Features of using Moodle tools in the training of future social workers

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Abstract. In the article the formation of information and communication competence of future social workers is carried out. The sequence of topics studied by future social workers in the content part of the discipline of the information cycle "Modern information technology" is presented. The stages of ICT competence formation of future social workers are described. Authors provide a clear description of the sequence of learning and acquiring skills of practical work with a personal computer, cloud technology and its applications, free use of e-mail and additional features of Gmail, creating and formatting files of various formats, creating electronic educational resources by cloud technology, developing online courses and personal pages, understanding the capabilities and awareness of software for creating and processing various content by future social workers. They also analyze the benefits of the Moodle platform for its active use during the training of social professionals in the distance learning situation. These include: ease of use, intuitive interface for students and teachers, free, compliance with the requirements of higher education institutions for educational platforms, availability of methodological and reference materials, the ability to perform tests, planning and organizing the work of teachers and students and so on. In the article the need for skills and abilities to work with the above programs, services and technologies is emphasized too. The expediency of placing the discipline "Modern information technology" on the basis of the distance learning platform Moodle for future social workers is substantiated. The preconditions for the use of Moodle by the participants of the educational process are determined, the list of advantages and possibilities of this platform is given. The results (initial and final) of the study of the discipline "Modern information technology" are presented.

Keywords: learning content management system Moodle · e-Learning environment · training of future social workers

1 Introduction

Modern education requires a variety of forms, methods and techniques of organizing educational activities. Preference should be given to forms, methods and techniques that involve in their arsenal the use of information and communication technologies that can individualize the learning process, enrich the acquired knowledge and become effective assistants in professional activities [12]. Recently, in connection with the global pandemic, e-learning and such a form of e-learning as distance learning have received special attention. Distance learning belongs to the form of organization of the educational process on the basis of information and communication technologies and is relied on the principles of self-educational activity. The use of distance learning platforms leads to the successful solution of modern educational problems and is consistent with the implementation of the Law of Ukraine "On the National Informatization Program" [20].

Each period is characterized by its own features associated with changes in social, cultural, political and economic development. It is clear that education in Ukraine should not be left out of all the processes taking place in society. Since according to the circumstances and information development of the state in the educational process it is necessary to introduce e-learning tools, educators must take into account the specifics of their implementation. This attitude will allow everyone to learn the strategy of teaching specific disciplines in the training of future social workers based on the learning environment on the Internet. Taken into account the above mentioned facts and based on our own experience, we should outline the educational prospects of teaching specific disciplines in the training of future social workers using the e-learning environment Moodle and identify features of the use test tools on this platform.

The issue of using distance learning platforms in the educational system is considered by modern researchers around the world. The use of the Moodle distance learning system in the process of training future specialists in Ukraine and abroad is considered by Abdula et al. [1], Mintii [25], Mintii et al. [27, 27], Mpungose [29], Shalatska et al. [44], Teo et al. [47]. To implement blended learning, the great part of the universities use learning content management system Moodle. According to statistics, in 2022 the Moodle system was used by educational institutions in 245 countries [28].

Educational programs cannot make such progress in the development of learning skills as programmes that use information and communication technologies in their arsenal. Fedorenko et al. [11, 12], Osadchyi et al. [31], Panchenko et al. [33], Semerikov et al. [40], Tkachuk et al. [48], Velychko et al. [51, 52] devoted their works to the development of theoretical and methodological principles of implementation of information and communication technologies in the educational process of training future specialists. An important aspect in the work of future social workers is the formation of a high level of mastery of information and communication technologies. Danilchuk [8], Povidaychyk [37] studied the training future social workers with the use of information and communication technologies.

The study of the professional training of social workers revealed a contradiction between the vital needs of society in modern specialists and the real state of their preparation for working with different categories of clients. An important role in the training of future social workers is the formation of a high level of knowledge of information and communication technologies (ICT) on the bases of modern educational platforms, like Moodle, at the higher educational establishment [14].

The most effective option for the formation of ICT competence is the use of a mixed form of learning in the educational process. The organization of blended learning was investigated by Bilousova et al. [6], Bondarenko et al. [7], Gayevska and Kravtsov [13], Holiver et al. [15], Martyniuk et al. [24], Mintii et al. [26], Semerikov et al. [40], Tkachuk et al. [48].

The professional tasks facing a social worker are transformed over time, expand the functional responsibilities of the specialist and modernize the organizational structure of social institutions, the content and technology of their activities.

Current issues of theory and practice of social work in Ukraine are considered by Bekh [4], Bekh and Bekh [5], Dubych [10], Kropelnytska et al. [19], Lukashevich and Semigina [23], Ovod [32], Trubavina [49]; professional training of social workers is investigated by Omelchenko et al. [30], Pinaeva and O. [35], Povidaychyk [36], Savelchuk and Bybyk [39], Slozanskaya and Horishna [45]. Studies of experience of social work and professional training of social workers are presented by Klos [17, 18], Lukashevich and Semigina [23], Semigina and Pozhidayeva [41], Semigina [42, 43], Slozanskaya and Horishna [45].

According to EDUCAUSE Report 2019, "key short-term (one to two years) trends of accelerating higher education technology adoption are redesigning learning spaces and blended learning designs" [2]. The Moodle system is one of a number of software products that are distributed under free software licenses. Free software products have become widely popular in Ukraine due to limited government funding for all areas of education. The undisputed leader in the prevalence of learning management systems, among free software, is the Moodle system, which is up to the SCORM standard and has a modular structure, thanks to which a large number of additional modules have been created that expand the capabilities of the system.

Moodle is created as a platform for technical support of distance learning, respectively, it provides mechanisms to solve problems that traditionally arise before teachers and students in a distance learning situation: communication between teacher and students, relations between students, access to methodical and reference materials, performance of tests, planning and organization of work of the teacher and students.

The experience of implementing free software at Donbas State Pedagogical University began in 2004. For the first time the Moodle was used at the Faculty of Physics and Mathematics in the study of computer science disciplines, such as "Programming", "Information systems and databases", "The use of computer technology in the educational process" [50]. Later, Moodle began to be used

in other faculties. At present, the entire educational process at Donbas State Pedagogical University has been transferred into a distance format. Training of future professionals, as well as training of future social workers, is carried out on the Moodle distance learning platform.

The Moodle distance learning platform has a lot of advantages, including introduction of e-learning technologies in the educational process, easy to learn and convenient e-assessment system, quality analysis of learning, monitoring the quality of learning resources, creating conditions for lifelong learning, the convenient and accessible archive of materials, ensuring a continuous learning process, easy distribution of electronic materials, compatibility with all formats of electronic materials, a wide range of tools for interaction between teacher and students etc.

The Moodle distance learning platform is the most promising e-learning platform, which is actively implemented in the educational process and contributes to its modernization [1].

According to the educational program of training of future social workers at the Donbas State Pedagogical University the formation of information and communication competence of future social workers is based on the discipline of the information cycle "Modern information technology" in the fourth term (the second year of study, the first level of higher education (bachelor's degree). This course is designed for future social workers to master the skills of working with a personal computer, cloud technology and its applications, free use of e-mail and additional features of Gmail, creating and formatting files of various formats, creating electronic educational resources by cloud technology, developing online courses and personal pages, understanding the capabilities and awareness of software for creating and processing various content.

The educational functions of the disciplines of the information cycle include:

- formation of general bases of modern scientific worldview;
- development of thinking;
- acquisition of practical skills in the use of information and communication technologies;
- preparation for practical activities and continuing education.

The implementation of educational functions of the information cycle disciplines are realized due to specially organized learning conditions and performs a number of functions:

1. The *educational function* is the organization of the learning process; mastering the system of knowledge, skills and abilities about the disciplines of the information cycle, information processing technology and software. It highlights terms and concepts that interact with other sciences, points out the importance of forming a system of views on the world around, forms the ability to solve applied problems.
2. The *developmental function* forms in future social workers the cognitive qualities of processes and personality traits such as attention, memory, thinking, cognitive activity and independence, abilities; develops methods of mental

activity (analysis, synthesis, generalization, abstraction, etc.) and methods of educational activity. It provides a focus on identifying and implementing in the learning process the possibilities of computer science disciplines, the specificity of which lies in creative information activities.

3. The *pedagogical function* is designed to cultivate a culture of feelings, a culture of thinking, moral norms, aesthetic ideals and tastes, industriousness, responsibility. It is also responsible for the formation of worldview, thinking, ideas about computer science disciplines as part of universal culture, understanding the nature of the reflection of computer science disciplines of the world.

Specially organized learning conditions are an important part of the organization of the educational process of future social workers, which belongs to the methods of teaching. The system of regulatory principles and rules of organization of pedagogically expedient interaction of persons of educational process applied to a certain range of tasks of training, development and education. The choice of a certain method of training is a difficult pedagogical task [50].

The methodology of teaching the disciplines of the information cycle in the training of future social workers is a complex and dynamic process that is constantly adjusted. The specificity of these disciplines affects through the means of training both the content of the discipline and the methods and forms of teaching. Automated control of current results simplifies the procedure of adjusting the content of the training process and changing the content of the discipline.

The organization of training of future social workers takes place according to a certain algorithm according to which the course "Modern information technology" was created:

– awareness or actualization of the purpose and general tasks of studying of information discipline;
– analysis of the content and didactic possibilities of the existing educational material, special attention is paid to electronic educational resources;
– analysis of educational abilities, determination of the level of information and communication competence;
– definition of meaningful lines of information discipline;
– making a preliminary decision on the leading type of training;
– adjustment and concretization of the accepted decision taking into account monitoring, educational time, means, the equipment.

Self-dependent study of information processing technologies and its presentation by future social workers should continue as long as possible under the conditions of obtaining an effective result. After conducting and analyzing the monitoring of the acquired knowledge, options for changing the learning process depending on the obtained results should be planned. Determining the level of formation of ICT competence of future social workers is in accordance with the diagnostic programme. The choice of parameters and evaluation criteria reflects all the achievements and problems of the process of forming ICT competence

of future social workers. The results of diagnostics are analyzed for further correction of acquired qualities and formation of information space of training. It provides continuous development of ICT competence of future social workers in the process of professional training.

Using e-learning platforms is a definite challenge of modern times, so educators need to respond to it adequately. Nevertheless, the following question arises: how and to what extent we can trust E-learning [1].

Thus, the *research goal* is to reveal the of using the Moodle distance learning platform in the training of future social workers, highlighting its subject specificity on the basis of methodologically sound forms of test control.

2 The theoretical backgrounds

Modern social changes and transformation processes in Ukrainian society raise important issues of social protection. These changes lead to the renewal of the content and expansion of the field of social work as science, theory and practice. The idea of protecting human rights presupposes the acquisition of certain competencies by future social workers and, consequently, the need for their special training. The main precondition for the acquisition of special professional competencies by future social workers was the consolidation of social human rights in the 19th century. This right was enshrined and adopted in the laws of different countries. In these documents, the state undertook to perform certain functions to protect the people in the field of employment, rehabilitation, public health, education, etc.

The development of social work in Ukraine shows the need for professionalization of this humane direction, which requires increased attention to the formation of professional competence of future social workers. The professional competence of future social workers is constantly in the process of improvement, but it has its own structure, which includes information and communication competence. Competence is a dynamic combination of knowledge, ways of thinking, views, values, skills, abilities, other personal qualities, which determines a person's ability to successfully conduct professional and further educational activities [20]. Professional competence characterizes the quality of personality of graduates of higher education institutions, which means a holistic set of characteristics of professionals who determine the symbiosis of both social and professionally necessary characteristics of a person receiving higher education [50].

During the training, future social workers should form a readiness to effectively address the social problems of clients at different levels. Particularly pronounced at the beginning of the 21st century is the tendency to interpret the educational outcomes of future social workers in the sense of the term "competence" and, accordingly, the introduction of a competence approach in the process of their training. Competence approach in education has a relatively short existence. Its formation began in the 1960s. Competence approach determines readiness for: continuing education and self-education; business communications: ability to make responsible decisions; critical thinking; working with

various sources of information, its processing and presentation, etc. The priority segment of the competence approach in the educational environment is competence-oriented education and its focus on the comprehensive acquisition of knowledge and methods of practice. A competent social worker should know the methods, techniques, technologies of social work and skills for their use.

Highlighting information and communication competence as a significant category in terms of professional development of the future social worker, we conclude that the problem of forming information and communication competence of the future social specialist is closely related to the acquisition of practical skills in working with software products of information and communication technologies. Features and main directions of formation of information and communication competence in the conditions of university are defined by a complex of forms and methods of training. The result of such a combination (complex) is a set of qualities of a specialist, which reflect the degree of his/her qualification, level of knowledge and skills, willingness to work with clients and their social and legal protection.

In the course of seminars and practical classes in higher educational institutions, a serious/applied game is used (development of sympathy for other people's troubles, patience, attention, respect, etc.), which is considered both as a method and as a socio-pedagogical tool. Such examples of serious/practical games are implemented both in face-to-face meetings and online.

Dominant forms of training social workers are integrated seminars, workshops, independent work, teamwork, case work, workshops, project work using web-technologies (e-textbooks, online courses, online dictionaries, web-encyclopedias, educational video channels, services for creating presentations, catalogs of educational resources, etc.) [14].

Progressive forms of virtual learning are video lectures, video conferences, work in electronic libraries, on the Internet, etc. The combination of stationary and remote forms of education, professional activity with education, etc., gives the best result.

This guideline was taken into account by the community of lecturers of Donbas State Pedagogical University (V. Velychko – Doctor of Pedagogical Sciences, Prof. in the Department of Teaching Methods of Mathematics and Teaching Methods of Computer Sciences; O. Fedorenko – Candidate of Pedagogical Sciences, Assoc. Prof. in the Department of Mathematics and Computer Sciences; O. Havrysh – Candidate of Pedagogical Sciences, a doctoral student in the Department of Social Work) in the process of developing and teaching the course "Modern information technology" with its positive consequences.

The combination of these aspects and training requirements for future social workers was implemented in the developed course "Modern information technology", which was posted on the Moodle distance learning platform. The choice to place the course on the Moodle distance learning platform came for a lot of reasons. Firstly, this platform is used as a recommended platform for distance learning by the management of Donbas State Pedagogical University. Secondly, the Moodle distance learning platform is easy to use and has an intuitive user

interface. Thirdly, this platform has a number of features and advantages in use compared to similar systems.

The implementation of Moodle is increasingly correlated with the prospect of implementing the principles of blended and distance learning, taking into account that the latter is a relatively new phenomenon in the educational space of Ukraine [7]. It is clear that the use of information and communication technologies in the training of future professionals will raise higher education in Ukraine to a upper level. Changes in the status of the higher education system and the integration of the national education system into the European educational space lead to the full use of blended and electronic learning. At the legislative level, this issue is prescribed in such Laws of Ukraine as the Law of Ukraine "On the National Informatization Program" [20], the Law of Ukraine "On Higher Education" [21], the Law of Ukraine "On Scientific and Scientific-Technical Activity" [22], National strategy for the development of education in Ukraine for the period up to 2021 [9], etc.

There are several groups of e-learning organization software: copyright software, learning management systems, content management systems, and educational content management systems [34]. Among these tools, one of the most suitable for higher education institutions is the open source distance learning platforms, to which the Moodle belongs (in general, there are a great number of such systems: ATutor, Claroline, Dokeos, Sakai etc.) [34].

As the Moodle distance learning platform is software that is distributed under the free GNU GPL (GNU General Public License), it is free software and therefore has the benefits of free software.

By definition of Wong and Sayo [53] there are several advantages of free software:

- reduction of license load;
- security;
- reliability and stability;
- open standards and independence of sellers;
- the possibility of developing new local software;
- observance of the right to intellectual property, fight against piracy;
- localization.

Exploring the prospects and possibilities of using free software in educational institutions and government agencies of Ukraine, Karpenko and Kiyak [16] light out the advantages of its use:

- openness of program codes;
- no costs for users to purchase licenses;
- free or low cost of a copy in the industrial production and distribution of copies;
- virus protection;
- possibility of free copying and distribution of programmes;
- the possibility of modifying programmes and developing solutions based on them, which are necessary for the national economy, government or the private sector;

– high speed of development of new releases, issue of new amendments and software products.

The founder of the movement for free software Stallman [46] to the advantages of using free software attributed the following components:

– savings;
– independence from megacorporations;
– the opportunity to study in the open source of the programme;
– encouragement to study;
– education of a responsible citizen of the state and society;
– the opportunity to gain practical experience of participating in the life of the free software community.

In general, these definitions have economic, informational and pedagogical nature.

Moodle allows organizing distance learning in such a way that it meets the today's didactic requirements: regularity, systematic character, objectivity of control, individuality, economic efficiency, that is, it is fully capable of completing the tasks assigned to it [3].

3 Methods

The following set of research methods are used in the research: analysis of scientific and educational literature, theses, documents of international organizations, educational programs, textbooks and training manuals, normative documents on the training of social workers.

Provisions on electronic educational resources and features of organizations of electronic educational resources to support learning were determined. The elements of the created electronic course to support learning in the discipline "Modern information technology" and their harmonious combination to create a more comprehensive educational material were pointed out.

The digital literacy assessment system "Digital" (https://osvita.diia.gov.ua/digigram) on the platform of the Ministry of Digital Transformation of Ukraine was used as input and output control. According to this system, the answers were divided into six categories. The analysis of the obtained results was carried out according to the Kruskal-Wallis H test and visually presented in the form of graphs. Generalization and systematization – to define conceptual categories, clarify modern trends in the use of ICT and justify the basics of using Moodle in the training of future social workers.

4 Findings

During learning the discipline "Modern information technology", future social workers do not need long-term personal communication. The purpose of this

course is to develop individual work skills; formation of skills of work with primary sources; systematization of knowledge and the received information; expression of own opinion; acquisition of practical skills in working with information and communication technologies. Based on this, we can state that the use of e-learning courses in the training of future social workers allows emphasizing the individuality of each student and evaluating his/her work.

Consider in detail the structure of the e-learning course based on Moodle.

4.1 The first (introductory) lesson

As can be seen in figure 1, the training of future social workers at Donbas State Pedagogical University is conducted in two areas: "231 Social Work" and "232 Social Welfare". For these two directions the joint discipline "Modern information technology" is taught.

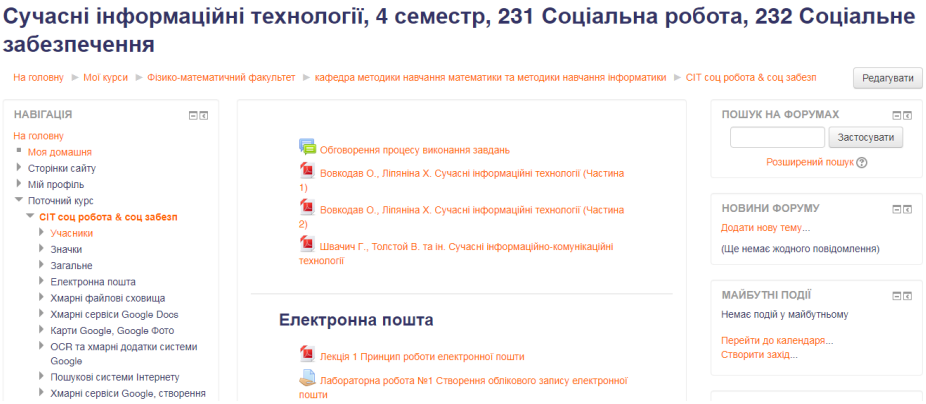


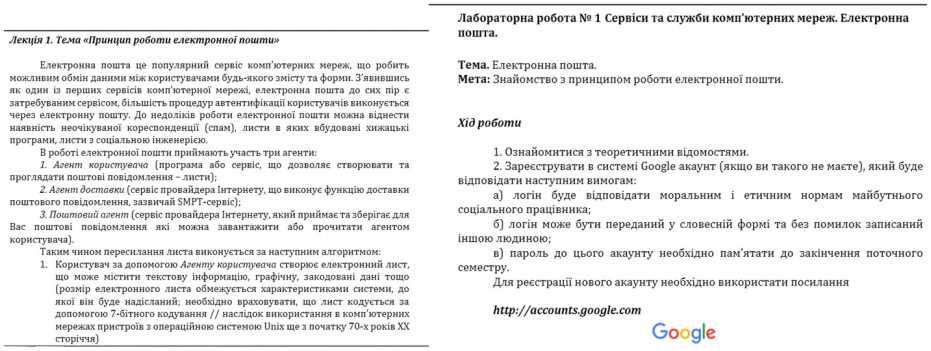
Fig. 1. An example of the first (lecture) courses.

At the first (lecture) lesson future social workers are invited to look through the list of recommended literature. Next, students are offered a system according to which they should perform tasks to obtain a high level of results. According to this system, future social workers should first get acquainted with the lecture (theoretical) material (figure 2, left), and then proceed to the laboratory work (figure 2, right) in accordance with the topic of the lecture.

The tasks to be completed in this course are aimed at gaining practical skills in using Google applications, starting with registering an account with Google.

Unfortunately, it should be noted that about a third of students do not understand that they have already registered with Google and have a Google account, although $\approx 90\%$ use mobile devices with Android OS ($\approx 10\%$ use mobile devices with iOS, where registration is not required on Google).

In total, future social workers are offered 12 topics for compulsory study and implementation, combined in 10 files of lecture material and, accordingly, in 10



Лекція 1. Тема «Принцип роботи електронної пошти»

Електронна пошта це популярний сервіс комп'ютерних мереж, що робить можливим обмін даними між користувачами будь-якого змісту та форми. З'явившись як один із перших сервісів комп'ютерної мережі, електронна пошта до сих пір є затребуваним сервісом, більшість процедур автентифікації користувачів виконується через електронну пошту. До недоліків роботи електронної пошти можна віднести наявність неочікуваної кореспонденції (спам), листи в яких вбудовані хижацькі програми, листи з соціальною інженерією.

В роботі електронної пошти приймають участь три агенти:

1. Агент користувача (програма або сервіс, що дозволяє створювати та проглядати поштові повідомлення - листи);

2. Агент доставки (сервіс провайдера Інтернету, що виконує функцію доставки поштового повідомлення, зазвичай SMPT-сервіс);

3. Поштовий агент (сервіс провайдера Інтернету, який приймає та зберігає для Вас поштові повідомлення які можна завантажити або прочитати агентом користувача).

Таким чином пересилання листа виконується за наступним алгоритмом:

1. Користувач за допомогою *Агенту користувача* створює електронний лист, що може містити текстову інформацію, графічну, закодовані дані тощо (розмір електронного листа обмежується характеристиками системи, до якої він буде надісланий; необхідно враховувати, що лист кодується за допомогою 7-бітного кодування // наслідок використання в комп'ютерних мережах пристроїв з операційною системою Unix ще з початку 70-х років XX сторіччя)

Лабораторна робота № 1 Сервіси та служби комп'ютерних мереж. Електронна пошта.

Тема. Електронна пошта.
Мета: Знайомство з принципом роботи електронної пошти.

Хід роботи

1. Ознайомитися з теоретичними відомостями.
2. Зареєструвати в системі Google акаунт (якщо ви такого не маєте), який буде відповідати наступним вимогам:

а) логін буде відповідати моральним і етичним нормам майбутнього соціального працівника;

б) логін може бути переданий у словесній формі та без помилок записаний іншою людиною;

в) пароль до цього акаунту необхідно пам'ятати до закінчення поточного семестру.

Для реєстрації нового акаунту необхідно використати посилання

http://accounts.google.com

Google

Fig. 2. Example of the theoretical part to Lecture 1 and tasks for Laboratory Work 1.

tasks for practical implementation in the form of laboratory work. The list of topics for mandatory study and implementation includes:

- Lecture 1. The principle of e-mail
  Laboratory work 1. Computer network services. Email.
  Purpose: Familiarity with the principle of e-mail.
- Lecture 2. Cloud file storage
  Laboratory work 2. Cloud file storage.
  Purpose: Familiarization of future social workers with the principle of cloud file storage.
- Lecture 3, 4. Google Docs cloud services
  Laboratory work 3, 4. Google Docs cloud services
  Purpose: Introduction to the basic possibilities of working with text documents, spreadsheets and presentations by means of an online office. Strengthen the skills of creating, editing, and formatting text documents, perform simple calculations and diagrams in spreadsheets, format presentation slides, apply slide transitions and animation to their objects using Google.docs, and share with other users.
- Lecture 5. Google Maps, Google Photos
  Laboratory work 5. Google Maps, Google Photos
  Purpose: Familiarity with GooglePhoto and Googlemaps.
- Lecture 6. OCR and Google cloud applications
  Laboratory work 6. OCR and Google cloud applications
  Purpose: Familiarity with the means of recognizing information provided by cloud services.
- Lecture 7. Internet search engines
  Laboratory work 7. Internet search engines
  Purpose: To get acquainted with the method of searching for the necessary data, using Internet search engines, to get acquainted with the classification of Internet search engines.

– Lecture 8. Google cloud services, site creation
  Laboratory work 8. Google cloud services, site creation
  Purpose: Familiarity with the principle of creating sites in the Google system.
– Lecture 9. Google cloud services, blog creation
  Laboratory work 9. Google cloud services, blog creation
  Purpose: Familiarity with the principle of blogging on Google.
– Lecture 10. Google cloud services, forms
  Laboratory work 10. Google cloud services, forms
  Purpose: Learn how to create tests with automatic collection of test results using Google forms.
– Lecture 11, 12. LMS Google Classroom
  Laboratory work 11, 12. LMS Google Classroom
  Purpose: Familiarity with the GoogleClassroom learning management system.

Figure 3 shows what the course structure looks like for future social workers.

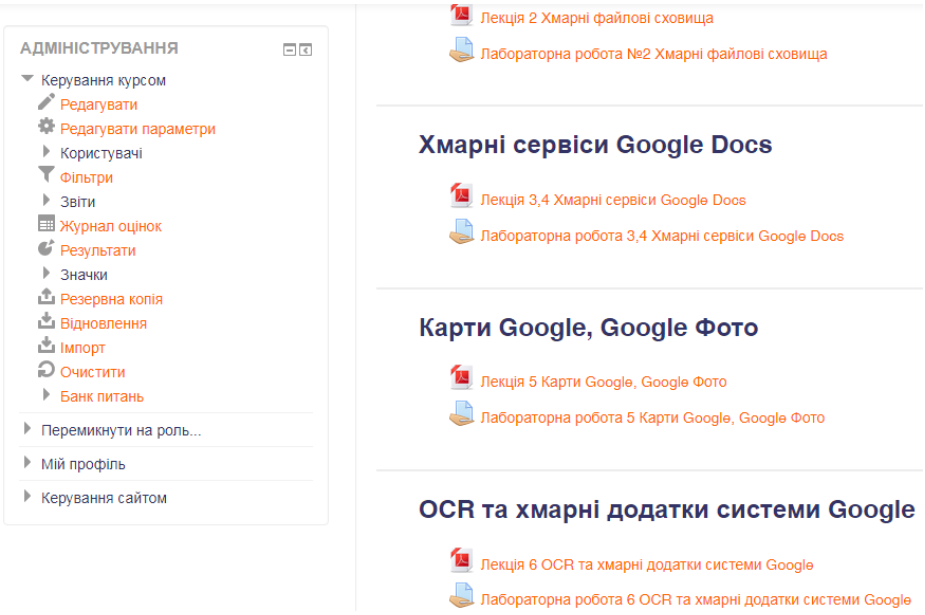


Fig. 3. Topics for mandatory study and implementation.

4.2 Testing for knowledge control

Students (future social workers) take the test – this is the easiest way to check whether students have read the lecture materials or not. In our case, the test is

used as a control measure of virtual support of the discipline "Modern information technology". Test tasks, in essence, involve the literal display of the text of lectures and perform the functions of checking the understanding of the content of lecture material and activate memory. The questions to the test tasks are directly related to the provided theoretical material for mandatory study and are limited only to the material provided in the theoretical part (figure 4). The main purpose of this test is to calculate the results and control the knowledge of future social workers. This test was designed to be able to remotely monitor the knowledge of students majoring in "231 Social Work" and "232 Social Welfare".

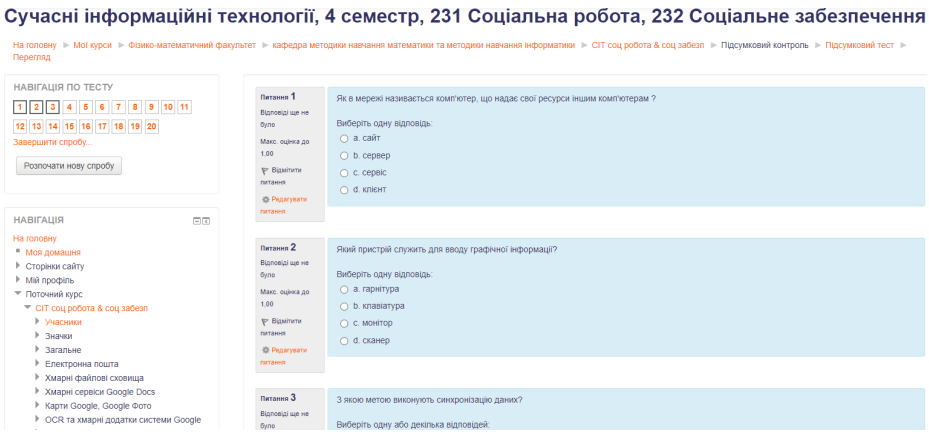


Fig. 4. Test.

Testing is the most important stage that allows you to objectively assess knowledge will be the creation of a high-quality and comprehensively thought-out base of questions, which will allow students to demonstrate all their knowledge and abilities in the subject area [38]. Testing increases the objectivity of the assessment of knowledge and practical skills in the discipline, including distance learning.

It should be noted that the Moodle distance learning system allows you to create several types of tests. These include: multiple-choice tests (with multiple choice answers); short answer tasks; compliance tasks; built-in answers; texts with gaps; true or false statements (tests with the choice of true / false); as a short text answer; text where the student must fill in the missing words; essays and more. All questions are stored in the database and can be used again in the same course. Tests can be educational (correct answers are shown at the end) or control (only the number of points scored (score) is reported).

The test tasks presented in the test should meet certain requirements. Such requirements include: unambiguity of the question (the text of the task is aimed at a specific answer and does not allow free interpretation); unambiguity of the answer (the possibility of multi-valued answers is excluded); correspondence to

the studied material (test tasks reflect only the material that was considered during the acquaintance with the theoretical and practical parts); selection of answer options (answers must be plausible); uniqueness (questions do not repeat identical formulations from the theoretical part of the studied material).

Testing is the fairest method. The testing process put students in the same conditions in the process of assessing the acquired knowledge. Testing has an educational function. Testing helps to identify and close gaps in the knowledge of students (future social workers). This form of knowledge control encourages the development of their own abilities, directing the activities of future social workers in the right direction. This fact disciplines, organizes the learning process.

At the beginning and at the end of the course we conducted testing on ICT competence of future social workers using the national test for digital literacy "Digital" (https://osvita.diia.gov.ua/digigram) on the platform of the Ministry of Digital Transformation of Ukraine. The proposed 90 test questions are systematized according to the areas of knowledge of the European Digital Competence Framework for Citizens DigComp 2.1, adapted by Ukrainian experts, allow you to test your knowledge in the following sections:

- basics of computer literacy (R1);
- information literacy, ability to work with data (R2);
- creation of digital content (R3);
- communication and interaction in the digital society (R4);
- security in the digital environment (R5);
- digital problem solving and lifelong learning (R6).

The level on each of the sections is determined by the scale (Basic A1/A2, Medium B1/B2, High C1/C2). The obtained values of the diagnostic stage in which 17 students of the pedagogical faculty of Donbas State Pedagogical University took part are presented in figure 5 in the form of the table and the diagram.

	A1	A2	B1	B2	C1	C2
R1	5	6	4	1	1	0
R2	5	8	4	0	0	0
R3	6	7	3	0	1	0
R4	7	8	2	0	0	0
R5	8	6	2	0	1	0
R6	8	7	2	0	0	0

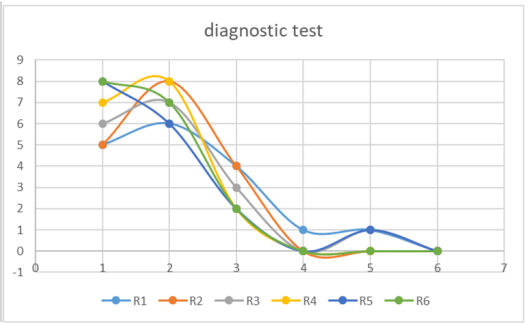


Fig. 5. The results of the diagnostic phase of the study.

Using the non-parametric method of checking the medians of several samples (Kruskal-Wallis H test), we obtained the values $h_{emp.} = 0.15463$, $p = 0.99953$,

which indicates the absence of differences in the distribution of results by sections of testing R1-R6.

At the end of the course, students took the test again. The results are presented in figure 6 in the form of a table and diagram.

	A1	A2	B1	B2	C1	C2
R1	0	1	5	5	4	2
R2	0	1	4	6	4	2
R3	0	2	4	5	4	2
R4	0	1	5	6	3	2
R5	0	2	4	6	4	1
R6	0	1	4	5	5	2

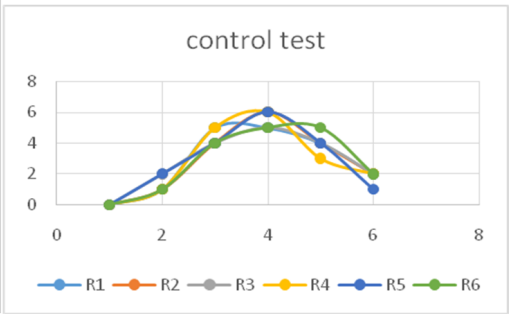


Fig. 6. The results of the control phase of the study.

Using the Kruskal-Wallis H test, we obtained the values $h_{mp} = 0.01161$, $p = 1.0$, which indicates the absence of differences in the distribution of results by sections of testing R1-R6.

Insignificant accumulated data do not allow confirming the obtained average results by methods of mathematical statistics, however, the comparison chart (figure 7) shows that the training course gives its positive results.

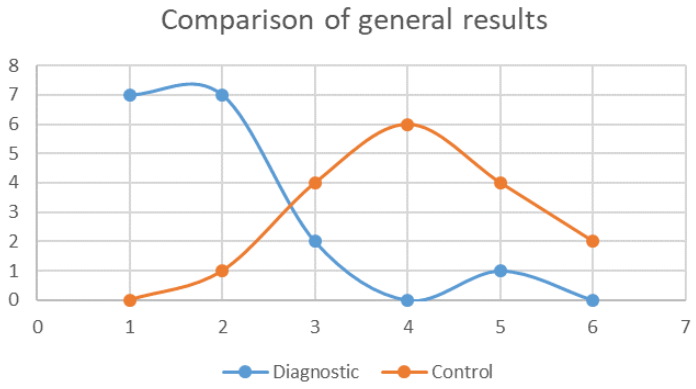


Fig. 7. Comparison of general testing results.

5 Conclusions and prospects for further research

Modern education is impossible without the use of ICT. The Moodle distance learning platform is very helpful in achieving educational purposes. The training of future social workers is no exception. Conducting surveys, creating databases, processing modern regulations, creating visual materials and communication on social networks are easier with the modern educational platforms like Moodle.

Electronic educational resources used in the course "Modern information technology" are designed and created taking into account the didactic requirements for educational resources using advanced information and communication technologies. The list of topics studied in the course corresponds to the constituent sections of the list of competencies described in DigComp 2.2.

With the help of testing, shortcomings are identified, a holistic view of the formation of components of professional competence and knowledge gained during the study of the course "Modern information technology" designed for future social workers majoring in "231 Social Work" and "232 Social Welfare". This course is directly aimed at forming one of the components of professional competence of modern social workers – ICT competence.

References

[1] Abdula, A.I., Baluta, H.A., Kozachenko, N.P., Kassim, D.A.: Peculiarities of using of the Moodle test tools in philosophy teaching. In: Kiv, A.E., Shyshkina, M.P. (eds.) Proceedings of the 7th Workshop on Cloud Technologies in Education (CTE 2019), Kryvyi Rih, Ukraine, December 20, 2019, vol. 2643, pp. 306–320, CEUR Workshop Proceedings (2020), URL http://ceur-ws.org/Vol-2643/paper18.pdf

[2] Alexander, B., Ashford-Rowe, K., Barajas-Murphy, N., Dobbin, G., Knott, J., McCormack, M., Pomerantz, J., Seilhamer, R., Weber, N.: EDUCAUSE Horizon Report: 2019 Higher Education Edition. Tech. rep., Louisville, CO (2019), URL https://library.educause.edu/-/media/files/library/2019/4/2019horizonreport

[3] Avdieiev, O.V.: Use the Moodle distance system to optimize the learning process in high school. Medychna osvita **1**, 6–8 (2015)

[4] Bekh, V.P.: Integrity of social work: methodological, theoretical and praxeological aspects. In: Social work in Ukraine at the beginning of the 21st century: problems of theory and practice: Materials of reports at the International Scientific and Practical Conference on October 29-31, 2002, Kyiv, pp. 29–47, DCSSM (2002)

[5] Bekh, V.P., Bekh, Y.V.: Theory of social work. National Pedagogical Dragomanov University, Kyiv (2012), URL http://enpuir.npu.edu.ua/handle/123456789/33247

[6] Bilousova, L., Gryzun, L., Zhytienova, N.: Interactive methods in blended learning of the fundamentals of UI/UX design by pre-service specialists. Educational Technology Quarterly **2021**(3) (Sep 2021), https://doi.org/10.55056/etq.34

[7] Bondarenko, O.V., Mantulenko, S.V., Pikilnyak, A.V.: Google Classroom as a Tool of Support of Blended Learning for Geography Students. In: Kiv, A.E., Soloviev, V.N. (eds.) Proceedings of the 1st International Workshop (AREdu 2018). Kryvyi Rih, Ukraine, October 2, 2018, vol. 2257, pp. 182–191, CEUR Workshop Proceedings (2019), URL http://ceur-ws.org/Vol-2257/paper17.pdf

[8] Danilchuk, L.O.: Theory and methods of social prevention of human trafficking by means of information and communication technologies. Dissertation of the doctor of pedagogical sciences: 13.00.05, Ternopil National Pedagogical University named after Vladimir Hnatiuk, Ternopil (2018)

[9] Decree of the President of Ukraine: National strategy for the development of education in Ukraine for the period up to 2021: approved by the Decree of the President of Ukraine of June 25, 2013 № 344/2013 (Jun 2013), URL http://zakon4.rada.gov.ua/laws/show/344/2013

[10] Dubych, K.V.: Modern system of social services in Ukraine. Public Administration: Improvement and Development **3** (2015), URL http://www.dy.nayka.com.ua/?op=1&z=821

[11] Fedorenko, E.H., Velychko, V.Y., Omelchenko, S.O., Zaselskiy, V.I.: Learning free software using cloud services. In: Kiv, A.E., Shyshkina, M.P. (eds.) Proceedings of the 7th Workshop on Cloud Technologies in Education (CTE 2019), Kryvyi Rih, Ukraine, December 20, 2019, vol. 2643, pp. 487–499, CEUR Workshop Proceedings (2020), URL http://ceur-ws.org/Vol-2643/paper29.pdf

[12] Fedorenko, O.H., Velychko, V.Y., Stopkin, A.V., Chorna, A.V., Soloviev, V.N.: Informatization of Education as a Pledge of the Existence and Development of a Modern High School. In: Kiv, A.E., Soloviev, V.N. (eds.) Proceedings of the 6th Workshop on Cloud Technologies in Education (CTE 2018) Kryvyi Rih, Ukraine, December 21, 2018, vol. 2433, pp. 20–32, CEUR Workshop Proceedings (2019), URL http://ceur-ws.org/Vol-2433/paper01.pdf

[13] Gayevska, O., Kravtsov, H.: Approaches on the augmented reality application in Japanese language learning for future language teachers. Educational Technology Quarterly **2022**(2), 105–114 (Feb 2022), https://doi.org/10.55056/etq.7

[14] Havrysh, O., Velychko, V., Fedorenko, O.: The role of information and communication technologies in the professional training of social educators for work with refugees in Germany. Electronic Scientific Professional Journal "OPEN EDUCATIONAL E-ENVIRONMENT OF MODERN UNIVERSITY" **11**, 49–61 (2021), https://doi.org/10.28925/2414-0325.2021.114

[15] Holiver, N., Kurbatova, T., Bondar, I.: Blended learning for sustainable education: Moodle-based English for Specific Purposes teaching at Kryvyi Rih National University. E3S Web of Conferences **166**, 10006 (2020), https://doi.org/10.1051/e3sconf/202016610006

[16] Karpenko, M., Kiyak, M.: Prospects and opportunities for the introduction of free software in educational institutions and government agencies of Ukraine (2009), URL http://old.niss.gov.ua/Monitor/june2009/15.htm

[17] Klos, L.: Social work in the field of health abroad: historical aspects of the profession. Pedagogy and Psychology of Vocational Education **3**, 155–168 (2016)

[18] Klos, L.Y.: Theory and practice of training future social workers in US universities for health care. Dissertation of the doctor of pedagogical sciences: 13.00.04, Institute of Pedagogical Education and Adult Education, Kyiv (2018)

[19] Kropelnytska, S.O., Myhovych, T.M., Kulesha-Lyubinets, M.M.: Development and implementation of social projects in Ukraine. State and regions. Series: Economics and Entrepreneurship **1**, 37–43 (2019), URL http://lib.pnu.edu.ua:8080/handle/123456789/3417

[20] Law of Ukraine: "On the National Informatization Program" of February 4, 1998 № 74/98-VR as amended on April 13, 2020 (Mar 1998), URL https://zakon.rada.gov.ua/laws/show/74/98-%D0%B2%D1%80#Text

[21] Law of Ukraine: "On Higher Education" of 28.12.2014, № 1556-VII-VR as amended on 12.05.2022 № 2003-IX (Jun 2014), URL https://zakon.rada.gov.ua/laws/show/1556-18#Text

[22] Law of Ukraine: "On Scientific and Scientific-Technical Activity" of November 26, 2015 № 848-VIII, as amended on October 16, 2020 (Nov 2015), URL https://zakon.rada.gov.ua/laws/main/1977-12,848-19

[23] Lukashevich, M.P., Semigina, T.V.: Sociology of social work. Psychology and society **1**, 107–149 (2014), URL http://nbuv.gov.ua/UJRN/Psis_2014_1_14

[24] Martyniuk, O.O., Martyniuk, O.S., Pankevych, S., Muzyka, I.: Educational direction of STEM in the system of realization of blended teaching of physics. Educational Technology Quarterly **2021**(3) (Sep 2021), https://doi.org/10.55056/etq.39

[25] Mintii, I.S.: Using Learning Content Management System Moodle in Kryvyi Rih State Pedagogical University educational process. In: Kiv, A.E., Shyshkina, M.P. (eds.) Proceedings of the 7th Workshop on Cloud Technologies in Education (CTE 2019), Kryvyi Rih, Ukraine, December 20, 2019, vol. 2643, pp. 293–305, CEUR Workshop Proceedings (2020), URL http://ceur-ws.org/Vol-2643/paper17.pdf

[26] Mintii, I.S., Kharadzjan, N.A., Shokaliuk, S.V.: IC competencies development of pedagogical higher educational institutions lecturer by certification training program "Information and communication technologies in the regular-distant (combined) learning". New computer technology **15** (2017), URL https://ccjournals.eu/ojs/index.php/nocote/article/view/643

[27] Mintii, I.S., Shokaliuk, S.V., Vakaliuk, T.A., Mintii, M.M., Soloviev, V.N.: Import test questions into Moodle LMS. In: Kiv, A.E., Soloviev, V.N. (eds.) Proceedings of the 6th Workshop on Cloud Technologies in Education (CTE 2018) Kryvyi Rih, Ukraine, December 21, 2018, vol. 2433, pp. 529–540, CEUR Workshop Proceedings (2019), URL http://ceur-ws.org/Vol-2433/paper36.pdf

[28] Moodle: Moodle statistics (2022), URL https://stats.moodle.org/

[29] Mpungose, C.B.: Beyond limits: Lecturers' reflections on moodle uptake in south african universities. Education and Information Technologies **25**(6), 5033–5052 (nov 2020), ISSN 1360-2357, https://doi.org/10.1007/s10639-020-10190-8

[30] Omelchenko, S., Chernukha, N., Spivak, Y., Spivak, L., Uteubaeva, E.: Communicative culture formation of future social workers in the educational process of pedagogical university. International Journal of Higher Education **9**(4), 283–290 (2020), https://doi.org/10.5430/ijhe.v9n4p283

[31] Osadchyi, V., Valko, N., Kushnir, N.: Determining the Level of Readiness of Teachers to Implementation of STEM-Education in Ukraine. In: Ermolayev, V., Mallet, F., Yakovyna, V., Kharchenko, V., Kobets, V., Korniłowicz, A., Kravtsov, H., Nikitchenko, M., Semerikov, S., Spivakovsky, A. (eds.) Proceedings of the 15th International Conference on ICT in Education, Research and Industrial Applications. Integration, Harmonization and Knowledge Transfer. Volume II: Workshops Kherson, Ukraine, June 12-15, 2019, vol. 2393, pp. 144–155, CEUR Workshop Proceedings (2020), URL http://ceur-ws.org/Vol-2393/paper_369.pdf

[32] Ovod, Y.: Innovative technologies in social work. Collection of scientific works of the National Academy of the State Border Guard Service of Ukraine. Series: Pedagogical Sciences **3**, 175–184 (2016), URL http://nbuv.gov.ua/UJRN/znpnadpcpn_2016_3_18

[33] Panchenko, L.F., Khomiak, A.O., Pikilnyak, A.V.: Using Twitter in Ukrainian sociology majors training. In: Kiv, A.E., Shyshkina, M.P. (eds.) Proceedings of the 7th Workshop on Cloud Technologies in Education (CTE 2019), Kryvyi Rih, Ukraine, December 20, 2019, vol. 2643, pp. 253–263, CEUR Workshop Proceedings (2020), URL http://ceur-ws.org/Vol-2643/paper14.pdf

[34] Pienkin, Y.M., Yatsenko, N.M.: Features of the organization of the educational process of students of distance learning in the system Moodle. Current issues of pharmaceutical and medical science and practice **1**, 105–108 (2014)

[35] Pinaeva, O.Y., O., P.B.: Preparation of future social workers in modern conditions. Modern informational technologies and innovative methods in professional training: methodology, theory, experience, problems **50**, 346–349 (2018), URL https://vspu.net/sit/index.php/sit/article/view/5001

[36] Povidaychyk, O.S.: Formation of readiness of future social workers for research activity in the process of professional training. OUTDOOR-SHARK, Uzhgorod (2018)

[37] Povidaychyk, O.S.: Theory and practice of professional training of future social workers to research activities. Dissertation of the doctor of pedagogical sciences: 13.00.04, Uzhgorod National University, Uzhgorod (2019)

[38] Romanenko, D.: Computer Testing as a Form of Students' Knowledge Control. In: Noskov, M., Semenov, A., Grigoriev, S. (eds.) Proceedings of the 4th International Conference on Informatization of Education and E-learning Methodology: Digital Technologies in Education (IEELM-DTE 2020), vol. 2770, pp. 196–203, CEUR Workshop Proceedings (2020), URL http://ceur-ws.org/Vol-2770/paper23.pdf

[39] Savelchuk, I.B., Bybyk, D.D.: Social leadership as a basis for the development of partnerships in the educational environment of the university. Scientific journal of the National Drahomanov Pedagogical University. Series 11. Social work. Social pedagogy **25**, 119–125 (2018)
[40] Semerikov, S., Striuk, A., Striuk, L., Striuk, M., Shalatska, H.: Sustainability in Software Engineering Education:a case of general professional competencies. E3S Web of Conferences **166**, 10036 (2020), https://doi.org/10.1051/e3sconf/202016610036
[41] Semigina, T., Pozhidayeva, O.: Formation of competences of social workers: international and local practice, pp. 47–63. Representation of educational achievements, mass media and the role of philology in the modern system of sciences, European Scientific Platform, 1st. edn. (2020), https://doi.org/10.36074/rodmmrfssn.ed-1.05
[42] Semigina, T.V.: International social work: global priorities of social development and a new definition of social work. Bulletin of the Academy of Labor and Social Relations of the Federation of Trade Unions of Ukraine **1-2**, 6–11 (2015)
[43] Semigina, T.V.: New Global Ethical Principles of Social Work. Bulletin of the Academy of Labor, Social Relations and Tourism **1**, 70–85 (2019)
[44] Shalatska, H.M., Zotova-Sadylo, O.Y., Muzyka, I.O.: Moodle course in teaching English language for specific purposes for masters in mechanical engineering. In: Kiv, A.E., Shyshkina, M.P. (eds.) Proceedings of the 7th Workshop on Cloud Technologies in Education (CTE 2019), Kryvyi Rih, Ukraine, December 20, 2019, vol. 2643, pp. 416–434, CEUR Workshop Proceedings (2020), URL http://ceur-ws.org/Vol-2643/paper42.pdf
[45] Slozanskaya, H.I., Horishna, N.M.: What competencies must a social worker have in order to provide social services in the community? In: Social work and modernity: theory and practice of professional and personal development of a social worker: materials of the Tenth International Scientific and Practical Conference (December 18, 2020, Kyiv), pp. 222–225, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (2020)
[46] Stallman, R.: Why Open Source misses the point of Free Software (2022), URL https://www.gnu.org/philosophy/open-source-misses-the-point.en.html
[47] Teo, T., Zhou, M., Fan, A.C.W., Huang, F.: Factors that influence university students' intention to use Moodle: A study in Macau. Educational Technology Research and Development **67(3)**, 749–766 (Jun 2019), https://doi.org/10.1007/s11423-019-09650-x
[48] Tkachuk, V., Semerikov, S., Yechkalo, Y., Khotskina, S., Soloviev, V.: Selection of Mobile ICT for Learning Informatics of Future Professionals in Engineering Pedagogy. In: Sokolov, O., Zholtkevych, G., Yakovyna, V., Tarasich, Y., Kharchenko, V., Kobets, V., Burov, O., Semerikov, S., Kravtsov, H. (eds.) Proceedings of the 16th International Conference on ICT in Education, Research and Industrial Applications. Integration, Harmonization and Knowledge Transfer. Volume II: Workshops (ICTERI 2020). Kharkiv,

Ukraine, October 06-10, 2020, vol. 2732, pp. 1058–1068, CEUR Workshop Proceedings (2020), URL http://ceur-ws.org/Vol-2732/20201058.pdf

[49] Trubavina, I.M.: Problems Internally Peremischnyh People in Ukraine as a Basis for Case Management in Social Work with Them. Pedagogical sciences: theory, history, innovative technologies **8**, 434–446 (2015), URL http://nbuv.gov.ua/UJRN/pednauk_2015_8_53

[50] Velychko, V.Y.: Theoretical and methodical principles of application of free software in the training of future teachers of mathematics, physics and informatics. FOP Motorin, Sloviansk (2017)

[51] Velychko, V.Y., Fedorenko, E.H., Kassim, D.A.: Conceptual Bases of Use of Free Software in the Professional Training of Pre-Service Teacher of Mathematics, Physics and Computer Science. In: Kiv, A.E., Soloviev, V.N. (eds.) Proceedings of the 1st International Workshop (AREdu 2018). Kryvyi Rih, Ukraine, October 2, 2018, vol. 2257, pp. 93–102, CEUR Workshop Proceedings (2019), URL http://ceur-ws.org/Vol-2257/paper11.pdf

[52] Velychko, V.Y., Omelchenko, S.O., Khyzhniak, I.A., Fedorenko, E.G.: Developing and using open electronic educational resources in educational activities. Journal of Physics: Conference Series **1840** (2021), https://doi.org/10.1088/1742-6596/1840/1/012063

[53] Wong, K., Sayo, P.: Free/Open Source Software. A General Introduction. United Nations Development Programme's Asia-Pacific Development Information Programme (UNDP-APDIP), Kuala Lumpur, Malasia (2004)