PROVISION OF THE PROFESSIONAL COMPETENCE OF THE APPLICANTS OF EDUCATION STUDYING AT THE SPECIALTY “ACCOUNTING AND TAXATION” BY USING THE INFORMATION TECHNOLOGIES OF DISTANCE EDUCATION

Abstract. The article considers the need to introduce the latest computer technologies into the educational process to contribute to the formation and provision of professional competencies of applicants of education studying the specialty “Accounting and Taxation.” Modern information technologies used in the educational space are considered an essential factor in the interaction between teacher and students. Distance education flexibility, i.e., the ability to study individually, choosing the time, place, and tempo of learning, are precisely the advantages, which are considered while organizing the educational process. The task of academic staff is to provide the students with maximum opportunities to remotely process the proposed material and perform all control exercises conveniently in compliance with the requirements for specific tasks. Distance education can be used as the main form of education for preparing students of the second level of education studying at the specialty “Accounting and Taxation”. To investigate the information support of professional competencies of applicants of education studying at “Accounting and Taxation”, we analyzed the practical experience of bachelors and masters studying the following accounting disciplines at Lesya Ukrainka Volyn National University with the use of distance education methods: “Managerial Accounting”, “Forensic accounting expertise”, “Accounting in foreign countries”, “Accounting and Taxation of international transactions”, “Accounting in enterprise management”, “Applied econometrics”, “International standards of accounting and financial reporting”, “Financial reporting consolidation”. The educational material allocation and access to it took place using standard software tools. The type of courses and features of the work organization depends on the format of a course chosen at its creation and adjustment stage. During the development of distance learning courses in the modern educational space, more attention is paid to the information environment service – “Moodle”.

Keywords: distance course, educational process; educational service; master; bachelor; module; information
ОБЕСПЕЧЕННЯ ПРОФЕСІЙНО-КОМПЕТЕНТНОСТЕЙ СОИСКАТЕЛЕЙ ОБРАЗОВАННЯ СПЕЦІАЛЬНОСТІ «УЧЕТ І НАЛОГООБЛОЖЕННЯ» НА ОСНОВІ ІСПОЛІЗУВАННЯ ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ ДИСТАНЦІЙНОГО ОБУЧЕННЯ

Аннотація. В статті розглянуто необхідність впровадження у навчальний процес новітніх комп'ютерних технологій, сприяючих формуванню та забезпеченню професійних компетенцій соїсказальників навчання специальності «Учет і налогообложение». Сучасні інформаційні технології, використовувані у навчальному процесі, є важливим фактором взаємодії ініціатора та студентів. Гнучкість дистанційного навчання, можливість індивідуально вчитися, запланироване, місце і темп навчання залишаються без уваги бюджетів, які використовуються у організації навчального процесу. Завдання соїсказальників заключається в наданні студентам максимальних можливостей розробити і виконати контрольні роботи та завдання в зручний час з виконанням вимог, встановлених для конкретних задач. Дистанційне навчання при підготовці соїсказальників навчання високого рівня навчання по спеціальності «Учет і налогообложение» можна використовувати як основну форму навчання. Для дослідження інформаційного забезпечення професійних компетенцій соїсказальників навчання спеціальності «Учет і налогообложение» ми використовували методику дистанційного навчання. Розміщення навчального матеріалу і доступ до нього були залежні від методики використання різних програмних продуктів. Вид курсів і особливості організації навчання залежали від виду, форми курса, відсутність уроків і настрою. При розробці дистанційних курсів в програмному забезпеченні навчання найбільше вагомо увагу слід привернути до інформаційної системи Moodle.

Ключові слова: дистанційний курс, навчальний процес; образовательная услуга; магістр; бакалавр; модуль; інформаційна сім'я; учет і налогообложение; ресурси; інформація; студенти.
Як відомо, процес дистанційного навчання має ряд позитивних властивостей. На підставі аналізу багатьох наукових робіт, можна сформулювати наступні висновки:

1. Дистанційне навчання дає можливість студентам вільно вибирати час і місце навчання, що збільшує гнучкість навчання.
2. Цей формат дозволяє студентам сформувати власний темп навчання, що покращує проекацію.
3. Дистанційне навчання надає можливість студентам самостійно організовуватися, використовуючи різні ресурси для навчання.

Якщо розглядати дистанційне навчання як основну форму навчання, на основі використання інформаційних технологій, то доцільно аналізувати наукові дослідження в цій області.

Формулювання проблеми та її значення. Різкі темпи соціально-економічних змін потребують недійсного підходу до формування компетентностей викладачів. В цьому контексті можна визначити такі дві головні проблеми:

1. Недостатня розвинутість інформаційних технологій у навчальних закладах.
2. Недосконала структура та організація навчального процесу.

В цій статті розглянуто необхідність упровадження в навчальний процес новітніх комп’ютерних технологій, що сприятимуть забезпечення фахових компетентностей здобувачів освіти спеціалізованості «Облік і оподаткування» на основі використання інформаційних технологій.
the educational process - those who teach and those who are trained, are subject to the following conditions: complete access to information, flexibility, hyperactivity in the transfer and acquisition of knowledge, the ability to teach and learn remotely, be communicative and aware of the latest information technologies [3].

Distance education technologies can provide such interaction. Information communication technologies of distance education are technologies for creating, accumulating, storing, and accessing web resources (electronic resources) of academic disciplines (programs), as well as providing organization and support of the educational process with the help of specialized software and means of information and communication, including the Internet [4].

The introduction of distance learning technologies into the teaching of disciplines in higher education institution is considered in scientific works by such scientists as N. M. Boliubash [1], T. A. Dmytrenko [7], T. M. Derkach, S. I. Volkov, V. T. Matevosian, Z. V. Dudar [11], V. M. Kukharenko [6, 7] E. S. Polat [8], O. M. Samoilenko [2], I. V. Batsurovska, O. O. Samoilenko, N. A. Dotsenko, N. M. Matviichuk, N. M. Shulskaya [3], etc. The works of M.M. Matyukha [5], M. T. Levochko [12], M. S. Pushkar [13], L. V. Chizhevskaya [14] are devoted to the study of the development of the professional competence of accountants. Their works contain the theoretical and practical aspects of the development and application of information technologies in the educational process to maintain the formation of competencies of future experts of the economic branch. However, it requires further research of implementation of interactive learning methods in teaching auditing analytical disciplines to increase professional competencies of applicants of education of “Accounting and taxation” specialty.

The necessity of introducing distance courses for the economic field specialties is caused by the fact that future specialists of accounting and taxation sphere are widely required in national economics. In modern management conditions, national companies require young and active workers capable of analyzing the current state of affairs, proposing future ways to improve such a state, and designing a business entity’s developing strategy.

M. M. Matiuksa notices a direct interdependence between business entities’ financial results and professionalism and economic competency of the economist, accountant, financial analyst. First of all, professionalism is related to a high level of individual features, self-realization, unique style, and approach to business activities. Therefore, individual style, approach to business activities, i.e., a system of personal methods that provide efficiency in further activities, should be perceived as the criterion for professional specialist determination [5].

The problems of modern education require to strengthen interconnection between theoretical research and practical components of training, pay attention to measuring and assessing the professional training, that real specialists achieved because it is they from whom the successfullness of reforms, and, in the final conclusion, – the economic and social development of the society in general, shall depend. These problems can be solved by a broader and scientifically reasonable implementation of the competent, relevant approach to studying the efficient, professional activities of a future accountant [5].

Therefore, during the formation of future competencies of specialists in the accounting sphere in Lesya Ukrainka Volyn National University, among the others, the special (professional) competencies are considered, in particular:

- the ability to formulate and use accounting information in order to make reasonable decisions at all levels of managing the company for increasing efficiency, effectiveness, and social responsibility of the business;
- the ability to formulate financial reporting according to national and international standards, interpret, publish and use relevant information for making managing decisions;
- the ability to organize the accounting process and manage activities of its makers according to the company’s management requirements;

Such specialists can simultaneously work in companies and achieve education in educational institutions (full-time or part-time study). Thus, the academic staff’s agenda is to provide the student with maximum possibilities to study the proposed material remotely and complete all control assignments in a convenient time with meeting requirements set out for particular tasks.

Higher education institutions’ educational process combines in-class studying the normative and special disciplines, individual work and independent studying the material, teacher’s consultations, etc. Distance education can be considered a supporting element of traditional education. However, in certain
situations, in particular during the preparation of second educational level students of the specialty “Accounting and taxation,” such form of education can be used as a basis.

Since distance education’s flexibility has many benefits compared to in-class education, the student has an opportunity to study individually, choosing the time, place, and learning tempo. So that, an applicant of education (either bachelor or master) can study following the individual plan, which corresponds his/her personal needs, as well as combines the education with other activities by using modern information and telecommunication technologies. Using the possibilities of information technologies is needed in the personnel’s professional development in the direction particularly required by the company.

Special attention is paid to the choice of educational information so that it is modern, complete, alternative, provokes the motivated studying of itself, and requires communication between students to enrich the involved informational resources and increase the quality of the results. Thus, the studying materials should form the special complex, which is to cover all the requirements for educational information mentioned above [6].

In the higher education system, distance education supplements the traditional model of university education’s organizational structure.

For the most optimal design and construction of the e-course, an understanding of the essential characteristics of the electronic educational materials is needed. The development of distance course includes the design and development of the course’s information part and its implementation into the information environment service “Moodle.”

E. S. Polat thinks that a distance course should include such structural components:

- general information about the course; its purpose, aim, tasks, content (structure), requirements of applying for the course, concluding documents;
- reference materials;
- a unit for establishing contact with the users;
- a unit of assignments, designed for mastering of the material, formation, and consolidation of practical skills;
- a unit of creative assignments;
- a unit of monitoring and control (assessment) [8].

In order to learn remotely, there is a need to have access to e-mail and the possibility, at least occasionally, to work online through the Internet.

Information materials that are to be used in a distance course are:

1) a textbook or lecture notes;
2) methodological materials for laboratory and practical assignments;
3) computer-based teaching applications on the Internet, CD-ROMs (e-textbooks, controlling testing systems, training programs, laboratory assignments, reference books, encyclopedias, subject-oriented space);
4) instruction materials.

A distance course includes such structural components as:

1) introduction information, where the purpose and tasks of the course, working schedule, recommendations are set out;
2) preliminary testing to help the user to assess the level of his/her preparation and to adjust the course according to personal needs;
3) recommendations on studying the course;
4) theoretical material, usually presented in the form of modules. Such way of presenting the material simplifies the mastering the material, gives the particular supporting points for controlling the material that is being studied, and provides high quality of education;
5) laboratory and practical assignments with preliminary testing systems.
6) list of the questions asked most frequently and answers for them;
7) glossary;
8) list of references to the other websites on the Internet for deepening the knowledge on the subject [9].

The purpose of the article is to investigate the information support of the professional competencies of the applicants of education of the specialty “Accounting and taxation” and justify the need to use
educational methodological complexes of the set of accounting disciplines, created on the Moodle platform, in the educational process, with a presentation of developed structural components.

The general science methods (analysis, synthesis, comparison, generalization) were used in the current research together with the highly specialized ones. In particular, for the achieving of the article purpose, we used the analysis of the practical experience of bachelors and masters studying the following range of accounting disciplines at Lesya Ukrainka Volyn National University using the methods of distance learning: “Managerial Accounting,” “Managerial Accounting,” “Accounting in foreign countries,” “Accounting and Taxation of international transactions,” “Accounting in enterprise management,” “Applied econometrics,” “International standards of accounting and financial reporting,” “Financial reporting consolidation.”

The results of the research. In formulating accounting and taxation specialists’ competencies during their preparation, the vital factor is employers’ requirements, which demand from their employees the efficient application of professional knowledge in practice according to the current managing conditions. A highly qualified professional specialist should stand out with his/her individual approach to work, the style of solving the key issues, have a system of unique techniques and methods to ensure the effectiveness of the further activities.

Based on acquired skills and abilities, the future accountant must properly operate information in accounting, economic, and financial areas using modern information technology.

Studying this issue, M.M. Matiukha thinks that computer technologies development entered into the stage when various functions performed by professional accountants are realized more successfully. The phase where Ukraine is now standing in the sphere of implementation the computing technologies into economic accounting work is related to using the software products such as word processors, spreadsheets, etc. E-documentation, submission of reporting, informational searching systems of various departmental institutions and structures are gaining their popularity among different communication tools. However, Ukraine is only at the stage of formation in terms of mastering methodologies and creating technological expert systems in accounting economic activities, and thus, practice is significantly ahead of the theory. Turning to professional competencies as to a result of purposeful professional preparation of future specialists in the economic sphere is not accidental, because it is this a result which allows to substantiate theoretically and design methodologically competence a system of continuous education, and to build up the interaction between the subjects of the educational process. Therefore, professional preparation of specialists, who have high competence in computer technologies, are able to apply new information technologies in the course of their studying and professional activities, is one of the global aims of informatization of education.

Therefore, in the formation of computer competence of future specialists accountants, there is a need to introduce and develop professional skills in working with computers, with electronic versions of lectures and practical materials in their training, and the latest methods of training in the specialty.

Center for Innovative Technologies and Computer Testing functions at Lesya Ukrainka Volyn National University and provides coordination and methodological support for the introduction and use of distance learning technologies in the university’s educational process.

The primary attention in developing distance learning courses at the Lesya Ukrainka Volyn National University is paid to the Moodle information environment. There are more than 16 courses of remote learning designed for students of economic specialties. They are recommended by the university’s scientific methodological council as methodological developments for use in the educational process. During the development of the academic course, a problem with determining the optimal course structure occurs. It made the provision of professional competencies for future specialists in accounting and taxation possible.

The most suitable environment for remote learning methods implementation is applicants of the first and second level of education of the specialty “Accounting and taxation.” In particular, such courses were chosen: “Managerial Accounting,” “Forensic accounting expertise,” “Accounting in foreign countries,” of the bachelor educational program, and “Accounting and Taxation of international transactions,” “Accounting in enterprise management,” “Applied econometrics,” “International standards of accounting and financial reporting,” “Financial reporting consolidation” of the master educational program of “Accounting and Taxation” specialty (http://194.44.187.60/moodle/course/category.php).

The courses’ development was performed using the remote learning website of Lesia Ukrainka VNU, which is functioning based on Moodle education management system. The educational material allocation
and access to it took place using standard software tools. Academic courses are systems of interrelated web-pages, the transition between which is to be made using hyperlinks. The type of courses and features of the work organization depends on the format of a course chosen at its creation and adjustment stage. For example, ‘weekly’ allows to allocate means for the study of educational material by weeks during which the process of studying the courses is planned, and ‘thematic’ – enables the distribution of means for the study of academic material by topics. The development of remote courses is based on consecutive creation of the elements, which are to contain this or that educational material, with the help of the information environment. The educational materials implemented into the information environment are to be prepared by the instructors in advance, presented in the format of files developed in external third-party software applications [10].

The Moodle information environment’s working space is organized according to the blocks principle, which means that all the information is divided into blocks at the course’s starting page. Blocks that contain setting instruments for the educational process management are situated to the left and to the right. Block for filling in with information and means of its learning during the course development are located at the center [1].

All the measures aimed at implementation of the educational courses had the following sequence of actions.

In the process of creating distance courses, we decided on the structure and content of the discipline (the number of hours, according to the curriculum, the presence of control, practical / seminar, laboratory classes). The teachers (developers) of the course have thought out what creative tasks students can perform in the discipline within the scope of the hours provided for in the section of independent work. While working on the creation of these courses, we understood that work with students would be remote, and thus, the learning would be entirely remote too, and the final assessment grades would be given according to the program journal. Therefore, a transparent system of evaluation of completed tasks has been developed for the courses created.

The next preparatory stage in the creation of distance learning courses is the distribution of the study load per semester. In order to achieve this, it is advisable to use a modular approach to load distribution. Modular mastering of the discipline involves determining the number of weeks during which this course will be studied, and therefore, all the workload had to be evenly distributed over the appropriate number of weeks. Evenly distributed weekly load, focused on 15-16 weeks, was taken into account. The course developers determined a specific number of tasks (practical tasks, essays, tests, reports, etc.) that the student must perform. This is important because the student receives a certain number of points for each completed task.

To start the work, the student needs to open the course’s starting page, which is very flexible and can be adjusted by adding educational information and different instruments for learning it.

For example, implementing such courses as “Accounting in enterprise management,” “Managerial Accounting,” “Managerial Accounting,” “Forensic accounting expertise” before the start of the academic year, we added different blocks for acquainting with the course, forum, list of recommended readings, terminology dictionary, and consultations.

Forum is for direct communication not only between the instructor and one particular student but with all the academic group, for example, there was a discussion proposed for the students on “Do you think the ratio of lectures and practical classes is optimal for the course “Accounting in enterprise management?”

We filled the block “Introduction to the course” with such elements as “Preface,” “Structure of the distance course,” “Evaluation criteria,” “Methods and means of diagnosis.” We used the resource “Moodle-page” to do this. The advantages of using the “Page” resource, compared to the “File” resource, are that the “Page” becomes more accessible (for example, for mobile users), and it is easier to update.

However, for large amounts of content, it is recommended to use the resource “Book” instead of “Page,” which we used when placing the “Course Program.” This allowed us to create a multi-page resource in book format with chapters and sections.

In the “Book,” we have placed the list of the required and additional readings, and thus for constant monitoring of updating the regulatory framework on the accounting and taxation, we recommended the use of periodicals and various online publications.

Considerable attention in the development of the course was paid to the allotment of theoretical and
practical parts of the course, united by a single block “MODULE 1: Content of lectures and practical classes,” or separate structural parts “Lecture notes,” “Practical work.” It is filled with various Moodle resources and activities. In particular, in the course “Accounting in enterprise management,” a folder “Lectures” was created to contain separate topics presented in the format of pdf files and a ppt-presentation “Accounting in management” (Fig. 1).

Fig 1. Screenshot of the page from the presentation “Accounting in management.”

This information block helps consolidate such a competency as the ability to generate and use accounting information to make informed management decisions at all levels of enterprise management to increase efficiency, effectiveness, and corporate social responsibility.

A useful activity in the web-based Moodle environment is the “Lesson,” which is used to create a set of one-tier web pages or for learning activities that offer different ways or options for learning material and self-monitoring for the student. This activity is chosen to increase interaction and provide understanding by using various assignments such as multiple-choice, matching, and short answers. In our example, the “Lesson” is used to study a new lecture topic individually. Depending on the choice of an answer given, students can go to the next page, go back to the previous page, or be redirected in a completely different way.

During remote processing of a course, considerable attention is given to practical classes. In Moodle, this is achieved through the “Tasks,” each with content, deadlines, and mandatory assessment.

For example, the course “Accounting in enterprise management” involves implementing tasks of various kinds, particularly in the form of a cross-cutting task, when the student has to solve the calculation part, fill out primary documents, and compile financial statements (Fig. 2). It develops the ability to form financial statements according to national and international standards, as well as interpret, publish and use relevant information for making management decisions.

The course “Forensic accounting expertise” includes three modules, each contains lectures using the “Book” resource and three practical assignments. Each of these modules is finished with a test.

As a quick survey to stimulate the understanding of the lecture material in the course “Accounting in enterprise management,” there was used such a type of activity as “Multiple-choice.” It allows the teacher to ask students a single question (for example, “Which of the following elements as achievements of modern science should be taken into account when developing an accounting system and improving it?”) and offer a wide range of possible answers. For masters of this specialty, it develops and deepens knowledge of
research and teaching in the field of accounting, auditing, and taxation.

Fig 2. Screenshot of the page filled with practical tasks

In the process of studying accounting disciplines, participants of the educational process operate with specific categories, terms, and concepts. Therefore, to help students, it is important to create a dictionary using the resource “Glossary.” This allowed course authors to create and maintain a list of definitions, as well as to collect and organize resources (information).

The instructor can allow files to be attached to the “Glossary” entry. Entries can be viewed alphabetically or by category, date, or author. Also, Entries can be approved by default or require teacher approval before everyone can see them.

If the “Glossary” allows an auto-binding filter, entries will be automatically linked to some concepts of words and/or phrases that appear during the course.

The teacher can allow comments on the posts. Records can also be assessed by teachers or students (independent assessments). Ratings can be combined to form a final rating, which will be recorded in the rating log.

When forming the above-mentioned distance courses, we consider the individual and independent work of students, which is realized in the blocks “MODULE 2: Individual tasks” and “MODULE 3: Independent work.”

Individual tasks are aimed at performing exercises similar to those performed within the practical classes. At the same time, students were assisted through consultation in the “Chat,” which allowed participants to have a synchronous online discussion in text mode. Chats are especially useful when a group is unable to meet live, for example:

- regular meetings of students participating in online courses so that they can share experiences with others in the same course but elsewhere;
- the student is temporarily unable to be present in a person with their teacher to catch up;
- students gather together to discuss their experiences with each other and with the teacher.

Students’ independent work in the development of courses is mostly creative because the tasks proposed for performing required an individual approach. The “Forum” of the course “Accounting in enterprise management” offers to discuss specific topics that were brought up for self-study. With the help of the “Choice” module activity, students were asked to perform research work (for example, “Choose one of the foreign accounting systems (on the example of a specific country) and formulate the main features of building an accounting system”).
For co-authorship of interesting and unexplained accounting and the history of accounting, such type of activity as “Wiki” was used.

Upon completion of the discipline, final control of students’ knowledge is carried out. Therefore the distance courses described above include such control assignments as modular test work and final tests.

Such activity as “Test” allows teachers to develop tests containing questions of different types, including multiple-choice, compliance, short answer, and numerical answer.

Teachers can allow multiple test attempts, questions can be changed or randomly selected from the question base. There is also a possibility to set a time limit. Each attempt’s evaluation is automatic, except the assignments of the essay-type, which are to be entered into the rating log. Teachers can choose to offer tips to students or show feedback and correct answers to questions.

Current knowledge tests most objectively assess the quality of students’ knowledge. The advantage of Moodle is that it itself, regardless of the teacher, gives a grade according to a given criterion. The student, thus, receives the result. The final test is an integral part of the rating. Therefore, when creating current knowledge control tests, it is advisable to set the number of points provided in the rating for this task, which will be indicated in the electronic journal and will be part of the rating.

At the final stage of creating the distance courses, an important place belongs to keeping a journal. After entering all the practical and test assignments, it is advisable to check their compliance with the electronic rating log scores to avoid errors.

Completing the development of distance learning courses for students to be future professionals in accounting and taxation, we paid enough attention to the management and control of the educational process. In the process of learning, the performance of tasks performance by students needed to be controlled. The main parts of the Moodle menu are “Course Elements” and “Settings.” In the “Settings” menu, by clicking EDIT, the student can make changes to the created resources and tasks. Also, students can change or add resources (theoretical material) at any stage of their work.

**Conclusions and prospects for further research.** The economic and social development of society requires strengthening the relationship of all theoretical research, practical components of professional training, on which the success of reforms depends. These purposes can be achieved by implementing a competency-based approach in the study of the future accountant. In order to increase the effectiveness of students’ education, it is necessary to introduce the latest computer technologies in the teaching of disciplines of accounting and analytical cycle to contribute to the formation of professional competence of the future specialist.

Given that educational information must be modern, complete, alternative, promote its motivated processing, and require communication between participants of the process to enrich the information resources involved and improve the quality of results, training materials must meet all the above requirements.

The creation of distance courses, the use of information and communication technologies not only significantly increases the level of students’ knowledge and teachers’ professional abilities but also clarifies that in-depth and advanced learning is now essential for society. Students’ communication with the teacher plays an important role here, as well as the search for knowledge, and the opportunity to analyze and discuss alternative views without a conflict. This will contribute to rational decision-making and the high-quality development of society.

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