations, "Code Time", "Night of Science", webinars on digital technologies,

competition for best e-portfolio, conferences and seminars on digital competence is proved. The basics for the digital competence development are defined. They are motivation and awareness of the digital competence necessity by all students in different subjects; availability of technical tools and free digital content with the native-language interface. The prospect of further research is to develop a structural and functional model of the process for philology students' digital competence development in a blended learning environment.

CONFLICT OF INTERESTS

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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АНОТАЦІЯ / ABSTRACT [in Ukrainian]:

РЕЗУЛЬТАТИ РОЗВИТКУ ЦИФРОВОЇ КОМПЕТЕНТНОСТІ СТУДЕНТІВ-ФІЛОЛОГІВ У МЕЖАХ ЗМІШАНОГО НАВЧАННЯ

Актуальність проблеми зумовлена динамічними змінами цифрового суспільства. **Метою** дослідження є визначення та порівняння рівнів розвитку цифрової компетентності майбутніх учителів-філологів до та після вивчення модуля «Засоби цифрового навчання».

Методологія дослідження передбачала розгляд цільових, змістових та процесуальних аспектів формування цифрової компетентності майбутніх філологів у межах компетентнісного, діяльнісного та технологічного підходів. Розроблено методи порівняльного аналізу наукових публікацій і документів з теми, методи практичного опитування за допомогою гугл-форми, аналізу отриманих емпіричних даних, узагальнення досвіду роботи науково-педагогічних працівників, які забезпечують реалізацію освітніх програм за спеціальністю «Філологія», що використовується факультетом української мови та літератури імені Г. Ф. Квітки-Основ'яненка.

Порівняння проводилося за допомогою педагогічних прийомів та відповідної позааудиторної роботи. З'ясовано, що більшість студентів-філологів (90 осіб) освітньо-кваліфікаційного рівня «бакалавр», за освітніми програми спрямування «Філологія» українського мовно-літературного факультету імені Г. Ф. Квітки-Основ'яненка та факультету іноземної філології знаходяться на середньому рівні розвитку цифрової компетенції перед вивченням модуля «Засоби цифрового навчання».

Результати дослідження показали, що кількість студентів на середньому рівні комунікації і взаємодії в цифровому суспільстві зменшилась, на

базовому рівні вона повністю відсутня, а на високому – зросла. Наведено отримані та порівняні результати після вивчення модуля та проведення позааудиторних заходів: на 17% зросла кількість студентів з високим рівнем володіння комп'ютерною грамотністю, на 15% – зменшилася на середньому рівні. Наведено дані про рівні інформаційної грамотності та вміння працювати з цифровими даними. Результати свідчать про ефективність пропонованого модуля та проведених заходів.

Висновки. Визначено засади розвитку цифрової компетенції. Це мотивація та усвідомлення значущості цифрової компетентності всіма студентами з різних предметів; наявність технічних засобів і безкоштовного цифрового контенту з інтерфейсом рідною мовою. Окреслено перспективи подальших досліджень.

КЛЮЧОВІ СЛОВА: цифровізація, цифрова компетентність, змішане навчання, підготовка викладачів, студенти-філологи.

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