
THE USE OF MODERN INFORMATION TECHNOLOGIES IN THE EDUCATIONAL PROCESS OF CHINESE STUDENTS AND POSTGRADUATES AT UKRAINIAN UNIVERSITIES



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Abstract. *The article proves that the studies of foreign students at the universities of Ukraine is currently not only an important factor in improving the competitiveness of the Ukrainian higher education at the international market, but also one of the most profitable and promising sectors of the Ukrainian economy. Therefore, there is an issue of topical interest to improve the quality of educational*

teaching process for foreigners. Particular attention in this regard should be paid to applicants from China, whose number at the Ukrainian higher educational institutions is constantly increasing. The purpose of the article is to identify a set of modern information technologies that should be applied in the educational process for Chinese students and postgraduates at Ukrainian universities, as well as to publicise the practical implementation results of the set of information technologies. The scientific work also presents the results of the conducted experiment that proved that the application of this set of information technologies provides an effective improvement in the educational process for the specified category of students and postgraduates. The academic achievements of the experimental group members had more positive changes in comparison with the group in which the teaching was carried out in accordance with traditional methods applied by the Ukrainian universities.

Key words: *a Chinese postgraduate; a Chinese student; education; information technologies; Ukrainian university.*

INTRODUCTION. PROBLEM STATEMENT

In the current context of further society globalization the creation of the single educational space at the level of higher education is being carried out. Moreover, it is important to clarify that the creation of such space on the territory of different countries does not imply the implementation of the same educational model but requires the coordinated action among all the learning process organizers based on the guidance by the unified standards as well as in accordance with the quality of education assessment criteria. The changes taking place in this area, in turn, will extensively intensify the process of the migration of young people for educational purposes.

The report of the Institute of Statistics of UNESCO should be taking into account to better understand the dynamics of changes in the number of foreign students in the world, the data of. Thus, the Report states that in 1999, 1.68 million foreigners studied at higher educational institutions, and the number of such students increased up to 2.9 million last year. Moreover, authoritative organizations that deal with the promotion of higher education are predicting that by 2025 the number of foreign students will have increased up to 7.2 million (Foreign students in Ukraine, 2019). As it has been identified, the leading place in the foreign students' education is currently taken by higher educational institutions of the United States, Germany, Great Britain and France. Moreover, the rapid increase in the number of foreign students in recent years has made it possible to transform the provision of educational services in developed countries into one of the most profitable and the most promising sectors of the economy. It should also be noted that competent management of the educational migration is currently an important factor in the country's foreign policy, which can significantly strengthen its economic, cultural and political status in the world (Bilyk, 2016; Chyrva, 2018; Forest, Altbach, 2006; Wit, 2011).

Considering the new world trends, the index of international activity (calculated as the ratio of the number of foreign students to the total number of local students) has become one of the most important indicators to be under consideration by global rating agencies while determining the ranking of a particular institution of higher education. In particular, this indicator takes the leading position among the 13 indicators in the system of calculations of the rating agency The Times Higher Education (the weight of this indicator amounts to 3 %), as well as among the 6 key indicators in the QS World University Rankings System (weight indicator amounts to 5 %). It is beyond question that the data published by the leading world rating agencies on the ranking of various higher education institutions greatly facilitates the applicants' choice of a country and a specific higher education institution (Chyrva, 2018; Petrenko, Semko & Yushkova, 2018).

Since Ukraine has been actively integrating into the European and world educational space, the internalization of the Ukrainian higher education is one of the priority areas for its further

development. This requirement is reflected in the main regulatory documents in the field of education. Thus, the Law of Ukraine “On Higher Education” identifies that the preparatory course offered for foreigners to enter higher education institutions and their training are among leading areas of foreign economic activity of domestic higher education institutions (Zakon Ukrainy..., 2019). It should also be noted that the “National Strategy of the Development of Education in Ukraine for the period up to 2021” stresses the importance of “making agreements with other states and implementing intergovernmental and interagency contracts concerning the cooperation in the field of education and science” providing training for foreign students in the Ukrainian higher education institutions (Natsionalna stratehiia ..., 2013).

It is important to note that the competitiveness of Ukrainian education in the international market is gradually increasing. This is evidenced by the improved international rankings of leading Ukrainian universities as well as by the intensive increase in the number of foreign students obtaining higher education in Ukraine. Thus, according to the latest statistics from the Ministry of Education and Science of Ukraine, currently the number of foreign students and postgraduates in Ukraine exceeds 75 thousand, which is almost 12 thousand more than it was registered two years ago. Moreover, the geography of international cooperation has recently considerably expanded, so natives from 154 countries of the world are currently studying at Ukrainian universities (Inozemni studenty v Ukraini, 2019).

Despite the significant achievements in the development of Ukrainian education and, in particular, its internationalization, it should be noted that there are many issues requiring an urgent and relevant solution nowadays in this area. So, there is a topical requirement to improve the quality of education for foreign students and postgraduates. The implementation of this necessity involves, first of all, the identification and practical implementation of effective innovative methods, forms and technologies of educational process enabling to take into consideration the socio-cultural and ethno-psychological differences of various categories of foreign students, as well as didactic aspects of teaching foreigners. In this regard, Chinese students and postgraduates are a point of concern as they are among top ten countries in Ukraine.

To identify the main difficulties experienced by the Chinese students studying at Ukrainian high education institutions, as well as the challenges that teaching staff encounter, an appropriate pilot research has been conducted. Thus, 138 Chinese students and 57 postgraduates from V. N. Karazin Kharkiv National University and H. S. Skovoroda Kharkiv National Pedagogical University, as well as 37 teachers from these universities were involved.

Accordingly, the main difficulties experienced by applicants from China in the educational process are the following: their weak command of Russian, and especially Ukrainian, which prevents them from understanding the teachers and other participants of the educational process properly as well as the existence of significant differences between the methods of teaching by Chinese and Ukrainian teachers. Thus, the Ukrainian teachers prefer problem-based teaching methods in their professional activities in contrast to China where the central place in the educational process is traditionally given to the explanatory-illustrative and reproductive methods of teaching. As a result, the Chinese are accustomed to study in accordance with the proposed algorithm. As a consequence, the attempts to raise issues and to offer the Chinese to solve them or to involve students or postgraduates in participating in discussions provoke stressful reaction among Chinese students and postgraduates.

Furthermore, Ukrainian teachers also drew attention to the fact that Chinese students and postgraduates lack knowledge of Ukrainian that greatly complicates the educational process. In addition, the teachers noted that they face difficulties in gaining feedback from the Chinese in the educational process, due to the fact that it is difficult to determine how well they master their educational material by their external reactions and even responses. The pilot experiment findings

have confirmed that there is a relevant issue focused on improving the quality of teaching Chinese students and postgraduates at Ukrainian higher education institutions as well as the topical requirement to facilitate mutual understanding between the participants of educational process. In this context, the study has determined that one of the effective ways of fulfilling this difficult issue appeared to be the implementation of modern information technologies into the educational process.

LITERATURE REVIEW

As was determined in the process of scientific research, separate aspects of the problem have been highlighted by researchers. Thus, the conceptual provisions for the implementation of international cooperation in the field of higher education, the issue of educational migration in Ukraine and in the world are disclosed in scientific research works by P. G. Altbach, J. F. Forest (Altbach, Forest, 2014), H. De Wit (De Wit, 2006), Liao Caizhi, N. Tkachova, A. Tkachov (Liao, Tkachova, Tkachov, 2015), etc. The major problems of socio-cultural and psychological adaptation of immigrants to studying in other countries have been analyzed in studies by O. Bilyk (Білик, 2016), Y. Scherbyak (Scherbyak, 2015), Hu Zhunsi (Zhunsi, 2016), etc. The didactic aspects of foreign students' education and, in particular, the special nature of the pedagogical interaction with the applicants from China are determined in the scientific works of O. Bilyk (Bilyk, 2016), Y. Chyrva (Chyrva, 2018), etc. The pedagogical conditions of the productive implementation of modern information technologies in the educational process of higher education are determined in the scientific researches of V. Andriievska (Andriievska, 2018), V. Bykov (Bykov, 2010), N. Morze, O. Veselovska (Morze & Veselovska, 2015), O. Ovcharuk, N. Soroko (Ovcharuk, Soroko, 2016), A. Trotsko, Y. Korotkova (Троцько, Короткова, 2018). At the same time, we have found out that teaching Chinese students and postgraduates at Ukrainian universities with the use of modern information technologies has not been the object of purposeful pedagogical research. Consequently, the relevance of the raised issue and its insufficient theoretical and practical development determined the choice of the topic of the article.

The article aims to identify a set of modern information technologies that should be applied in the education of Chinese students and postgraduates at Ukrainian universities, as well as to present the results of practical implementation of the set of information technologies.

METHODOLOGY

To select an optimal set of information technologies which are expedient to be employed in the educational process of this contingent of foreign students, it is necessary to consider the typical socio-cultural and ethno-psychological characteristics of Chinese applicants, as well as what methods and forms of education they are familiar with, and which ones, on the contrary, can cause confusion. As it was defined in the survey, the special features that favourably influence the academic performance of Chinese students and postgraduates include the following ones: high performance, emotional stability, balance, persistence, ability to self-organize, respect for knowledge and its possessors, restraint, unpretentiousness, moderation, readiness to courageously endure various life issues and physical deprivations for the sake of education as a guarantee of future well-being (Bilyk, 2016; Chyrva, 2018; Zhunsi, 2016). It should also be noted that the Chinese students and postgraduates have a strong developed commitment to national traditions, maintain close ties with their fellow countrymen, demonstrating a high degree of cohesion within their community and striving to reap approval of its members. Therefore, it is possible to improve the involvement of the participants through the informal leaders of their community.

Accordingly, among the socio-cultural and ethno-psychological features of this category of students and postgraduates causing the difficulties of mutual understanding between them and Ukrainian teaching staff emerging in the process of pedagogical interaction (and as a consequence, negatively affecting the academic success of the Chinese applicants), the following aspects should be mentioned: low cognitive motivation, introversion, incommunicability, weak expressiveness, overestimating their capabilities, the desire to hide true feelings and mood, failure to sincerely discuss their affairs and difficulties with teachers, desire to present unpleasant information not directly but in a veiled form, cult of authority and power (Bilyk, 2016; Chyrva, 2018). It is also worth noting that during the learning process, the Chinese traditionally experience significant linguistic difficulties caused. At the same time, it must be emphasized that the essential advantage of the major part of all participants from China is considered to be the mastery of modern information technologies.

On the grounds of the experts' conclusions (V. Andriievska (2018), V. Bykov (2010), O. Ovcharuk, N. Soroko (2016), etc.) regarding the main advantages of information technology it has been concluded that the pedagogically competent application of such technologies during the learning process provides sufficient use of the socio-cultural, ethno-psychological and academic advantages of Chinese students and postgraduates. Moreover, their mastery of modern information technologies aims to neutralize those typical features that reduce the effectiveness of pedagogical interaction, and, as a consequence, the effectiveness of the educational process. In the context of the study, we should clarify that in relation to the definition of the notion of "information technology" (or its synonym – "information and communication technologies"), we refer to the point of view of V. Bykov, who defines this concept as "the computer-oriented component of pedagogical technology, which reflects some formalized model of a certain component of the content of teaching and the presentation method in the educational process. This method is represented by educational software tools in the educational process and involves the use of a computer, computer-oriented instructional facilities as well as computer communication networks for the solution of didactic tasks or their aspects" (Bykov, 2010).

Based on the above-presented material, the hypothesis has been put forward. The hypothesis is based on the fact that the introduction of the determined set of modern information technologies in the teaching process contributes to the increased teaching process efficiency of Chinese students and postgraduates at Ukrainian universities. In order to verify the validity of this hypothesis, the pedagogical experiment was conducted during 2017-2019 academic years involving Chinese students and postgraduates from V. N. Karazin Kharkiv National University and G. S. Skovoroda Kharkiv National Pedagogical University. The experimental work covered the learning process of the Ukrainian and English languages by the Chinese.

MAIN RESULTS

It should be noted that mobile information technologies feature prominently in the educational process of the specified subjects of the teaching process. These technologies represent a combination of mobile hardware means (such as mobile phones and smart phones, laptops and netbooks, tablets, e-books etc.), software means (mobile learning support systems, mobile pedagogical software, feedback systems, etc.) as well as a system of methods and forms of employing these means in the process of learning with different educational goals in terms of operational communication with global computer networks or local information resources (Rashevs'ka, 2011: p. 121-122). In the light of these facts, it should be indicated that at the beginning of the 21st century, D. Kigan, predicting a significant increase in impact of such technologies on human life in the future, referred to the mobile learning as a "precursor to learning in the future" (Keegan, 2019).

Accordingly, voice interpreters were widely applied during the teaching process of Chinese students and postgraduates. In particular, Chinese students typically use the *Baidu Translate program* for voice interpretation which is an official translation service application for Baidu, a well-known company in China. In addition, new terms introduced in the teaching process used to be often translated from Ukrainian not only into Chinese but also into English and even Russian. The need for such translation was conditioned by the fact that the scientific concepts used in Ukrainian scientific works do not necessarily have exact equivalents in foreigners' native language. In addition, the degree of foreign language proficiency among different students and postgraduates appeared to be significantly different. Therefore, time availability in the classroom to ensure that the students have acquired the necessary terminology enabled the teacher to confirm that all participants of the pedagogical interaction understood the point of certain key concepts correctly, and, thereafter, to proceed to the presentation of the main lecture teaching material.

It is also worth noting that Chinese students and postgraduates received electronic versions of the lectures and seminars syllabus. This enabled them to improve their knowledge of the basic terminology in Ukrainian as well as to master written Ukrainian. In order to overcome the language difficulties experienced by Chinese students and postgraduates, they were also encouraged to apply mobile voice recorders at classes. Since the Chinese are known to be very good at comprehending all the speech varieties, this means of teaching showed its efficiency.

It should be noted that, according to the recommendations of foreign experts (S. Aoki (Aoki, 2015); G. Lord (Lord, 2008)), the function of language recording with the mobile device was applied in various types of educational activities of students. Hence, the most difficult fragments of the educational material for their understanding were recorded by the teacher on the tape recorder. This enabled the subjects of the teaching process to listen to the sound of the teacher's certain phrases attentively, and thereafter, without the voice recorder, they tried to repeat these phrases. The voice recorder was also used by students as a means of reflection. In this case, students or postgraduates recorded a certain text on the tape recorder, which he had to read out, and thereafter compared their sound with the proposed model of the teacher. In addition, the Chinese were offered special tasks which required recording (for instance, to give answers to the proposed questions, to express their points of view on solutions of a particular issue, etc.). Listening to these records helped the teacher not only to determine the degree of students or postgraduates' mastery of the educational material as well as the accuracy of the relevant terminology, but also to save time, as the Chinese, as a rule, are considered to lack foreign language fluency.

In the experimental work, mobile phone conversations of educational process participants were applied for pedagogical purposes. This method was used to receive teacher's answers on certain topical issues, to transfer important information or to hold short tutorials. It is obvious that available time for such conversations and their regulations were discussed in advance. In addition, the lecturers, while conducting such conversations, took into account the fact that the speech via telephone led to a worse comprehension by the Chinese in comparison with direct communication. Therefore, teachers usually duplicated the most important information in the form of a text and transferred it to the pedagogical interaction participants using other information technologies, this communication being carried out in a synchronous manner (chat, Skype, audio or video conferences, etc.) as well as in an asynchronous way (e-mail that enabled to send the required information or necessary educational training materials; mailing lists enabling to send information or text announcements to a certain category of subjects of learning; online forums that provided correspondence between its participants).

Among the mentioned technologies we would like to provide the detailed description of pedagogical capabilities of the information technology "Skype", which has recently become increasingly popular among educators. Consequently, within the experiment, this technology

enabled Skype network users to make audio and video calls to send messages or to hold conversations in appropriate modes, to create test chats as well as to create communities within academic group members or postgraduate students of one supervisor. The advantages of Skype contributed to improving the knowledge of Ukrainian and English by the Chinese using multifunctional sites that made it possible to organize various participants' language activities.

The mentioned technology also enabled teachers to represent other text or graphic materials to other subjects of the educational process. As Chinese students and postgraduates are known to comprehend the demonstration of necessary actions better than the description by verbal means, a particularly valuable advantage of Skype in the process of organizing the participants' training activities was to ensure their access to the teacher's screen, which enabled the interlocutor to present the necessary files, tables, presentations or action sequence. For example, within the experiment, the teachers demonstrated how to change the numbering of sources in the abstract or thesis after completing a general list of sources used in accordance with existing requirements, or how to find research works at the websites of the universities or information on training or educational work conducted at particular higher educational institutions.

In the context of the raised issue, the significant educational opportunities of a popular Viber messenger are also worth noting. Viber messenger is officially prohibited in China being caused by Internet censorship, but the Chinese students and postgraduates actively use this technology in Ukraine. In accordance with its educational capabilities, Viber is approaching the Skype technology, but the former is not capable of displaying the screen to other interlocutors.

Information technologies have also been widely applied in the process of self-learning activity of Chinese students and postgraduates. During its implementation, they used didactic and methodological materials prepared by teachers in a digital format, uploading them to the appropriate media (flash disk, iPhones, laptops, etc.). In addition, electronic journals, books, dictionaries, reference books, encyclopaedias, as well as entire electronic libraries, including electronic databases of scientific, educational and methodological works of leading Ukrainian universities served as important sources of information for the Chinese. For example, Chinese students and post-graduates first of all had to demonstrate how to work with educational and research materials of V. Karazin Kharkiv National University and G. S. Skovoroda Kharkiv National Pedagogical University. In particular, study guides, methodological recommendations and reference publications presented on the website of the Educational and Research Institute of International Education as a structural subdivision of the former university were of great use for foreigners at the initial stage of study at the university. At later stages of study, they were involved in working with the sites of the relevant faculties, as well as with the materials of the Central Research Library. In their turn, students and post-graduate students of G. S. Skovoroda Kharkiv National Pedagogical University worked on the materials presented on the websites of the faculties, as well as with the materials of the university library.

Chinese students and postgraduates were involved in the preparation of presentations, reports and abstracts. The presentations to the audience made by the authors of such works were accompanied by an appropriate video or multimedia presentation. Thus, second year post-graduates (specialty 011 – educational and pedagogical sciences) during the study of the academic subject “Fundamentals of Educational Innovation” took the floor with reports and relevant presentations on the following topics: “The use of innovative information technologies in the educational process of the higher education of China”, “Experience of innovation development of Chinese Universities” etc.

It should also be noted that Chinese students and postgraduates were involved in the presentation of their self-study work results applying such promising information technology as Mindmap (sometimes this technology appears in the Ukrainian research works as

“mindmapping”). We shall specify that the result of this technology application is considered to be a tree-like structure diagram, with a certain term or idea in the centre and radially located elements (words, phrases, signs, etc.) around it, reflecting the possible connections between them. The main advantage of Mindmap is thought to make this technology generate, structure and classify certain ideas related to the issue solutions, as well as make proper decisions. As it was found out, different programs can be applied to create Mindmap, but most of them are not free of charge. Therefore, to manage the process of educational activities of Chinese students and postgraduates, Google online application, which can be used free of charge after registration, was used to create Mindmap. To implement this, the users had to visit the appropriate site by the following link: <https://coggle.it>. This site provides a video tutorial in English, which explains and demonstrates the algorithm of creation. Since the majority of the Chinese speak English better than Ukrainian, they did not face any difficulties to comprehend the algorithm. We should emphasize that the application of Mindmap technology greatly facilitated the learning process of Chinese students and postgraduates, since the development of intellectual maps did not require foreigners, having difficulty in writing texts in Ukrainian, to articulate long phrases or sentences. In addition, other participants of the educational process did not encounter particular difficulties in comprehension of certain words and phrases.

Considering the specialists' recommendations (B. Bocharov, M. Vojvodina (Bocharov & Voyvodina, 2015), etc.). Chinese students and postgraduates were involved in the computer testing in order to form and improve educational knowledge and skills, as well as to estimate formation of these skills. The computer testing enabled to identify a lack of knowledge on a particular topic or unit promptly. We would like to clarify that teachers used both their own electronic tests (they used such common educational platforms as Moodle (<https://moodle.org>), Google Forms (https://www.google.com/intl/en_us/forms/about), Kahoot (<https://kahoot.com>) ClassMaker (<https://www.classmarker.com>) and on-line tests from the Internet.

Computer simulators were also applied in the educational process of Chinese students and postgraduates. They enabled to select tasks of a certain level of complexity, to control the actions of the performer, responding promptly to their false answers and enabling to correct, as well as to demonstrate the right way to solve the issue and to present the information about the overall results of the user's educational work. We should specify that the practical experience of the teachers from universities where the experiment was conducted, as well as on-line simulators were used. For instance, to study the Ukrainian language, the electronic simulator of the Ukrainian spell-checker was useful for the Chinese <http://webpen.com.ua/index.htmlhowToWork>.

The technologies formed a holistic set. At the same time, we should note that the order and duration of these technologies differed in various academic groups where experimental group members studied. Such difference was conditioned by the academic level of Chinese students and postgraduates, as well as by the content of the educational material. In order to prove the effectiveness of the set of information technologies, the diagnostics of the obtained results at the formative and monitoring stages of the pedagogical experiment was performed. Thereafter, the results were compared.

CONCLUSIONS

Based on the generalization and comparison of the obtained data at the control level, it can be concluded that academic achievements of experimental group members had more significant positive changes in comparison with the group in which the teaching process was carried out in accordance with traditional methods for Ukrainian universities.

This confirms the correctness of the formulated hypothesis in that the defined set of modern

information technologies, indeed, provides an increase in the effectiveness of teaching Chinese students and postgraduates.

Further research is planned to deal with determining the impact of such information technologies as teacher's blog, wiki-technology and web-quest on the educational activity of subjects of the teaching process, as well as with the development of appropriate methodological support for the implementation of these technologies.

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