

R. Baranenko¹, D. Tyshchenko², T. Franchuk², H. Sokol³

¹ Uman National University of Horticulture, Uman, Ukraine

² Kyiv National University of Trade and Economics, Kiev, Ukraine

³ National Technical University "Kharkiv Polytechnic Institute", Kharkiv, Ukraine

INFORMATION SYSTEM FOR QUALITY ASSURANCE OF EDUCATION

Abstract. The article analyzes the problem of developing and implementing an information system for quality assurance of higher education. The purpose of the article is to research modern methodological, technical and software tools used in the process of developing and implementing an information system for quality assurance of higher education. The peculiarities of the development of the announced information system were analyzed, on the basis of which the requirements for the design of the information system were determined, the possibilities of modification and development of the information system for ensuring the quality of education were investigated, and ways of its improvement were proposed.

Keywords: management information system, information system, education, software.

Introduction

For modern society, acquiring new knowledge, mastering new technologies, methods of managing social and scientific processes is of great importance. Any type of activity must go through certain stages that are directly related to the collection of information, its analysis, the selection of priority tasks, the finding of optimal options for solving these tasks, the formation of approaches to the realization of the intended goals. First of all, technologies made it possible to receive information in any quantity, and not be limited to a given volume. The ability to use the network has become indispensable. Students also had the opportunity to show their creative abilities thanks to various presentations and other things. Separately, it is worth talking about the fact that the new information technologies of education have allowed the emergence of completely new projects that help self-learning, distance learning, and this, in turn, allows maintaining the connection between teachers and students.

The object of research is an information system for collecting quality indicators of educational services of a higher education institution. The purpose of the work is to investigate the education quality system of the institution of higher education and the possibility of its improvement by developing an information system for collecting quality indicators of the work of the educational and pedagogical staff of the departments.

Analysis of recent research and publications.

The results of the conducted research were reported and published in the materials of numerous scientific conferences of professors, teachers, researchers, post-graduate students and students of the institution of higher education. Bublyk M., Karpiak A., Rybytska O. believe that one of the main directions of informatization is the construction of an informational educational space, then in this context such problems arise as: lack of a single software standard, lack of technical personnel for the maintenance of technical devices [1]. Chukhrai N., Shcherbata T. analyze the

cooperation of modern IT enterprises with leading domestic and foreign universities [2]. According to many researchers, in particular, Alyoshin S., Borodina O., Hafiiak A., Nosach O. many of the information technologies within the walls of educational institutions are not fully equipped with the package of programs necessary for training [3, 4]. Melnyk, M., Korcell-Olejniczak, E., Chorna, N., Popadynets, N. argue that the actual problems are: problems related to the conservatism of electronic publications and the use of outdated ideas about software architecture in their design [5–8].

Main part

In a world where things that are easy to teach and test are also easy to digitize and automate, it is our imagination, our awareness and our sense of responsibility that will allow us to use the opportunities of the XXI century to shape the world for the better. Higher education institutions need to help future professionals think for themselves and engage with others with compassion in work and citizenship. They will need to help higher education graduates develop a strong sense of professional competence.

How these fundamental changes will affect us depends on how we collectively and systemically respond to them. Education is a very important area of any country. It is thanks to education that success in further development is ensured. Given the fact that in this area, the trends of the modern century should be taken into account, information technologies of education are particularly popular. Educational information technologies can be of several types. Everyone is necessary for full-fledged training, as well as for this process to be comfortable and pleasant for all parties. First of all, information technology has helped teachers a lot. This is a great way to get all the information you need, as well as competently compile relevant and modern lessons. Teaching systems are constantly changing, and a huge number of discoveries are made, but with the help of the Internet it is easy to

always be up to date and make your lessons as useful as possible for modern people. It is also impossible not to emphasize the form of teaching itself.

Information technology in education allows you to find not only texts, but also videos, slides, and much more on this topic. Now the training is interesting and enjoyable, because it is not only in the form of stories, but also with the help of computers and technical means, as well as projectors, information is presented in the most convenient format for students. Many even gladly began to receive higher education at various educational institutions, although it used to be a great difficulty.

Carrying out tasks, projects and making sessions remotely is a great opportunity to replace the classical form of education. Teachers can now teach with the software and also have opportunities to learn languages with them or acquire a new profession that is not too difficult. New trends and strategies for integrating ICT into daily educational practice are a necessary condition for the modernization of the education system. Digital learning materials are different from traditional ones and have the ability to manage them. In the process of work, a number of tasks are defined: analyze the current quality management systems of higher education; investigate the processes of informatization through the prism of the development of the educational space; evaluate the negative consequences of the analyzed system, indicate the possibilities of their elimination; develop, design and implement an information system.

Today, university students and teachers are representatives of that social environment, in which there is a huge flow of information that is constantly updated, and due to limited opportunities, a person cannot take full advantage of this "huge flow". Under the current circumstances, humanity has come to such a process as "informatization".

The main most popular LMS systems (Blackboard, Moodle and Sakai) provide a concentration of learning materials and courses, and also cover course management, registration, course planning, discussion forums, blog sites, assessments. The main features of the LMS are password-controlled access to selected courses. The LMS tracks which materials a student has access to and how much time they spend on them.

Here, learning activity analysis is performed to collect data available to the LMS about student actions. Enrollment accounting systems in an LMS contain basic student information such as registration details, course selection, course outline, qualification objectives, study time and tracking information. In particular, the practice of private, elite, individual education is becoming more and more widespread, which inevitably causes the role of traditional public education to decline. Forums/webinars, e-mail, chats are also used to include recipients in the publication of materials or can be mechanisms for uploading via blogs or wikis, links to other web resources, such as library resources.

Also, it is possible to obtain information and sum up statistics through mass surveys with the provided ERP variants of system indicators of department activity, which greatly complicates the task due to the

preparatory stage and time for its implementation. As a result of the implementation of the developed site, we will get the opportunity to conduct an internal audit without much time expenditure and a visual display of the results of the activities of both individual units and the institution of higher education as a whole.

The following software was chosen to implement the above solution. Namely, CMS Joomla 1.5.25 content management system; Denver 3 software package, which includes: PHP 5.3; Apache 2; MySQL 5.1; phpMyAdmin; MySQL. At the same time, the dominant view remains that learning and social networks are incompatible. But experience shows that social media expand learning opportunities outside the educational institution, stimulate the joint work of future specialists, their awareness and communication.

During the implementation of the assigned task, the requirements for the designed and developed information system were taken into account, looks as shown in Fig. 1.

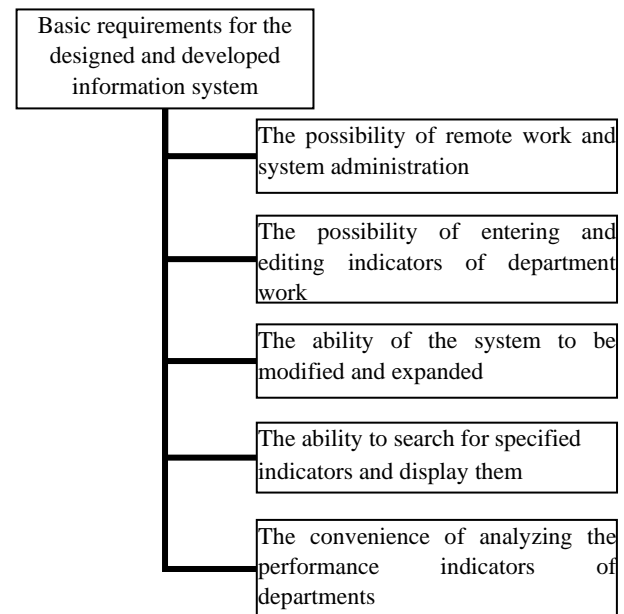


Fig. 1. Requirements for the designed and developed information system

A number of steps should be taken to develop interactive learning, namely: recognize the value of education in a non-traditional, informal or everyday environment, encouraging students' aspirations for self-realization through the use of mobile learning tools; provide geographically dispersed needy with mobile technologies for sharing knowledge and experience; together with educational institutions, create administrative and legal norms for mobile learning; train teachers, encourage teachers who are constantly learning using various technical and software tools; work with stakeholders to provide the opportunity to reduce the cost of mobile Internet access for mobile learning.

The learning platform analyzes resource metadata and their preferences to deliver the appropriate type of resource for a specific user. This type of accessibility is useful for students with special needs. Since the most

important characteristic of an innovative educational platform is the support for the functioning of various devices and learning environments for teachers and future specialists, accessibility issues should be resolved based on the characteristics of the educational platform. Another factor in the diversification of educational platforms was changes in means of communication and information and computer infrastructures.

Conclusions

The information system will significantly reduce the time spent on obtaining quality indicators of the institution of higher education, because it has the possibility of remote access, and will also ensure their visibility. During pre-diploma practice, this system was tested and showed high performance and expected results.

The considered materials correspond to the most important directions of development of new information and communication technologies in various sectors of education. The study of various opportunities for obtaining education in the digital age shows how the forms of education are changing and what new resources are needed for this (educational platforms, mobile learning and cloud technologies in education, social media). In this work, the problem of informatization of educational services is analyzed, which increases the efficiency of activities and the quality of human preparation for a full-fledged life in the information society, and the necessity of introducing

information systems into the process of managing the activities of departments, faculties, and the institution of higher education as a whole is proven.

The work examines the ERP system of educational services and identifies ways to improve it, namely, the development of an information system for monitoring the quality of educational services, which contains the components of ERP systems and quantitative system indicators of the work of all departments of a higher education institution.

An information system for monitoring the quality of educational services has been developed: a system model has been developed; algorithms of system operation are developed, the implementation platform is selected and the data scheme of the system is developed; a flexible and intuitive user interface is developed.

On the basis of the above, it can be concluded that the project of the ERP information management system of the educational services system has been developed in this work, which will provide clear and long-term monitoring of the performance indicators of the departments, as well as help in determining the main tasks and directions of work and development of educational activities.

The developed system has a very convenient construction and, if necessary, can be supplemented and modified. The system provides the necessary conditions and work results and is completely ready for implementation.

REFERENCES

1. Bublik M.I., Karpiak A.O., Rybyska O.M. The perspectives of IT industry development in Ukraine on the basis of data analysis of the world economic forum. Innovative management: theoretical, methodical, an applied grounds/ Pražský Institut zvyšování kvalifikace Prague institute for Qualification Enhancement. 2018. 115 -128.
2. Chukhrai, N. I., & Shcherbata, T. S. Cooperation between IT development enterprises and universities. Marketing And Management Of Innovations. (3). 2016. 161-169.
3. Hafiak A.M., Borodina O.O., Alyoshin S.P., Nosach O.B. The Information Society and Informatization Development Problems of Economy. International Journal of Engineering & Technology. 7. (4.8). 2018. 364 – 369.
4. Hafiak, A. Problems of professional competence formation of future specialists on information and communication technologies in universities. Modern scientific researches. Series: Education and pedagogy. Issue 10. Part 2. Yolnat PE, Minsk, Belarus. 2019. 15-18.
5. Zikov, I.S., Kuchuk, N.H. and Shmatkov S.I. (2018), “Synthesis of architecture of the computer transaction management system e-learning”, Advanced Information Systems, Vol. 2, No. 3, pp. 60-66, DOI: <https://doi.org/10.20998/2522-9052.2018.3.10>
6. Semenov, S., Weilin, C., Zhang, L., & Bulba, S. (2021). Automated penetration testing method using deep machine learning technology. Advanced Information Systems, 5(3), 119–127. <https://doi.org/10.20998/2522-9052.2021.3.16>
7. Donets V., Kuchuk N., Shmatkov S. Development of software of e-learning information system synthesis modeling process. Сучасні інформаційні системи. 2018. Т. 2, № 2. С. 117–121. DOI: <https://doi.org/10.20998/2522-9052.2018.2.20>.
8. Melnyk, M., Korcelli-Olejniczak, E., Chorna, N., & Popadynets, N. Development of Regional IT clusters in Ukraine: institutional and investment dimensions. Economic Annals-XXI, (173). 2018. 19-25.

Received (Надійшла) 24.12.2023

Accepted for publication (Прийнята до друку) 22.02.2023

Інформаційна система забезпечення якості освіти

Р. Бараненко, Д. Тищенко, Т. Франчук, Г. Сокол

Анотація. У статті проаналізовано проблему розробки та впровадження інформаційної системи забезпечення якості вищої освіти. Метою статті є дослідження сучасних методичних, технічних та програмних засобів, що використовують у процесі розробки та впровадження інформаційної системи забезпечення якості вищої освіти. Проаналізовано особливості розробки анонсованої інформаційної системи, на основі яких визначено вимоги до проектування інформаційної системи, досліджено можливості модифікації та розвитку інформаційної системи забезпечення якості освіти та запропоновано шляхи її вдосконалення.

Ключові слова: інформаційна система управління, інформаційні технології, освіта, програмне забезпечення.