

CHAPTER 1

GENERAL PEDAGOGY AND HISTORY OF PEDAGOGY

BYOD CONCEPT IN THE FORMATION OF AN INNOVATIVE EDUCATIONAL ENVIRONMENT FOR THE FUTURE EDUCATION BACHELORS TRAINING

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Abstract. *One of the main reasons for the increased attention to the problem of introduction of mobile technologies in the educational process is the convenience and ease of use of existing tools for search, creation and use. Using these technologies, you can significantly increase the efficiency of the process of professional training of teachers, to intensify their educational and cognitive and independent activities. In the process of his activity, the teacher has to solve problems related to the search for existing mobile technologies, analyzing them for the feasibility of use in the educational process and creating their own. To train a competent specialist who is able to effectively use the ideas of the BYOD concept to solve the problem of their professional training is an important task of higher pedagogical education. The innovative educational sphere, organized on the basis of the BYOD concept, contains effective means that stimulate creativity in future teachers, reflexive actions, creativity in solving professional problems. It focuses on creating such an environment in higher education that would stimulate each student to take non-standard actions, to search for a creative way out of problematic situations that are so abundant in pedagogical reality. We found that the pedagogical purpose of the BYOD concept can be: propaedeutic acquaintance with the lecture material; classroom lecture for self-study; admission to laboratory classes; virtual laboratory workshop; self-control, etc. Measures for the use of mobile technologies and services in the process of training future teachers should be based on an informatization strategy (IT strategy), which is designed to determine the role and place of mobile technologies in ensuring the activities of an educational institution and solving problems of its development for a certain period. A modern teacher cannot effectively solve professional problems put forward by pedagogical reality if he does not have experience in research and innovation and is not ready to create the necessary atmosphere of scientific research in the context of practical pedagogical work based on the BYOD concept.*

Keywords: *educational space of Ukraine; higher education; professional training; BYOD concept; future education specialists; innovative educational environment.*

JEL Classification: A22, I23

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Introduction. Modernization of education is the most important task of socio-economic policy of each developed country. In these conditions, the problem of improving the quality of higher education is particularly relevant. At each stage of

development of education historically different ways of improving its quality have been used. Currently, improving the quality of education is expected by changing the methods and means of educational activities, in particular through the introduction of BYOD-approach. At the same time, computer and Internet technologies themselves are developing rapidly, replacing personal computers with more portable and mobile devices; There are more and more powerful smartphones in the consumer market - mobile phones that have computer functions.

Today, mobile devices (iPhones, smartphones, tablets, MP3 players, e-books, etc.) are a mandatory part of every student's life and learning. The abbreviation BYOD = Bring Your Own Device (relatively bring your own device) is relatively new, and it appeared in the field of commercialization and information technology in 2009-2011, but began to be used even earlier in various universities around the world, including and during the training of future teachers. It should be noted that many studies have shown the positive effects of using electronic and mobile devices in the educational process: increase motivation, promote interactivity, cooperation and involvement in different types of work, individualization of learning, help create a sense of community. However, there are some disadvantages, such as high price, availability, connectivity, small screen size, limited battery life, distraction from personal correspondence on the Internet during classes and social networks, and so on.

First of all, it is necessary to develop guidelines for students on the effective use of mobile devices for learning, which should provide specific examples of the use of this technology in learning, set goals and objectives of learning using their own mobile devices, clearly indicate general learning outcomes and criteria with mobile devices, features of combination with the Moodle platform used at the LMS university. These key considerations (student preferences, goals, objectives, typology of exercises, etc.) are the main objectives of the organization of an innovative educational environment for the training of future bachelors of education.

Literature review. A significant number of state programs and projects are devoted to the problems of introduction of information technologies in the field of education. Thus, the Decree of the President of Ukraine «On measures to develop the national component of the global information network Internet and ensure wide access to this network in Ukraine», «On urgent measures to ensure and develop education in Ukraine», the Decree of the President of Ukraine «On additional measures to improve quality Education in Ukraine» and other state documents are aimed at providing appropriate conditions for the effective use of modern mobile technologies, which would contribute to the improvement of the educational process in all educational institutions, including higher pedagogical educational institutions. The effectiveness of this process largely depends not only on the amount of investment in computer equipment and other technical means, but also on the level of professional training of teachers, pedagogically balanced and sound computer-oriented methodological support of the educational process.

The introduction of the BYOD concept in the educational process of future teacher training is considered in a number of works by Ukrainian and foreign authors, is the subject of serious discussion at scientific-practical and scientific-methodical

conferences, as well as on the pages of periodicals. Some aspects of the multifaceted problem of the use of mobile technologies in education have been studied in the Ukrainian scientists works (N. Balik, L. Belousova, L. Breskina, V. Wember, O. Goncharova, A. Zabarna, I. Ivaskova, A. Kravtsova, O. Kuzminskaya, N. Morse, O. Rezina, I. Robert, O. Semenikhina, S. Semerikova, Yu. Trius and others).

One of the main reasons for the increased attention to the problem of introduction of mobile technologies in the educational process is the convenience and ease of use of existing tools for search, creation and use. Using these technologies, you can significantly increase the efficiency of the process of professional training of teachers, to intensify their educational and cognitive and independent activities. In the process of his activity, the teacher has to solve problems related to the search for existing mobile technologies, analyzing them for the feasibility of use in the educational process and creating their own. To train a competent specialist who is able to effectively use the ideas of the BYOD concept to solve the problem of their professional training is an important task of higher pedagogical education.

Aims. Highlight the role and opportunities for the introduction of BYOD-approach to create an innovative educational environment for the training of future bachelors of education.

Methods. Theoretical methods: systematic analysis of scientific, psychological and pedagogical, methodological literature; generalization and systematization of theoretical information on the introduction of innovative changes in the higher education system of Ukraine.

Results. The innovative educational sphere, organized on the basis of the BYOD concept, contains effective means that stimulate creativity in future teachers, reflexive actions, creativity in solving professional problems. It focuses on creating such an environment in higher education that would stimulate each student to take non-standard actions, to search for a creative way out of problematic situations that are so abundant in pedagogical reality [1].

An innovative educational sphere organized on the basis of the BYOD concept is a set of conditions that ensure the effectiveness of professional growth, mastering the professional values of pedagogical reality based on interaction, cooperation and co-creation of participants in the pedagogical process, stimulating the development of a professional image and the level of readiness of future teachers for creative pedagogical activity, scientific search, development of copyright programs and projects, innovative support of the educational process.

The innovative educational sphere, organized on the basis of the BYOD concept, as a complex education, its essence, structure and content are determined by the specifics of pedagogical work and the main types of teacher's creative activity. An important aspect of his activities is pedagogical science, which combines fundamental theoretical provisions that determine the understanding of the world as a whole and specific pedagogical reality. The processes of research and transformation (implementation) converge in time and interpenetrate. Science is becoming a tool for solving pedagogical problems, a means of transforming pedagogical reality, one of the conditions for the effectiveness of training future teachers for pedagogical creativity.

In educational practice, innovative activity is developing, which determines the borderline state of the teacher-innovator between scientific activity and pedagogical practice [1].

At the same time, mobile technologies are either weakly or not at all integrated into the educational process. As a rule, Ukrainian universities do not have mobile versions of portals; do not adapt information services for users of mobile devices; do not create electronic educational content intended for use on mobile devices; do not develop mobile applications for students and teachers. An analysis of the content of the GooglePlay, iTunesStore and Windows Phone Store app stores allows us to state that almost the only mobile application that universities have developed for their own purposes is the class schedule. Mobile devices in the hands of students are often viewed as a hindrance to the educational process (calls and SMS during classes, the use of the Internet in exams, video recording of lectures without the knowledge of the teacher, followed by posting them on video hosting sites, etc.).

At the same time, a survey of university professors showed their high interest in using these technologies: the use of mobile technologies makes it possible to implement various mechanisms to support m-learning, in particular:

- to organize distributed controlled distribution of electronic educational resources (access to educational and research content; podcast broadcasting; webinars; social media, etc.);

- to provide indirect, geographically distributed communication for the implementation of joint activities without reference to the location of the participants in the educational process;

- to use a mobile device as a personal media library of educational, methodological and reference materials;

- as photo and video cameras for recording visual information in digital form; as a player for recording and listening to audio lectures; as a multimedia guide in museums, etc.;

- to connect a mobile device to multimedia and office equipment, measuring instruments and devices in the corporate network of the educational institution;

- to use the sensors and sensors built into the mobile device to collect information about the user's environment (position in space - using a gyroscope; vibration; illumination; humidity; pressure; temperature, etc.) for educational and research purposes;

- to use the means of geolocation of the mobile device to determine the location; search and joint description of geographic objects; obtaining reference cartographic information; building tracks of movement, etc.

In this regard, the institutions of higher education are faced with the following tasks: on the one hand, to teach participants in the educational process to use the advantages of mobile devices, equipping them with convenient tools and services; on the other hand, to limit the uncontrolled use of the capabilities of mobile devices, ensuring information security and data protection in the educational space of the university.

The preparation of students should orient students towards understanding the role of the innovative educational sphere, organized on the basis of the BYOD concept, not only in their professional development, but also in the desire to master the art of modeling it in independent creative work. A whole system of pedagogical means is needed, the activation of the preparation of students for solving this complex problem, the result of which is a high level of their readiness for pedagogical creativity.

We found that the pedagogical purpose of the BYOD concept can be: propaedeutic acquaintance with the lecture material; classroom lecture for self-study; admission to laboratory classes; virtual laboratory workshop; self-control, etc.

The simplest and most effective way to solve this problem is an electronic mobile complex in text format (in particular, a Word-copy of the digital reference abstract of the lecture material). It is important to provide space on each page for notes to be able to record questions from obscure parts of the study material. There is no need to read the lecture material in the audience at all - it is enough for the teacher to dwell on the main theses and answer the questions that arose in the students during the propaedeutic study of the lecture material. This approach is very effective when you want to cover a large amount of material in a short period of time (Fig. 1).

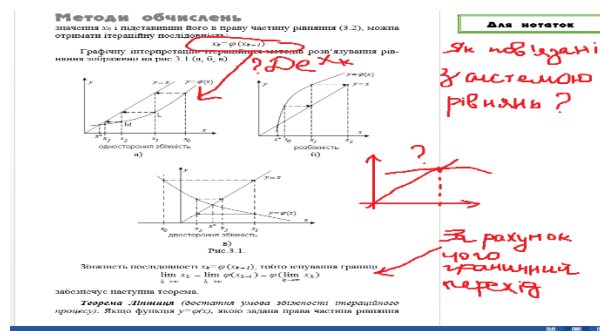


Figure 1. Fragments of materials from the course «Calculation Methods», which provides notes from the screen of the mobile

The educational task of self-learning by re-listening to educational material is realized through video lectures (in particular, in MP3 format). For example, we have created a bank of lectures on the course «Fundamentals of Microelectronics» (author-developer of the course - Ph.D., Assoc. Prof. Shamonya V.), including to support mobile learning. Footage of one of these lectures is presented in Fig. 2.

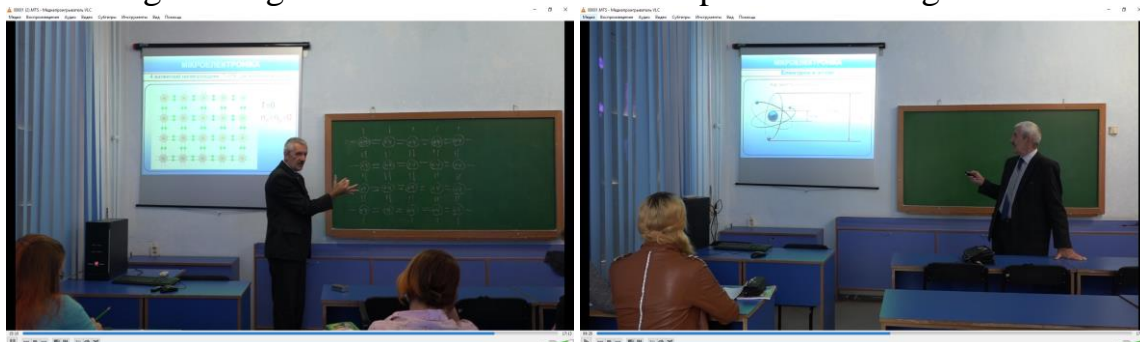


Figure 2. Excerpts from the video lecture «Fundamentals of Microelectronics», which is read by Ph.D., Assoc. Prof. Shamonya V.

Discussion. According to a study by California State University (USA), students use their own mobile devices in the learning process on average every six minutes. Indeed, modern teaching methods and technologies increasingly involve the use of students' personal mobile devices (laptops, tablets, smartphones or other similar devices). The BYOD strategy is being actively implemented in leading foreign universities and in the future, according to experts, will become a widespread practice. A 2013 Cisco Partner Network Survey claims BYOD is widespread in education, with 95% of educators surveyed saying they use personal mobile devices at work. Problems in information security, restrictions on access to corporate information, a variety of software and platforms currently hinder the implementation of BYOD technology not only in universities, but also in other organizations. But the benefits of this approach are significant and outweigh many of the problematic aspects. In particular, BYOD technology can significantly contribute to «attracting and retaining talented employees, increasing the productivity and mobility of employees, increasing their satisfaction, as well as reducing IT» [4].

In addition, research has shown that the mobile devices that students bring with them to an educational institution are extremely diverse, from traditional laptops to various smartphones and tablets, and even entertainment devices such as game consoles and Internet TVs. These mobile devices are not intended for personal use only. They are increasingly being integrated into the educational process. At the same time, information security continues to be one of the main problems for educational organizations. The study revealed some questionable, already implemented practices of using devices and technologies that undermine security and expose university computer networks to vulnerabilities. For the full-scale implementation of the BYOD strategy, there are many unresolved issues in the management of corporate educational networks. All this is also a significant factor, which must be taken into account in the development of the education system in the era of widespread informatization [2].

This is the beginning of a kind of «electronic evolution» of society. Further development of technologies will inevitably change the personality, and in order to avoid an insurmountable qualitative and quantitative gap between generations, it is necessary today to apply the results of such studies, for example, to change the system and standards of education [3].

All of the above allows us to conclude that significant changes in the social situation, the emergence of new forms of relationships in society, including among students, require new approaches to the learning process, the formation of its content and organization, application along with classical new forms of education, changes and updates of means and methods of teaching. Obviously, education should not only respond to external changes in society and its technological development, but also, working ahead of the curve, prepare future members of this society who would have modern thinking, an adequate attitude to life and new opportunities.

The attitude towards designing new ways of acquiring knowledge and solving pedagogical problems are the basis of the teacher's innovative activity. Pedagogical research, as an important component of pedagogical work, provides for the design and modeling of future states of the objects under study, conditions and ways of their

development. The teacher becomes a transformer of the processes under study, and the personality (student) is placed at the epicenter of pedagogical reality. The emphasis of the teacher-researcher falls on such aspects as: values and personal meanings, professional development and formation, educational space, cultural-informational and problem-innovative environment of an educational institution. All these concepts make it possible to talk about a change in pedagogical reality, which leads to the complication of the nature and content of the training of future teachers to creative activity. In the light of these tendencies, the pedagogical picture of the world appears to the modern researcher in the form of a global educational space, at the epicenter of which there is a person realizing his inclinations and abilities in various cultural and informational environments through the implementation of an individual trajectory of his development, which is pedagogically provided humanoid type of education, value-semantic content and adequate technologies of teaching and upbringing [3, p. 116].

Measures for the use of mobile technologies and services in the process of training future teachers should be based on an informatization strategy (IT strategy), which is designed to determine the role and place of mobile technologies in ensuring the activities of an educational institution and solving problems of its development for a certain period. When forming an IT strategy, it is recommended to adhere to the following principles [5].

1. It is advisable to develop mobile information services in accordance with the service model – a structured description of the list of services for the collection, processing, storage, presentation and transmission of information that will be provided to internal (students, faculty, administration and technical personnel) and external users information services.

2. All information resources of the university must be accessible through a web browser, mobile web client or special mobile applications 24 hours / 7 days a week.

3. On the territory of the educational institution, the organization of secure wireless access to information services and the Internet is required.

4. It is necessary to provide for the installation of corporate software on mobile devices of users of information systems and setting up wireless access to internal resources. At the same time, users can use personal devices, but only under the control of operating systems that are supported by the IT service of the university.

5. It should be possible to use a mobile device as a means of identification and authentication in information systems.

6. For each user of information resources, it is advisable to create an account and allocate unlimited file space in the information system of the university (personal account, e-mail, calendar, personal portfolio, document storage, electronic document management, application catalog, etc.). The account and all content posted by the user must have an unlimited period of validity and storage, and all personal information must be synchronized between mobile devices and users' PCs.

A modern teacher cannot effectively solve professional problems put forward by pedagogical reality if he does not have experience in research and innovation and is not ready to create the necessary atmosphere of scientific research in the context of practical pedagogical work based on the BYOD concept.

Conclusions. The innovative educational sphere, organized on the basis of the BYOD concept, stimulates the future teacher to:

- attitude to pedagogical creativity as an integral scientific and methodological space, where the standards of pedagogical activity, personality behavior are recreated, an innovative solution to professional problems is carried out, methodological support of the creative process is created, aimed at the high-quality fulfillment of a social order;
- installation and positive motivation for creative work as an important factor in the professional development of a person;
- implementation of purposeful, systematic preparation of students for scientific and pedagogical work and the formation of their readiness for creative search and innovative solutions to professional and pedagogical problems;
- satisfaction of teachers and students with relationships, interaction, cooperation and co-creation in the course of scientific research activities;
- a prosperous emotional state of students at various stages of problem-innovative activity in an educational institution;
- the focus of participants in problem-innovative activities at a positive result, the creation of a new educational product, methodological solutions and findings, the development of creative projects;
- the participants' enthusiasm for collective scientific research and creative solution of pedagogical problems;
- monitoring, assessment and self-assessment of creative achievements, the level of professionalism in the research and development of professional and pedagogical problems arising from the pedagogical reality and the needs of modernization of the pedagogical process in educational institutions of various types;
- productivity of problem-innovative activity.

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