

BYOD TECHNOLOGY AS AN INSTRUMENT OF MODERNIZATION OF TRAINING OF FUTURE ENGLISH LANGUAGE TEACHERS (FUTURE FOREIGN PHILOLOGISTS)

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INTRODUCTION

Today, technological innovations are drivers of continuous move of society development and provide universal access to information through telecommunication systems. Obviously, qualitative transformations in the education system are inseparably linked to digitalization oriented towards active application of simplification strategies in learning on the one hand and enhancing of knowledge and skills on the other hand and which means the creative use of potential of various digital instruments and resources during learning¹. According Finnish researchers P. Armila, A. Sivenius, B. Stanković and L. Juutilainen, digitalization in education initiates a transition from personal encounters to more distant and algorithm-based methods to teach².

At the same time, learning using digital technologies is a very topical issue for all the participants of educational process since the students of institutions of higher education acquire and master new skills, and teachers manage to create efficient educational environment. In such circumstances, a rapid development of mobile applications within the educational process gives rise to BYOD (Bring Your Own Device) technology when a student uses his/her personally-owned technological device like smartphone, tablet, laptop computer, MP3 player, or e-book, etc. in educational setting instead of using an institution-owned device to do education related tasks³.

BYOD helps to solve one of the most important educational problems that deals with providing institutions of higher education with modern alternative infrastructure and equipment. Moreover, due to continuous

¹ Arisoy B. Digitalization in education. *Cypriot Journal of Educational Science*. 2022. № 17(5). P. 1799–1811. DOI: <https://doi.org/10.18844/cjes.v17i5.6982>

² Armila P., Sivenius A., Stanković B., Juutilainen L. Digitalization of Education: Commodification Hidden in Terms of Empowerment?. *Postdigital Science and Education*. 2022. DOI: <https://doi.org/10.1007/s42438-022-00347-8>

³ Clark K. A., Welsh K. E., Mauchline A. L., France D., Whalley W. B., Park J. Do educators realise the value of Bring Your Own Device (BYOD) in fieldwork learning? *Journal of Geography in Higher Education*. 2021. № 45(2). P. 255–278. DOI: <https://doi.org/10.1080/03098265.2020.1808880>

improvements of mobile applications, BYOD technology significantly extends the boundaries of training process and makes it as effective as possible when all students can access to course necessary materials and are able to perform the work in the classroom without delay. Currently, BYOD is leading to a major shift in higher education and distance learning as it allows more individualization, flexibility and collaboration within the learning process⁴. In addition, mobile technology encourages positive collaboration between students and helps the participants of the educational process construct collective knowledge⁵.

Introduction of State standard of higher education for speciality 035 “Philology”, implementation of competency-based approach and extensive use of information and communication technologies (hereinafter – ICT) within the educational process require new forms, methods and instruments while training of future English language teachers (future foreign philologists). Considering a number of educational innovations and technological advances, methodology of higher education is enriched with new technologies oriented towards formation of professional skills and abilities. Modern technologies mainly concern the establishment of e-learning that is an appropriate reaction to the demands of the times and topical urgent necessity to organize efficient educational process. In this context, multifunctional mobile devices become competency-oriented technologies.

Thus, the issue of using BYOD technology to modernize the process of training of future English language teachers (future foreign philologists) is a relevant task of contemporary pedagogical science and a precondition for creation of innovative educational environment according to the European standards.

1. BYOD technology in the designing of innovative educational environment for formation of professional competency of future English language teachers (future foreign philologists)

Efficient educational environment is regarded as robust ecosystem within the institution of higher education and consists of interconnected components like place, participants, and activities oriented to achieve the

⁴ Sánchez S. P., López-Belmonte J., Moreno-Guerrero A.-J., Sola Reche J. M., Cabrera A. F. Effect of Bring-Your-Own-Device Program on Flipped Learning in Higher Education Students. *Sustainability*. 2020. № 12. DOI:10.3390/su12093729

⁵ Wong P. P. Y., Wong G. W. C., Techanamurthy U., Mohamad W. S. B., Febriana A., Chong J. C. M. Using social mobile learning to stimulate idea generation for collective intelligence among higher education students. *Knowledge Management & E-Learning*. 2022. № 14(2). P. 150–169. DOI: <https://doi.org/10.34105/j.kmel.2022.14.009>

particular educational purposes⁶. Modern trends in higher education necessitate the training of a professionally competent specialist who meets the requirements of the existing socio-economic, cultural, political, educational, informational, and technological situation. The solution to this problem is associated with, first of all, modernization of educational process and implementation of innovative technologies^{7,8}.

Digital properties of educational environment enable to solve actual pedagogical and psychological problems regarding personality development and formation of professional competency because the extensive use of innovative computer-assisted systems as well as teaching support equipment within the educational process encourages building of necessary skills as well as scientific and technological culture among students. Gradually, conventional approaches when a teacher was the main actor in the classroom, are developing into interactive technologies and suggest using various devices. At the same time, due to the digital instruments applied, the institution of higher education needs to revise completely the algorithm of analysis, processing, systematization, and dissemination of the information used for educational purposes⁹.

Our research position on the problem of formation of professional competency of future English language teachers (future foreign philologists) is based upon the following statements: under conditions of development of information and communication sphere the process of modernization of education must take place considering current requirements for its quality, efficiency, intensity and instrumentality, decrease of labour complexity while using information resources at the educational process; teaching methodology must be oriented towards the extensive use of innovative technologies, methods, and techniques, in particular those that require the application of ICT and suggest operating within digital educational environment; all innovative transformations depend on a student's creative potential, readiness to continuous self-education, needs for professional

⁶ Frelin A., Grannäs J. Designing and Building Robust Innovative Learning Environments. *Buildings*. 2021. № 11(8). DOI: <https://doi.org/10.3390/buildings11080345>

⁷ Besspartochna O., Hrubá T., Piddubna N., Pavlova I., Ovdiychuk L. Integration of innovative technologies in the professional training of teachers of literature. *Laplage em Revista (International)*. 2021. № 7(3). P. 407–412. DOI: <https://doi.org/10.24115/S2446-6220202173C1635p.407-412>

⁸ Герасименко Ю. Інноваційні технології у викладанні англійської мови у закладах вищої освіти. *Молодь і ринок*. 2021. Вип. 11–12. С. 155–120. DOI: <https://doi.org/10.24919/2308-4634.2021.252863>

⁹ Мельник Т. Доцільність реалізації концепції BYOD у системі підготовки майбутніх педагогів професійного навчання. *Фізико-математична освіта*. 2020. Вип. 1(23). Ч. 2. С. 53–59. DOI: [10.31110/2413-1571-2020-023-1-2-008](https://doi.org/10.31110/2413-1571-2020-023-1-2-008)

development, flexibility of social and pedagogical thinking, humanistic orientation of personality.

In accordance with some international regulatory documents (European Commission Digital Education Action Plan (2021–2027)¹⁰ and UNESCO Policy guidelines for mobile learning¹¹), and a number of national legislative acts (Decrees of the Cabinet of Ministers of Ukraine “Some problems of digital transformation”¹² and “Strategy for the development of higher education of Ukraine for the period of 2022-2032”¹³, Project of the Concept of digital transformation of education and science until 2026¹⁴ by the Ministry of Education and Science of Ukraine), effective use of mobile technologies contribute to the improvement of educational process in educational institutions significantly. This does not depend on only the amount of financial investments in computers and other digital instruments, but also the level of methodological mastery of teachers and pedagogical balanced instruments they use to support the educational process¹⁵.

Necessity to possess skills of working with ICT as well as mobile devices in the educational process is a quite logical phenomenon as the modern teachers have to act in the educational environment filled with computers or other digital tools and, therefore, it affects the structure of the lesson and, of course, teaching methodology. Besides, efficiency of ICT depends on clear understanding of relevant functionality of the complex of

¹⁰ Digital Education Action Plan (2021-2027) / European Commission. URL: <https://education.ec.europa.eu/focus-topics/digital-education/action-plan> (дата звернення: 14.05.2023)

¹¹ Policy guidelines for mobile learning / United Nations Educational, Scientific and Cultural Organization. URL: <https://unesdoc.unesco.org/ark:/48223/pf0000219641> (дата звернення: 14.05.2023)

¹² Деякі питання цифрової трансформації: Розпорядження Кабінету Міністрів України від 17 лютого 2021 р. № 365-р / Верховна Рада України. URL: <https://zakon.rada.gov.ua/laws/show/365-2021-p#n14> (дата звернення: 14.05.2023)

¹³ Стратегія розвитку вищої освіти в Україні на 2022-2032 роки: Розпорядження Кабінету Міністрів України від 23 лютого 2022 р. № 286-р / Верховна Рада України. URL: <https://zakon.rada.gov.ua/laws/show/286-2022-p#Text> (дата звернення: 14.05.2023)

¹⁴ Проект Концепції цифрової трансформації освіти і науки на період до 2026 року / Міністерство освіти і науки України. URL: <https://mon.gov.ua/news/koncepciya-cifrovoyi-transformaciyi-osviti-i-nauki-mon-zaproshtuye-dogromadskogo-obgovorennya> (дата звернення: 14.05.2023)

¹⁵ Shyshenko I., Loboda V., Shamonina V. BYOD concept in the formation of innovative educational environment for the future bachelors training. *Pedagogy and Education Management Review*. 2021. № (4). P. 4–11. DOI: <https://doi.org/10.36690/2733-2039-2021-4-4>

interrelations within the system “teacher-student”. Under these conditions, BYOD technology appears to be an effective instrument to organize the educational process and it contributes to designing of innovative educational environment.

Main principle of BYOD in education concerns the fact that teachers and administration of educational institution do not ban students bringing their devices and use them in the classroom, but they actually encourage it¹⁶. Presently, BYOD has become an integral element of the didactic system of educational institutions and it allows to transform formal teaching procedures into interesting information process where data are collected, treated and used with the help of personal mobile devices¹⁷. The reason for the wider acceptance of BYOD technology in the institutions is that the most students own their personal devices¹⁸ and may freely use them in the classroom to carry out educational activities or search necessary information. Recent findings show that slightly more than 40% of students are satisfied with the learning in the wake of BYOD and consider its advantageous technology that can reshape the educational process and positively affect formation of professional competency. Moreover, it inspires the learning process, increases the reliance on ICT, and make the management procedures easier decreasing the dependency on the conventional documents¹⁹.

In the context of training of future English language teachers (future foreign philologists) BYOD includes particular means to stimulate students’ creativity and decision-making that are necessary components of professional competency. Also, the technology focuses on designing such an environment in higher education that can prepare future specialists to take

¹⁶ Блудова Ю. О. Використання технології BYOD в освітньому процесі Нової української школи. *Педагогіка формування творчої особистості у вищій і загальноосвітній школах*. 2020. № 71(1). С. 92–95. DOI: <https://doi.org/10.32840/1992-5786.2020.71-1.15>

¹⁷ Tsyvylskiy F. M., Kozel V. M., Drozdova I. A., Prykhodko O. O., Practical implementation of the BYOD concept in higher educational institutions. *Information Technologies and Learning Tools*. 2021. № 81(1). P. 285–296. DOI: [10.33407/itlt.v81i1.3744](https://doi.org/10.33407/itlt.v81i1.3744)

¹⁸ Rosman M. R. M., Baharuddin N. S., Alimin N. A., Rosli N. N. I. N., Shukry A. I. M., Razlan N. M. Bring-Your-Own-Device (BYOD) and Productivity: A Conceptual Framework. *Proceedings*. 2022. № 82. DOI: <https://doi.org/10.3390/proceedings2022082010>

¹⁹ Jehma, H.; Punkhoom, W. How Thai Students Perceive BYOD as an Effective Strategy Applied in English Learning Environment. *Dhammathas Academic Journal*. 2022. № 22. P. 29–38. DOI: <https://so06.tci-thaijo.org/index.php/dhammathas/article/view/252786/172196>

non-standard and innovative actions which necessarily comprise pedagogical methodology²⁰.

Professional competency is an important aspect of professional activity including individual professional motives, knowledge, skills, abilities, attitudes, and experience that is specified with external conditions of professional surrounding and requires innovative approaches to carrying out professional duties²¹. Considering professional competency as a complicated category, we will analyze it to outline the requirement to designing of innovative educational environment.

On the basis of scientific literature^{22,23,24,25}, we found that professional competency of future English language teachers (future foreign philologists) consists of the following components: activity component that aimed at formation of readiness to act efficiently in the professional surrounding under changeable conditions and plan further own professional development considering the necessity to perform relevant functions; communicative component suggests possession of appropriate cooperation skills, mutual understanding, ability to operate using professional discourse, knowledge of foreign language and ability to build adequate communicative behaviour; personal component concerns acquisition of techniques of personal self-

²⁰ Shyshenko I., Loboda V., Shamonina V. BYOD concept in the formation of innovative educational environment for the future bachelors training. *Pedagogy and Education Management Review*. 2021. № (4). P. 4–11. DOI: <https://doi.org/10.36690/2733-2039-2021-4-4>

²¹ Fergusson L. C., Brömdal A., Gough M., Mears S. Competency, Capability and Professional Identity: The Case for Advanced Practice. *Work Based Learning*. 2020. № 9(1). P. 95–131. URL: <https://files.eric.ed.gov/fulltext/EJ1272079.pdf> (дата звернення: 14.05.2023)

²² Герасименко Ю. Формування іншомовної лексичної компетенції у майбутніх фахівців. *Наукові записки Бердянського державного педагогічного університету. Серія: Педагогічні науки*. 2022. Вип. 3. С. 249–255. DOI: 10.31494/2412-9208-2022-1-3-249-255

²³ Zhuravel N. V. Competence-based approach to the training of English philology bachelors in higher education institutions of Ukraine. *Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences*. 2022. № 4(111). P. 155–168. DOI: 10.35433/pedagogy.4(111).2022.155-168

²⁴ Sobchenko T., Vorozhbit-Horbatiuk V. Results of Digital Competence Development for Philology Students within Blended Learning. *Educational Challenges*. 2022. № 27(2). P. 185–198. DOI: <https://doi.org/10.34142/2709-7986.2022.27.2.13>

²⁵ Одицова Г. Використання BYOD-технології у процесі удосконалення лексикографічної компетентності майбутніх учителів початкової школи. *Наукові записки. Серія: педагогіка*. 2022. № 1. С. 176–181. DOI: 10.25128/2415-3605.22.1.21

reflection, self-development, and ability to counteract professional deformations despite of demanding environment.

At the same time, we agree with N. Zhuravel²⁶ who states that the final results of professional training of future English philology bachelors do not necessarily involve certain set of knowledge, skills or abilities related to professional sphere but it is, above all, integrated formation that is organized from the system of these knowledge, skills and abilities and allows to perform professional tasks adequately and properly.

Taking into account this structure, we can confidently assert that designing of innovative educational environment for formation of professional competency of future English language teachers (future foreign philologists) with the use of BYOD technology takes place in five dimensions: professional, technological, individual, communicative, contextual, and organizational²⁷.

Professional dimension refers to the readiness to act in professional surrounding, to possess high level of professional knowledge, skills, and ability. Technological dimension concerns the ability to use technological equipment within professional or educational activities and to know how they work to improve professional surrounding. Individual dimension touches upon individual personal characteristics that influence towards BYOD application. At the same time, communicative dimension is related to knowledge of professional discourse, ability to interact with other participant through interpersonal or online interaction and readiness to function educationally or professionally using privately-owned mobile devices. Contextual dimension includes readiness to implement BYOD in different environments based on multiple factors such as task resources or task complexity. Organizational dimension is about the facilities and support provided by the teacher or administration to the student while applying BYOD concept.

Figure 1 shows the framework of designing of innovative educational environment for formation of professional competency of future English language teachers (future foreign philologists) with the use of BYOD.

Innovative educational environment with the use of BYOD technology creates a number of benefits for the process of formation of professional competency of future English language teachers (future foreign philologists). To obtain the maximum advantages of using the technology, let's analyze

²⁶ Zhuravel N. V. Competence-based approach to the training of English philology bachelors in higher education institutions of Ukraine. *Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences*. 2022. № 4(111). P. 155–168. DOI: 10.35433/pedagogy.4(111).2022.155-168

²⁷ Rosman M. R. M., Baharuddin N. S., Alimin N. A., Rosli N. N. I. N., Shukry A. I. M., Razlan N. M. Bring-Your-Own-Device (BYOD) and Productivity: A Conceptual Framework. *Proceedings*. 2022. № 82. DOI: <https://doi.org/10.3390/proceedings2022082010>

the procedure of implementation of BYOD in the process of training of students at the educational institutions.

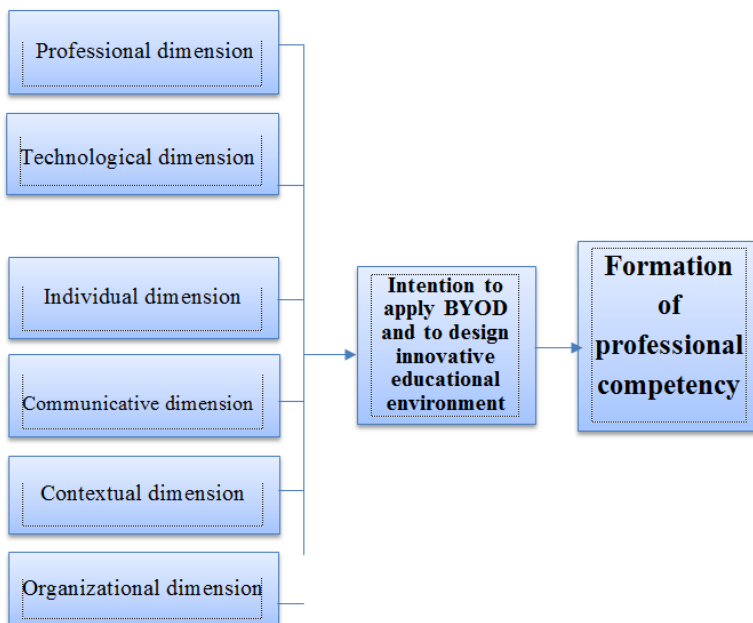


Fig. 1. Framework of designing of innovative educational environment for formation of professional competency with the use of BYOD

*Source: author's development on the basis of literature review*²⁸

2. The implementation of BYOD technology in the process of training of future English language teachers (future foreign philologists) at the institutions of higher education

As BYOD technology is currently considered to benefit educational institutions due to relieving the financial pressure and transition to innovative approaches in the educational process, it is implemented extensively at the different educational institutions.

²⁸ Rosman M. R. M., Baharuddin N. S., Alimin N. A., Rosli N. N. I. N., Shukry A. I. M., Razlan N. M. Bring-Your-Own-Device (BYOD) and Productivity: A Conceptual Framework. *Proceedings*. 2022. № 82. DOI: <https://doi.org/10.3390/proceedings2022082010>

In the context of higher education, scientists differentiate five applicable BYOD models: institution-provided laptop (tablet), institution-provided laptop together with another device, institution-provided multi-platform device, student-owned laptop(tablet), student-owned any device that is able to connect to the Internet. Table 1 shows the description of BYOD models.

Table 1

Description of BYOD model in institutions of higher education

BYOD model	Description
institution-provided laptop (tablet)	Students are provided with a laptop or tablet with educational purposes. They are able to work in the classroom and perform activities using digital materials. Also, they are able to work in the certain place defined by the institution administration to carry out individual tasks.
institution-provided laptop together with another device that is able to connect to the Internet	Similar to the previous model but students are allowed to use own smartphone that is able to connect to the Internet.
institution-provided multi-platform device	Similar to the previous model but students are allowed to use several platform provided by the institution.
student-owned laptop (tablet)	Students are allowed to use laptops or tablet while learning. They are able to use their device individually or join digital educational environment of institution.
student-owned any device that is able to connect to the Internet	Students are allowed to use any device that is able to connect to the Internet including smartphones, laptops, tablets, e-books, etc. They are responsible for downloading application and may perform the tasks in their own pace both individually and in groups.

Source: author's development on the basis of literature review²⁹

Besides, the educationalists suggest combining different BYOD models in the classroom and during individual work to enhance the efficiency of the educational process. Thus, some institutions of higher education implement cross-platform BYOD learning when students can exchange information

²⁹ Zulaiha Ali Othman Z. O., Shahrulnizam Meor Sepli M. M., Mokhtar U. A., Yeop bin Y. H. BYOD implementation model in Malaysian schools: The perception and readiness of parents, schools, and teachers. *International Journal of Advanced and Applied Sciences*. 2020. № 7(6). P. 57–68. DOI: <https://doi.org/10.21833/ijaas.2020.06.008>

through their devices and be involved in collaborative work and multi-platform BYOD learning that refers to the simultaneous use of different devices to increase the intensity of information flow and to perform multiple tasks³⁰. Other findings show that professional training at the institutions of higher education requires the introduction of supported platform that provides positive student-teacher interaction and behavioral analysis of learners in the classroom. This platform is realized as a cloud-based technology or centralized server assistance³¹.

The current educational paradigm shows that BYOD concept can be effectively implemented at the institutions of higher education within the flipped classroom technology^{32,33}.

The flipped classroom is the blended environment both physical and digital where mixed educational methodology is applied³⁴. The method means learning material is disseminated outside the classroom through video lectures, audio presentations, eBooks or other online resources. Classroom activities are oriented towards improvement of knowledge, formation of practical skills and collaborative work³⁵. Some findings show that flipped classroom helps to ensure independence of learning and intensification

³⁰ Zulaiha Ali Othman Z. O., Shahrulnizam Meor Sepli M. M., Mokhtar U. A., Yeop bin Y. H. BYOD implementation model in Malaysian schools: The perception and readiness of parents, schools, and teachers. *International Journal of Advanced and Applied Sciences*. 2020. № 7(6). P. 57–68. DOI: <https://doi.org/10.21833/ijaas.2020.06.008>

³¹ Deb S., Saha, N. Designing a BYOD Supported Platform for Formative Learning of Student and Predictive Analysis of Their Performance in Classroom Environment. *International Journal of Computational Intelligence & IoT*. 2018. № 2(4). URL: <https://ssrn.com/abstract=3361139> (date of accession: 14.05.2023)

³² Sánchez S. P., López-Belmonte J., Moreno-Guerrero A.-J., Sola Reche J. M., Cabrera A. F. Effect of Bring-Your-Own-Device Program on Flipped Learning in Higher Education Students. *Sustainability*. 2020. № 12. DOI:10.3390/su12093729

³³ Zulaiha Ali Othman Z. O., Shahrulnizam Meor Sepli M. M., Mokhtar U. A., Yeop bin Y. H. BYOD implementation model in Malaysian schools: The perception and readiness of parents, schools, and teachers. *International Journal of Advanced and Applied Sciences*. 2020. № 7(6). P. 57–68. DOI: <https://doi.org/10.21833/ijaas.2020.06.008>

³⁴ Sánchez S. P., López-Belmonte J., Moreno-Guerrero A.-J., Sola Reche J. M., Cabrera A. F. Effect of Bring-Your-Own-Device Program on Flipped Learning in Higher Education Students. *Sustainability*. 2020. № 12. DOI:10.3390/su12093729

³⁵ Nuhoglu Kibar P., Gunduz A.Y., Akkoyunlu B. Implementing Bring Your Own Device (BYOD) Model in Flipped Learning: Advantages and Challenges. *Technology, Knowledge and Learning*. 2020. № 25. P. 465-478. DOI: <https://doi.org/10.1007/s10758-019-09427-4>

of educational process³⁶. Generally, flipped learning concerns the implementation in any teaching-learning process that suggests combining individual work with digital instruments and classroom interactive technologies.

This technology is especially efficient for training of future English language teachers (future foreign philologists) as it significantly contributes to realization of student-centered approach and introduction of self-paced learning. Also, students may practice foreign language skills, improve technological readiness, and learn how to apply innovative solutions in decision-making.

To implement BYOD successfully within the educational process, it is important to create adequate educational and organizational policies at the institution of higher education. This, in its turn, requires the careful study of BYOD and the detailed analysis of principles of its realization. According to some findings³⁷, BYOD technology in the process of training of future specialists is implemented in four different stages: dissemination, practice, assessment or feedback, and result. The results show that a number of applications are used in different stages of implementation of BYOD technology³⁸. Table 2 shows the detailed analysis of the procedure of implementation of BYOD technology in the process of training of future English language teachers (future foreign philologists) regarding four stages and provides the examples of examples of BYOD tools used to form professional competency of future philology bachelors.

Considering the analysis of the procedure of implementation of BYOD technology in the process of training of future English language teachers (future foreign philologists), we may state that BYOD performs a number of functions within the educational process of the institution of higher educations. The findings show that these functions include the following: content dissemination and explanation of new learning material³⁹, enhancement

³⁶ Мельник Т. Доцільність реалізації концепції BYOD у системі підготовки майбутніх педагогів професійного навчання. *Фізико-математична освіта*. 2020. Вип. 1(23). Ч. 2. С. 53–59. DOI 10.31110/2413-1571-2020-023-1-2-008

³⁷ Zulaiha Ali Othman Z. O., Shahrulnizam Meor Sepli M. M., Mokhtar U. A., Yeop bin Y. H. BYOD implementation model in Malaysian schools: The perception and readiness of parents, schools, and teachers. *International Journal of Advanced and Applied Sciences*. 2020. № 7(6). P. 57–68. DOI: <https://doi.org/10.21833/ijaas.2020.06.008>

³⁸ Rosman M. R. M., Baharuddin N. S., Alimin N. A., Rosli N. N. I. N., Shukry A. I. M., Razlan N. M. Bring-Your-Own-Device (BYOD) and Productivity: A Conceptual Framework. *Proceedings*. 2022. № 82. DOI: <https://doi.org/10.3390/proceedings2022082010>

³⁹ Deb S., Saha, N. Designing a BYOD Supported Platform for Formative Learning of Student and Predictive Analysis of Their Performance in Classroom Environment. *International Journal of Computational Intelligence & IoT*. 2018. № 2(4). URL: <https://ssrn.com/abstract=3361139> (date of accession: 14.05.2023)

of students' motivation to learning and future professional activities as well as to acquire skills to operate new technologies and devices on the principles of gamification^{40,41}, improvement of new knowledge in foreign language like vocabulary, grammar, etc.^{42,43}, practicing of new skills among students like writing, listening, speaking, or reading⁴⁴, learning additional information and studying extended educational materials⁴⁵, efficient organization of self-education and involvement of students into independent work⁴⁶. Table 3 shows the analysis of BYOD applications and description of their functions in the process of training of future English language teachers (future foreign philologists). The teacher's activities are not limited to this list of BYOD applications and methodology of training of future philology specialists may be widely extended depending on the learning objectives, availability of equipment, and students' needs or interests.

⁴⁰ Zulaiha Ali Othman Z. O., Shahrulnizam Meor Sepli M. M., Mokhtar U. A., Yeop bin Y. H. BYOD implementation model in Malaysian schools: The perception and readiness of parents, schools, and teachers. *International Journal of Advanced and Applied Sciences*. 2020. № 7(6). P. 57–68. DOI: <https://doi.org/10.21833/ijaas.2020.06.008>

⁴¹ Nuhoğlu Kibar P., Gündüz A.Y., Akkoyunlu B. Implementing Bring Your Own Device (BYOD) Model in Flipped Learning: Advantages and Challenges. *Technology, Knowledge and Learning*. 2020. № 25. P. 465–478. DOI: <https://doi.org/10.1007/s10758-019-09427-4>

⁴² Одинцова Г. Використання BYOD-технології у процесі удосконалення лексикографічної компетентності майбутніх учителів початкової школи. *Наукові записки. Серія: педагогіка*. 2022. № 1. С. 176–181. DOI: 10.25128/2415-3605.22.1.21

⁴³ Герасименко Ю. Комунікативна спрямованість навчання діалогічного та монологічного мовлення у процесі підготовки студентів-філологів. *Педагогічні науки: теорія та практика*. 2022. № 4 (44). С. 82–89. DOI: <https://doi.org/10.26661/2786-5622-2022-4-12>

⁴⁴ Одинцова Г. Використання BYOD-технології у процесі удосконалення лексикографічної компетентності майбутніх учителів початкової школи. *Наукові записки. Серія: педагогіка*. 2022. № 1. С. 176–181. DOI: 10.25128/2415-3605.22.1.21.

⁴⁵ Zulaiha Ali Othman Z. O., Shahrulnizam Meor Sepli M. M., Mokhtar U. A., Yeop bin Y. H. BYOD implementation model in Malaysian schools: The perception and readiness of parents, schools, and teachers. *International Journal of Advanced and Applied Sciences*. 2020. № 7(6). P. 57–68. DOI: <https://doi.org/10.21833/ijaas.2020.06.008>

⁴⁶ Ibid.

Table 2

**The procedure of implementation of BYOD technology
in the process of training of future English language teachers
(future foreign philologists)**

Stage of implementation of BYOD technology	Description	Examples of BYOD applications
Dissemination	Teachers disseminates the learning material. The students are involved in group discussion and questions-answers session	Google Classroom Google Drive YouTube eBooks Edublogs TED
Practice	Students improve their knowledge and skills through various practical activities	Google Classroom Kahoot! Grammarly Word Reference Online Dictionary
Assessment or feedback	Teachers assess students' learning achievement and get feedback on the learning activities	Kahoot! Mentimeter Quizlet Edpuzzle Smartlab Google Forms
Result	Teachers evaluate the results of the lesson and elaborate the recommendations for the following sessions on the basis of student's needs and interests	Google Drive Evernote Google Calendar Wunderlist

Source: author's own development

Table 3

**The analysis of BYOD applications and their functions
in the process of training of future English language teachers
(future foreign philologists)**

BYOD applications	Functions enhancing the efficiency of training
Content dissemination	Google Classroom Google Drive YouTube TED eBooks Edublogs

Table 3 (continuance)

Enhancement of students' motivation	Google Classroom YouTube Kahoot! Quizlet
Improvement of new knowledge	YouTube Google Classroom Smartlab
Practicing of new skills	Google Drive Google Forms Grammarly Edublogs Edpuzzle Quizlet Kahoot!
Learning additional information	YouTube Khan Academy TED
Organization of self-education	Khan Academy YouTube TED Edublogs Edpuzzle eBooks Word Reference Online Dictionary
Assessment of students' achievements	Kahoot! Mentimeter Google Forms Quizlet Edpuzzle Quizizz
Building collaborative learning environment	Google Classroom Mentimeter
Enhancement of feedback	Google Forms Mentimeter

Source: author's own development

Despite a number of functions performed by BYOD, it is required to conduct the perceptual analysis of this technology in the context of modernization of educational process and its affect upon the improvement of professional training of future English language teachers (future foreign philologists).

3. The perceptual analysis of BYOD in the context of modernization of educational process

The introduction of BYOD technology at the educational institutions was based on its benefits in comparison with other technologies of mobile learning. The perceptual analysis of BYOD among the participants of educational process testify that its implementation is oriented towards support of learning inside and outside of educational institution and may be performed both individually or in groups. The use of BYOD improves communication between teachers and students and help organize effective collaborative work while learning. Moreover, it provides a wide access to information resources and various applications that improve students' motivation and make the educational process interesting and useful as well as professionally oriented⁴⁷.

In addition, I. Shyshenko, V. Loboda, V. Shamonia⁴⁸ state that BYOD concept contribute to enhancement of learners' motivation, encouragement of interactivity of educational process, establishment of cooperation and involvement of students in different activities, improvement of individualization of instruction, and creation of positive atmosphere in the classroom. BYOD helps the teachers to organize controlled distribution of electronic educational resources and ensures positive communication between the participants while using interactive activities⁴⁹. Other findings show that the use of BYOD in the classroom ensures the improvement of creativity, critical thinking, decision-making, communication skills, foreign language competency, information literacy, innovative readiness, teamwork and collaboration abilities⁵⁰.

⁴⁷ Watts M., Andreadis I. First-year Secondary Students' Perceptions of the Impact of iPad Use on Their Learning in a BYOD Secondary International School. *Journal of Open, Flexible and Distance Learning*. 2023. № 26(2). P. 92–106. URL: <https://www.jofdl.nz/index.php/JOFDL/article/view/533/363> (date of accession: 14.05.2023)

⁴⁸ Shyshenko I., Loboda V., Shamonia V. BYOD concept in the formation of innovative educational environment for the future bachelors training. *Pedagogy and Education Management Review*. 2021. № (4). P. 4–11. DOI: <https://doi.org/10.36690/2733-2039-2021-4-4>

⁴⁹ Tsyvil'skyi F. M., Kozel V. M., Drozdova I. A., Prykhodko O. O., Practical implementation of the BYOD concept in higher educational institutions. *Information Technologies and Learning Tools*. 2021. № 81(1). P. 285–296. DOI: 10.33407/itlt.v81i1.3744

⁵⁰ Sobchenko T., Vorozhbit-Horbatiuk V. Results of Digital Competence Development for Philology Students within Blended Learning. *Educational Challenges*. 2022. № 27(2). P. 185–198. DOI: <https://doi.org/10.34142/2709-7986.2022.27.2.13>

Besides, using your own device is very comfortable and can intensify the learning process significantly as it helps all the participants be better organized and start working immediately after downloading files in full confidentiality. BYOD ensures convenient processing of video or audio materials and creates the opportunities to work in usual conditions⁵¹.

The training of future English language teachers (future foreign philologists) has other benefits. They concern the following^{52,53}: organization of objective assessment and efficient self-control among students; providing all the learners with the opportunities to work in their own pace; increasing productivity and satisfaction in the process of learning and, as a result, enhancement of learning outcomes; organization of diverse learning process on the principles of student-centered approach and to apply individual tasks; designing of new ways to acquire actual knowledge by future specialists and application of new approaches to improve their professional competency; implementation of individual trajectory of students' personality development; systematic preparation of students for future scientific and pedagogical work; building of students readiness for creative and innovative professional and pedagogical activity; establishment of positive emotional state of students in the classroom; creation of possibility to assess creative achievements of students.

Yu. Bludova⁵⁴ differentiates the following advantages of using BYOD technology in the process of training of future teachers: cost reduction as educational institution do not spend its funds on mobile devices; mobility of the learning while the students may perform their tasks in different time; opportunity to use various devices and, therefore, diversify the educational process; possibility to get information instantly; application of differentiation approach to teaching.

⁵¹ Tsyvilskyi F. M., Kozel V. M., Drozdova I. A., Prykhodko O. O., Practical implementation of the BYOD concept in higher educational institutions. *Information Technologies and Learning Tools*. 2021. № 81(1). P. 285–296. DOI: 10.33407/itlt.v81i1.3744

⁵² Clark K. A., Welsh K. E., Mauchline A. L., France D., Whalley W. B., Park J. Do educators realise the value of Bring Your Own Device (BYOD) in fieldwork learning? *Journal of Geography in Higher Education*. 2021. № 45(2). P. 255–278. DOI: <https://doi.org/10.1080/03098265.2020.1808880>

⁵³ Zhuravel N. V. Competence-based approach to the training of English philology bachelors in higher education institutions of Ukraine. *Zhytomyr Ivan Franko State University Journal. Pedagogical Sciences*. 2022. № 4(111). P. 155–68. DOI: 10.35433/pedagogy.4(111).2022.155-168

⁵⁴ Блудова Ю. О. Використання технології BYOD в освітньому процесі Нової української школи. *Педагогіка формування творчої особистості у вищій і загальноосвітній школах*. 2020 р., № 71, Т. 1. С. 92–95. DOI: <https://doi.org/10.32840/1992-5786.2020.71-1.15>

At the same time, the survey conducted among future English language teachers (future foreign philologists) and teachers shows that all the participants of educational process admit a number of advantages of using BYOD technology. Thus, both teachers and students agree that the implementation of BYOD contributed to improvements of their technological skills (83,8% and 73,5% respectively), communication skills (71,2% and 65,7%), collaboration abilities (62,3% and 44,7%). Also, 90,6% of teachers and 78,9% of students agree that due to BYOD technology they obtain universal access to educational materials, including extended information of the topic. Figure 2 shows the results of perceptual analysis of BYOD technology among teachers and students in the institutions of higher education.

The adequate usage of BYOD technology within the process of training of future English language teachers (future foreign philologists) requires to follow a number of recommendations^{55,56,57}. They include:

- 1) Integrate mobile technologies into the educational process;
- 2) Develop mobile versions of portals;
- 3) Creation of electronic educational content of high quality that can be used on various mobile devices;
- 4) Development of mobile applications for both students and teachers;
- 5) Teaching of students to use the advantages of mobile devices and orient the towards innovative technological advances intentionally;
- 6) Introduction of the uncontrolled use of the capabilities of mobile devices, ensuring information security and data protection in the educational environment of the institution of higher education;
- 7) Distribution of electronic resources in advance. All resources must be always accessible through a web browser or special mobile applications.
- 8) Providing students with accurate instructions on working with mobile device and announcement of the details about the assessment of their learning achievements;

⁵⁵ Shyshenko I., Lobjada V., Shamonia V. BYOD concept in the formation of innovative educational environment for the future bachelors training. *Pedagogy and Education Management Review*. 2021. № (4). P. 4–11. DOI: <https://doi.org/10.36690/2733-2039-2021-4-4>

⁵⁶ Tsyvil'skyi F. M., Kozel V. M., Drozdova I. A., Prykholdko O. O., Practical implementation of the BYOD concept in higher educational institutions. *Information Technologies and Learning Tools*. 2021. № 81(1). P. 285–296. DOI: 10.33407/itlt.v81i1.3744

⁵⁷ Rosman M. R. M., Baharuddin N. S., Alimin N. A., Rosli N. N. I. N., Shukry A. I. M., Razlan N. M. Bring-Your-Own-Device (BYOD) and Productivity: A Conceptual Framework. *Proceedings*. 2022. № 82. DOI: <https://doi.org/10.3390/proceedings2022082010>

Perceptual analysis of BYOD technology

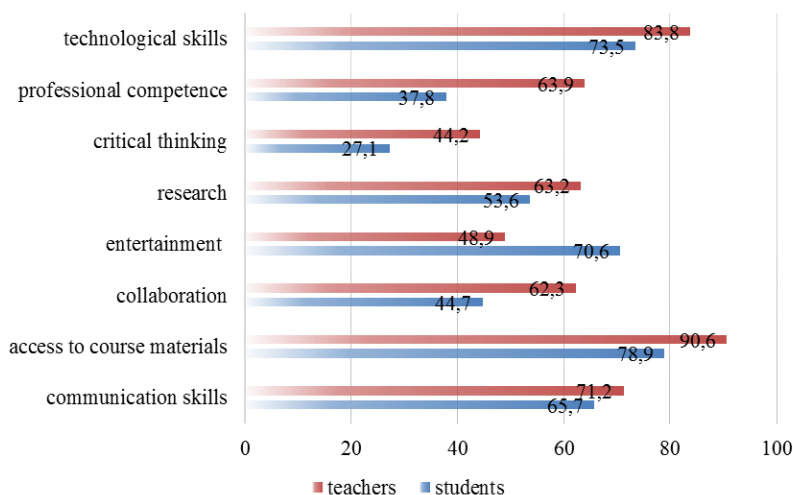


Fig. 2. The results of perceptual analysis of BYOD technology among the participant of educational process

Source: author's own development

9) Determination of role of mobile devices in the education process and orientation of the efforts on the creation of convenient environment for all the participants;

10) Organization of secure wireless access to the Internet in the territory of educational institution.

11) Installation of corporate software on students' mobile devices.

Thus, BYOD technology is gradually getting an integral component of the process of training of future English language teachers (future foreign philologists) and contributes to modernization of educational process.

CONCLUSIONS

Based on the research results we found that BYOD technology appears to be an effective instrument to organize the educational process and it contributes to designing of innovative educational environment. Main principle of BYOD in education concerns the fact that teachers and administration of educational institution do not ban students bringing their devices and use them in the classroom. We proved that BYOD has become an integral element of the didactic system of educational institutions and it allows to transform formal teaching procedures into interesting information

process where data are collected, treated and used with the help of personal mobile devices.

The findings show that BYOD technology is used extensively in the process of training of future English language teachers (future foreign philologists). Designing of innovative educational environment for formation of their professional competency of with the use of BYOD technology takes place in five dimensions: professional, technological, individual, communicative, contextual, and organizational.

In the context of higher education, scientists differentiate five applicable BYOD models: institution-provided laptop (tablet), institution-provided laptop together with another device, institution-provided multi-platform device, student-owned laptop(tablet), student-owned any device that is able to connect to the Internet. To increase the efficiency of the educational process, it is suggested to combine different BYOD models in the classroom and during individual work to enhance the efficiency of the educational process.

The current educational paradigm shows that BYOD concept can be effectively implemented at the institutions of higher education within the flipped classroom technology that is the blended environment both physical and digital where mixed educational methodology is applied. This technology is especially efficient for training of future English language teachers (future foreign philologists) as it significantly contributes to realization of student-centered approach and introduction of self-paced learning. Also, students may practice foreign language skills, improve technological readiness, and learn how to apply innovative solutions in decision-making. BYOD technology in the process of training of future specialists is implemented in four different stages: dissemination, practice, assessment or feedback, and result. The results show that a number of applications are used in different stages of implementation of BYOD technology.

The perceptual analysis shows that BYOD technology has a number of advantages in the process of training of future English language teachers (future foreign philologists) including improvement of professional competency, enhancement of learners' motivation, encouragement of interactivity of educational process, establishment of cooperation and involvement of students in different activities, formation of critical thinking and technological skills.

The adequate usage of BYOD technology within the process of training of future English language teachers (future foreign philologists) requires to follow a number of recommendations presented in the research.

SUMMARY

The study of the use of BYOD technology in the process of training of future English language teachers (future foreign philologists) showed that it is an important component of technological transformation and obviously leads to the modernization of education process in the institutions of higher education. *The purpose of the article* is to study the peculiarities of implementation of BYOD technology in the process of training of future English language teachers (future foreign philologists) and to show its advantages for the modernization of educational process despite the topicality of the research problem in modern pedagogical science. *The research methodology* is based on theoretical and empirical methods like literature review, analysis and synthesis, deductive and inductive analysis, systematization of theory and practice of the pedagogical problem, observation and interviewing of the participants of educational process. *The results of the study* show that BYOD helps to solve one of the most essential educational problems that deals with providing institutions of higher education with modern alternative infrastructure and equipment. In addition, it contributes to solution of actual pedagogical and psychological problems regarding personality development and formation of professional competency. The article states that the main principle of BYOD in education concerns the fact that teachers and administration of educational institution do not ban students bringing their devices and use them in the classroom, but they actually encourage it. The reason for the wider acceptance of BYOD technology in the institutions is that the most students own their personal devices and may freely use them in the classroom to carry out educational activities or search necessary information. During the research we found that designing of innovative educational environment for formation of professional competency of future English language teachers (future foreign philologists) with the use of BYOD technology takes place in five dimensions: professional, technological, individual, communicative, contextual, and organizational. At the same time, scientists differentiate five applicable BYOD models in the institutions of higher education: institution-provided laptop (tablet), institution-provided laptop together with another device, institution-provided multi-platform device, student-owned laptop(tablet), student-owned any device that is able to connect to the Internet. The study shows that combining different BYOD models in the classroom and during individual work to enhance the efficiency of the educational process. On the basis of literature analysis, we found that BYOD concept can be effectively implemented at the institutions of higher education within the flipped classroom technology. This technology is especially efficient for training of future English language teachers (future foreign philologists) as it significantly contributes to realization of student-

centered approach and introduction of self-paced learning. Also, students may practice foreign language skills, improve technological readiness, and learn how to apply innovative solutions in decision-making. The study states that BYOD technology in the process of training of future specialists is implemented in four different stages: dissemination, practice, assessment or feedback, and result. The results show that a number of applications are used in different stages of implementation of BYOD technology. In addition, the authors analyzed the advantages of BYOD technology in the process of training of future English language teachers (future foreign philologists) and elaborated a number of recommendations to implement the technology successfully in the context of modernization of educational process and enhance the formation of students' professional competency. *Practical implementation* of the research concerns the possibility to improve the use of BYOD technology in the process of training of future English language teachers (future foreign philologists). The recommendations may be valuable to the researchers who study the problems of digitalization of educational process, teachers in different educational institutions, and future instructors or philologists who need to improve their technological skills and orient successfully in innovative educational environment.

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