IMPLEMENTATION OF CONNECTED LEARNING PRINCIPLES
IN TEACHING A FOREIGN LANGUAGE AT AN ENGINEERING UNIVERSITY
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The article attempts to consider the topical issues of modern pedagogy: interactive forms and methods of optimizing the process of teaching a foreign language for special purposes in the context of higher engineering education, and peculiarities of distance and blended learning of a foreign language through the use of advanced information and communication technologies.

Based on the analysis of the most recent research works in the field of innovations in teaching foreign languages, it is concluded that one of the most important directions is the introduction of modern information and communication technologies into the educational process, in particular technologies related to mobile learning, providing optimization of the educational process, accessibility and efficiency of learning, and students' integration into the information society. The author emphasizes that in the English-language methodological literature the designation of such a model of using electronic devices as "connected learning" is widely spread; defines the basic principles of "connected learning"; provides key advantages (intensification of independent activity, individualization of learning, increase of cognitive activity and motivation of learning, acquisition of skills and abilities, the formation and development of which on the basis of traditional teaching tools seems to be quite laborious) and disadvantages of active involvement of smartphones in the educational process (excessive emphasis on the technological filling of the educational process does not contribute to the development of logical and effective learning, reinforces students' inclination to use conventional patterns in their thinking process, and even strengthens the habit of clip perception of reality, which is typical for the generation that grew up in the period of wide availability of the Internet and social networks).

The article concludes that the practical application of mobile applications has a huge potential in improving the efficiency of the process of learning a foreign language for special purposes and can significantly improve the process of foreign language training of engineering students, open its new sides and turn it from a serious time-consuming process into an exciting activity, but it is necessary to carefully calibrate and integrate new mobile technologies into the educational process, and teachers should be properly prepared for the effective use of mobile technologies.

Keywords: mobile technologies, engineering university, optimization, foreign language for special purposes, information technologies, connected learning.

*Г. Зеленін ″*Реалізація принципів «Connected learning» у процесі викладання іноземної мови в інженерному університеті″.

У статті зроблено спробу розглянути актуальні питання сучасної педагогіки: інтерактивні форми та методи оптимізації процесу викладання іноземної мови для спеціальних цілей у контексті вищої інженерної освіти, особливості здійснення дистанційного та змішаного навчання іноземної мови за допомогою новітніх інформаційно-комунікаційних технологій.

На основі аналізу останніх досліджень у галузі новацій у навчанні іноземних мов зроблено висновок, що одним із актуальних напрямів є впровадження у навчальний процес сучасних інформаційно-комунікаційних технологій, зокрема технологій, пов'язаних з мобільним навчанням, які забезпечують оптимізацію навчального процесу, доступність та ефективність навчання , інтеграцію студентів у інформаційне суспільство. Автор наголошує, що в англомовній методичній літературі поширене позначення подібної моделі використання електронних пристроїв як "connected learning"; визначає основні принципи «connected learning»; наводить ключові переваги (інтенсифікація самостійної діяльності, індивідуалізація навчання, підвищення пізнавальної активності та мотивації вчення, набуття навичок та умінь, формування та розвиток яких на основі традиційних засобів

навчання видається досить трудомістким) та недоліки активного включення смартфонів в освітній процес (зайвий упор на технологічну начинку навчального процесу не сприяє розвитку логічного мислення студентів, закріплює їх орієнтацію використання шаблонів у процесі розумового процесу, й навіть посилює звичку до кліпового сприйняттю реальності, характерному для покоління, що виросло в період широкої доступності Інтернету та соціальних мереж).

У висновках статті автор зазначає, що практичне застосування мобільних додатків несе в собі величезний потенціал у підвищенні ефективності процесу вивчення іноземної мови для спеціальних цілей та здатне значно вдосконалити процес іншомовної підготовки студентів інженерних спеціальностей, відкрити його нові сторони та перетворити із серйозного трудомісткого процесу на захоплююче заняття , однак необхідно ретельно калібрувати та інтегрувати нові мобільні технології у навчальний процес, а викладачі відповідним чином мають бути підготовлені до ефективного використання нового функціоналу.

Ключові слова: мобільні технології, технічний університет, оптимізація, іноземна мова для спеціальних цілей, інформаційні технології, мобільне навчання.

Problem statement. At the present time, the modern paradigm of higher engineering education involves the effective organization of the educational process in order to form both key universal and general professional and job-related competencies. In the era of intensive development of information technologies, society requires future specialists to have the skills and abilities required for self-dependent knowledge acquisition and its application in practice to effectively solve various problems, collect and analyze facts, making generalizations and grounded conclusions [3, p. 257], a future engineering specialist should be communicative, to work collaboratively in different professional situations, to find a way out of conflict situations; to think critically and creatively, finding ways to solve arising problems using modern information technologies; to work independently to improve their own cultural level in order to take it successfully. The development of the above-mentioned skills and cognitive skills of future specialists in the educational process is currently due to the technology of active learning methods.

Foreign language education is currently becoming one of the basic components in the structure of the competence model of professional training. By using a foreign language a highly qualified engineering specialist can solve a variety of professional tasks, including the following: preparation of reporting and marketing materials, oral presentation of a product or service, negotiating with foreign investors, communicating with non-specialists-foreigners regarding his/her professional activities; carrying on a professional conversation with meaningful use of foreign language terminology; orientation in the basic patterns of corporate relations in foreign companies; use of normative documents of foreign partners; preparation of corporate documents for interaction with foreign partners. In this regard, the role of foreign language in the context of higher engineering education, where the foreign language course is communicative-pragmatic and professionally oriented, is significantly increasing. Nowadays, for engineering universities in particular, the challenge is not only to modernize the content of training courses, but also to implement new technologies for the development of foreign-language communicative competence of future engineering specialists.

These days, the basic indicator for selecting learning tools is the achievement of the final levels of foreign language proficiency, developed by the Council of Europe and representing an effe ctive Europe-wide system of information exchange [4, p.11]. "Language learning activities should become a fascinating, meaningful activity and a real linguistic creativity. Only in this case the student will turn from a learning person into a learner, will gain autonomy and desire to develop himself/herself in accordance with the new educational standards" [1, p. 21–22].

Literature review. Analysis of the latest research in the area of innovations when teaching foreign languages has shown that one of the topical trends is the introduction into the educational process of modern information and communication technologies, in particular technologies related to mobile learning, providing optimization of the learning process, accessibility and efficiency of learning, integration of students into the information society. This is expressed, in particular, in the gradual introduction of applications for cell phones based on various platforms into the learning process.

Mobile learning today is a new and developing trend in higher education, characterized by the creation of a new learning environment. Due to the widespread use and

popularity of mobile technologies and the increasing functionality of mobile devices, UNESCO experts in the educational sphere suggest using their potential to improve the quality and accessibility of education, as well as to build individual learning paths [7].

The theory and practice of using mobile devices and mobile educational resources are actively discussed at scientific conferences and forums. Since 2002 a number of conferences and seminars have been held annually in Europe and the USA to discuss the use of mobile learning technologies or resources. Since 2002 the International Conference "MLearnCon" on the problems of mobile technology integration in education, creation and use of learning mobile content has been held. [9]. The International Conference of Mobile Learning (held since 2005) is a forum for the discussion of research and achievements in the field of mobile learning [8]. The findings of the project "Mobile Technologies in Life-long Learning: Best Practices" have been of interest. This project provides research on the effects of mobile technologies on improving access to education, regardless of social and economic status, age, gender, religion, ethnicity, physical disability [8]. In Europe and the United States there are periodicals devoted to the issues of mobile learning, in particular, the International Journal of Mobile and Blended Learning (since 2009) and the International Journal of Mobile Learning and Organization (since 2007). There are a number of large foreign projects aimed at creating a new virtual learning environment using mobile technologies.

The purpose of the article is to reveal the concept and outline the principles of «connected learning», to analyze various methods of mobile learning in teaching foreign language for professional purposes to students at a higher engineering educational institution.

The statement of the main material. Many scientists and teachers believe that the future of information and computer-assisted learning is precisely due to the spread of mobile communications, the emergence of numerous educational applications and programs, new technologies expanding the possibilities and quality of education.

The application of tablet computers, smartphones, cell phones, iPads, iPhones and other technological innovations in educational purposes has led to the development of the concept of e-Learning (Electronic learning) in a new direction - mobile learning a foreign language (M-Learning).

In the English-language methodological literature, it is common to refer to this model of using electronic devices as "connected learning. The authors of the collective studies "Connected Learning: an Agenda for Research and Design" and "Teaching in the Connected Learning Classroom" emphasize that nowadays various media can serve as building blocks for creating unique personalized products, including educational ones (5, p. 6). A new approach to learning, called "connected learning," promotes "broadened access to the training process that is socially embedded, engaged-driven, and focused on educational, economic, or political opportunities. "Connected learning" is realized when the learner (the authors write about schoolchildren, mostly adolescents, emphasizing that their proposed approach can be extended to any age group [6, p. 8]) is able to consider personal interests and has the opportunity to connect his/her interests with academic achievement, career success, and social obligations [6, p. 4].

"Connected learning" is designed to fill the gap between learning inside and outside the educational institution, to overcome the generation gap, and to address the inequalities arising from the increasing individualization of learning. Proponents of the new approach to learning are relying on digital technologies, including communication tools, to solve these problems. However, in contrast to many approaches to the educational process, "connected learning" is not limited to the application of certain technologies. Researchers emphasize that we are talking about a new system of values and priorities.

The key principles of "connected learning", according to the proponents of this approach, should be considered "equity, social connection, as well as participation", [3, p. 9], and the main advantage is flexibility. The authors of the collective study "Teaching in the Connected Learning Classroom" emphasize that the teacher in modern conditions is a designer of the learning "ecosystem", and its most important features should be adaptability, the ability to consider the interests of each student, quick response to significant events of regional, national and global importance.

It is therefore clear that active involvement of the smartphones in the training process has a number of advantages. First, social networks and messengers are now a more natural environment for young people to communicate. Using these forms of communication in the educational process allows us to overcome the gap between

modern technological entertainment and ways of communication, on the one hand, and traditional forms of conducting classes, on the other. Broadcasting educational material to students' smartphones enables it to be included in the educational process in more familiar and convenient forms for students. As a result, students are no longer distracted by their phones, as the phones become a full-fledged part of the class. Secondly, in contrast to the usual demonstration of educational material on the screen (blackboard), its distribution to students' smartphones allows not only to show certain resources, but, most importantly, provides an opportunity for each student to interact with educational resources in one way or another.

In fact, the use of a smartphone as a personal ("second") screen is the same important step toward independence in mastering the learning material as the transition from a teacher's monologue to a dialogue between the teacher and/or students in class. Presentations certainly facilitate learning, but they do not provide the experience of interacting with that material in the learning process itself. Third, sending teaching and learning materials directly to students' smartphones allows them to be stored in the natural environment that gadgets are for most students, without additional steps (such as copying presentations to memory cards). Popular messaging apps have special functionality based on which images, documents, links, etc., obtained in group chat or individual correspondence, are saved in special sections and students can easily access them when needed. Fourthly, the application of messengers makes it possible to promptly notify students about changes in the educational process, important events in the educational institution and/or the city where students live. In our opinion, the most convenient technologies are instant messaging in the format of group (open or closed) chats through special applications - messengers. In this way, the principles of "connected learning" are implemented both during classes and, importantly, outside.

Today there are a number of services, including popular social networks, that provide this functionality. First, of course, these are the well-known "Telegram" and "Facebook. Telegram differs from other similar applications in its ability to create bots and channels. A bot is a program designed for answering a user's questions, searching for information, and giving advice. A channel is a chat room sending messages to an unlimited number of users subscribed to it. As a rule, students, united by common goals and objectives in the learning process, create a closed group to exchange information about assignments, current events, getting support from fellow students and the instructor. The teacher, in turn, guided by the principles of "connected learning" (equality, social relationships and participation), can motivate the creation of such a group, become its participant, create a situation of continuous learning of foreign language, teach students the skills of independent work with educational and methodical materials, using the technical capabilities of smartphones and the application itself.

Such practice has already been the subject of scientific consideration. For example, in their article [5] a group of Spanish researchers, using the example of the WhatsApp application among students of the Seville University (Spain), notes that the creation of group chats devoted to the discipline with the participation of the teacher and students can improve the interaction of students among themselves, as well as with the teacher and increase their level of involvement in the learning process. The researchers recommend adhering to certain rules when working in a WhatsApp group, which are necessary to maintain safety and show respect to all participants of the chat room. It is also pointed out that the convenience of this communication format, easy handling, accessibility and applicability are positively accepted by students who are used to being part of various groups in social networks.

The task of a foreign language teacher is to show the students the positivity of the training process and the success of each of them in that process. In natural communicative process, speech is not an end in itself. That is why in Internet communication forms of communication are not enclosed in the frameworks of a certain language system: it is possible to use emoticons, memes, pictures, expressions from different languages. All of this, in varying degrees of course, reduces psychological barriers to communication in the foreign language, which is especially important at the elementary level.

Communicating on the Internet involves bringing to automaticity the graphic skills that are necessary for an individual's presence in any Internet community. Students gradually memorize and reproduce the graphic image of a word. When communicating in an online community, especially one created for academic purposes, correcting communication mistakes is a particular problem. It is well known that responding to mistakes of students learning a foreign language can be achieved in two basic ways. The choosing

of strategy depends on the goals and objectives of a particular task.

If the main goal is to practice a particular lexico-grammatical model, mistakes should be corrected as soon as they are made to prevent them from becoming fixed in speech. If the task involves the development of communicative skills, you should not interrupt the speaker even if he or she makes mistakes. In this case, as a rule, mistakes are fixed and discussed after the student has spoken.

As the main tasks of communication in a Telegram group are lowering psychological barriers and relatively free communication in a foreign language, the teacher, in our opinion, should not correct the participants, but should demonstrate correct speech patterns, repeating as much as possible the vocabulary and grammatical constructions that have been already used by the participants of the "conversation". To do this, you can use screenshots of the necessary parts of the dialogue. At the elementary level of learning a foreign language the teacher should participate in a natural conversation without changing the constructions, and later gradually introduce students to synonymous vocabulary and grammatical constructions. The teacher needs to motivate students to communicate in a foreign language and show students their success in this communicative process. Being successful is first and foremost about being understood. The teacher can give hints, help to express a thought correctly first as a fully fledged participant of communication (and not as a mentor explaining grammar in class). It is also worth emphasizing that emoticons, memes, and pictures can also be commented on and thereby demonstrate speech patterns reflecting their meaning.

When communicating in a Telegram group, students often use online translators to formulate a statement in a foreign language. This unavoidably leads to mistakes. The techniques described above will be effective in this case as well. Making screenshots of students' replicas and demonstrating speech samples, the teacher should explain to the students how to use dictionaries and online translators, how to choose the correct meaning of a word, tell them which dictionaries and online translators to use, why they have quite a few erroneous translation solutions.

Chatting is always in the nature of a conversation, an exchange of information. Using messengers, the teacher can implement educational and general developmental goals and objectives, offering students new information of cultural and general country character: photos or pictures with small comments, texts, links. Students enjoy discussing the topics that are interesting to them, encouraging them to use the foreign language in communication.

Of course, the use of messengers cannot replace academic classroom communication with a teacher, work with a textbook, and the usage of traditional methodological materials. Communication in online groups plays the role of an accompanying methodological technique, but, as the experience has shown, the technique is very effective.

One of its main disadvantages is time-consuming for the teacher, but with skillful and rational use it allows you to take into consideration the interests of each student, softly develop students' skills of independent work with educational materials of various kinds, analyze and systematize students' mistakes, offer students more information of regional, national character than the program framework allows, motivate students to continue studying a foreign language.

The development of modern technologies, the growth of digitalization of human life-activity and, as a consequence, increasing the volume of various information on the Internet have led to the fact that numerous audio and video materials relating to the teaching of English for special purposes have appeared on various kinds of specialized Internet resources. At the same time, it is possible to point out the wide availability of authentic English-language materials for teachers to use in the teaching process. Over the past two decades, the amount of online content offered as a good complement to basic textbooks has become almost limitless. Its application in English learning process improves the quality of teaching, and gives students an additional incentive to take an active part in classroom and out-of-class assignments, because in parallel with learning a foreign language proper, students enrich their communication skills in professional environment, focusing on the best examples from foreign engineering universities. Reading the articles written by native speakers, listening to audio and video recordings from the English-speaking environment are additional sources for the listeners' motivation, allowing them to immerse themselves in the environment of the language being studied and to feel the foreign cultural specificity. In this context, a careful selection of concrete supplementary audio-visual material and its correspondence to the determined programs and the level of the listeners' language training are of particular importance. Only under

this condition, authentic materials can become an organic addition to the knowledge acquired through the studying the major disciplines. A great help in the educational and methodological work of the university English teacher are various online platforms and specialized software for drawing up exercises, dictations, tests. On the Internet there are a considerable number of portals, the functionality of which allows you to choose your favorite exercise from a catalog or even create your own one from one of the submitted templates. In general, there is no doubt that such opportunities greatly expand the tools of teaching a foreign language, helping to increase the methodological coverage of the studied topics, especially those related to specialized topics [2, p.104].

At the same time, a number of disadvantages of over-reliance on new technologies in the educational process should not be ignored. At present, technological solutions allow only to a limited extent to replace or supplement the functions that have traditionally been performed by the foreign language teacher. So far we can speak only about the auxiliary nature of the new technologies in teaching a foreign language at an engineering university. Undoubtedly, they they are increasingly entering the educational process and, if used appropriately, make it much more efficient and productive. However, it is obviously the foreign language teacher's role remains central and cannot be replaced by any modern technology or messengers in the foreseeable future. In this regard, it is necessary to note that sometimes excessive enthusiasm for the effects of modern technology is not beneficial to teaching foreign language. First of all, it is advisable to carefully calibrate and integrate them into the learning process, and teachers should be appropriately prepared to effectively use the new functionality.

The review of new technological solutions and practices of their application in teaching English for special purposes to engineering students carried out within the framework of this article allows us to conclude that for effective application of advanced technologies in the educational process the right balance between traditional teaching methods, which proved to be justified over a long period of time, and the use of modern technological solutions should be achieved. Breaking this balance in favor of excessive, methodologically unjustified computerization of the educational process in the context of foreign language teaching is fraught with complete chaotization and, as a consequence, a deterioration in the quality of students' foreign language training, which was further confirmed in the course of distance learning.

The necessity of the sharp transition to the remote type of interaction with students in 2021-2022 academic years has shown the importance of careful, methodologically verified implementation of new teaching tools in the foreign language teaching at an engineering higher educational institution.

It is important to understand that the tools offered by the new technologies are only supportive of the classical approaches to teaching students and cannot replace them in any way. At the same time, the competent and proper application of modern technological solutions really does increase the quality of students' foreign language education. The realization of these opportunities, however, is not realizable without an appropriate level of computer literacy of the teaching staff at universities.

Conclusion and further research prospects. From our point of view, the practical application of mobile applications has a huge potential to increase the effectiveness of the process of foreign language learning in the context of higher technical education and can significantly improve the process of foreign language training of students, open up its new aspects and transform from a serious time-consuming process into an exciting and passionate activity.

As pedagogical practice shows, mobile technologies have significant advantages over traditional methods of learning: intensification of independent activity, individualization of training process, increasing cognitive activity and motivation of studying. At the same time, the application of mobile technologies in the learning process contributes not only to the enrichment of the foreign language educational process, but also to the acquisition by students of skills and abilities, the formation and development of which on the basis of traditional means of education is quite time-consuming.

To sum up, the use of mobile technologies in the training process in the context of higher engineering education promotes the improvement of foreign language skills and abilities of students, provides effective independent work, increases students' motivation and cognitive activity, interest in the subject, and promotes the intensification and individualization of learning process.

Список використаних джерел

1. Беляева И. С. Из опыта составления учебного пособия по английскому языку для студентов технического вуза / И. С. Беляева, А. Е. Шабанова // Вестник Тверского государственного технического университета. Серия: Науки об обществе и гуманитарные науки. – 2016. – № 3. – С. 18–23.

2. Брынцева Е. В. Особенности профессионально-ориентированного обучения иностранному языку студентов инженерно-педагогических специальностей / Е. В. Брынцева, А. А. Подорожная // VIRTUS. – 2016. – № 6. – С. 101–106.

3. Голубева Н. Б. Развитие критического мышления как важный элемент формирования профессионально-ориентированной иноязычной компетенции // Вестник университета. – 2015. – № 3. – С. 257–261.

4. Convention on the recognition of qualifications concerning higher education in the European region // Council of Europe - UNESCO joint Convention (Lisbon, 11 April 1997) : the European Treaty Series. – 1997. – № 165. – 15 p.

5. Teaching in the Connected Learning Classroom / Garcia A., ed. – Irvine, CA : Digital Media and Learning Research Hub, 2014. – 113 p. – URL : https://dmlhub.net/wp-content/uploads/fi les/teaching-in-the-CL-classroom.pdf. (date of application : 11.01.2023)

6. Connected Learning : An Agenda for Research and Design / Ito M., Gutiérrez K., Livingstone S., etc. – Irvine, CA : Digital Media and Learning Research Hub, 2013. – 99 p. – URL : https://dmlhub.net/wp-content/uploads/fi les/Connected Learning_report.pdf. (date of application : 11.01.2023).

7. UNESCO Policy Guidelines for Mobile Learning. – URL : https://unesdoc.unesco.org/ark:/48223/pf0000219641. (date of application: 10.01.2023).

8. MOTILL – Mobile technologies in lifelong learning : recommendations. –URL : http://oro.open.ac.uk/29151/2/Farrow-Fulantelli.pdf. (date of application: 10.01.2023).

9. International Conference on Mobile Learning. – URL : http://mlearningconf.org/. (date of application: 10.01.2023).

References.

1. Belyaeva, IS & Shabanova, AE 2016, "Iz opyita sostavleniya uchebnogo posobiya po angliyskomu yazyiku dlya studentov tehnicheskogo vuza", *[From the experience of composing a textbook on the English language for technical university students], Vestnik Tverskogo gosudarstvennogo tehnicheskogo universiteta. Seriya: Nauki ob obschestve i gumanitarnyie nauki,* no. 3, pp. 18–23.

2. Bryintseva, EV & Podorozhnaya, AA 2016, "Osobennosti professionalno-orientirovannogo obucheniya inostrannomu yazyiku studentov inzhenerno-pedagogicheskih spetsialnostey", *[The specific features of professionally oriented teaching of a foreign language to students of engineering and pedagogical specialties], VIRTUS,* no. 6, pp. 101–106.

3. Golubeva, NB 2015, "Razvitie kriticheskogo myishleniya kak vazhnyiy element formirovaniya professionalno-orientirovannoy inoyazyichnoy kompetentsii", *[Development of critical thinking as an important element in the development of professionally-oriented foreign language competence], Vestnik universiteta.* no. 3, pp. 257–261.

4. Rada Yevropy & YuNESKO 1997, "Convention on the recognition of qualifications concerning higher education in the European region" *Council of Europe - UNESCO joint Convention, Lisbon. the European Treaty Series,* no. 165, 15 p.

5. Garcia, A. ed 2014, Teaching in the Connected Learning Classroom. Irvine, CA: Digital Media and Learning Research Hub, viewed 11. 01. 2023 https://dmlhub.net/wp-content/uploads/fi les/teaching-in-the-CL-classroom.pdf.

6. Ito, M, Gutiérrez, K, Livingstone, S & etc 2013, *Connected Learning: An Agenda for Research and Design. Irvine: Digital Media and Learning Research Hub,* viewed 11.01.2023 https://dmlhub.net/wp-content/uploads/fi les/Connected Learning_report.pdf.

7. UNESCO, *Policy Guidelines for Mobile Learning,* viewed 10.01.2023 https://unesdoc.unesco.org/ark:/48223/pf0000219641.

8. MOTILL – Mobile technologies in lifelong learning: recommendations, viewed 10.01.2023 http://oro.open.ac.uk/29151/2/Farrow-Fulantelli.pdf.

9. International Conference on Mobile Learning, viewed 10.01.2023 http://mlearningconf.org/.