



# POSITIVE PRACTICES OF DEVELOPING DIGITAL COMPETENCE OF ACADEMIC STAFF OF HIGHER EDUCATION INSTITUTIONS: EXPERIENCE OF THE PEOPLE'S REPUBLIC OF CHINA

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## Abstract

*Relevance:* the relevance of the study is due to the need for developing the digital competence of teachers in higher education institutions at the international level.

*Objective:* the objective is to describe and substantiate positive practices of developing the digital competence of academic staff in higher education institutions of the People's Republic of China to use the positive experience of this country in reforming Ukrainian education.

*Methods:* theoretical analysis of scientific sources, websites of educational institutions, and educational and professional programmes and working curricula for the competence development of academic staff to determine the main positive trends in developing digital competence of academic staff in higher education institutions of the People's Republic of China.

*Results:* the concept of digital competence is formulated and clarified and the issue of forming digital competence in representatives of higher education from different countries of the world, as well as relevant research on its development in the academic staff of higher education institutions, are analysed. The measures for the implementation of digital education in the PRC are characterised and proposals are formulated to solve the issue of developing digital competence and information literacy of teachers in higher education institutions.

*Conclusions:* it has been found that the development of digital competence of Chinese teachers is more effective in creative activities. Improving the control of interactive learning by college and university managers, enhancing timely feedback and interaction between teachers and students in the learning process, enriching the variety of interactive forms and tools to increase the efficiency and effectiveness of learning, highlighting the best online courses and programs for organizing events to exchange experiences for academic staff of higher education institutions, providing the participation of teachers in training sessions, workshops, seminars, and other forms of scientific interaction have been identified as effective means to develop the level of digital competence and information literacy among higher education institution teachers.

**Keywords:** *digital competence, the People's Republic of China, distance learning, higher education academic staff, teacher-student interaction*

**Introduction.** Today's society, and especially the social group of extremely active people, millennials, is forced to solve many issues related to the modern information space (Shannon, 2019). This domain is featured by huge amounts of information, and therefore the task of a modern person is not to memorise information but to be able to navigate and process it. Regarding navigation and processing procedures, we can confidently say that a person's critical thinking level is important (Smith, 2013, 88-96). The ability to form judgments about specific information, select arguments to support one's reasoning, engage in conversation and participate in a civilized discussion should be within everyone's reach. These abilities, collectively known as information literacy, are considered essential in modern times.

It is important to note that among the various concepts used in the field of computer and digital technologies, digital competence is currently the most expansive, but in Ukrainian science, it is used mostly as a synonym for information literacy (S. Prokhorova, 2014, p. 113-115) and ICT competence (Ovcharuk, 2014, pp. 7-16)

**Sources.** In the scientific literature, many studies are devoted to developing digital competence and information literacy of academic staff. We rely on the results of research by scholars such as M.-A. Mundy, L. Kupczynski, R. Kee, E. Probert, M. Henkel. These scholars emphasised the importance of developing critical thinking as an individual's ability to process information flow, which is one of the aspects of information literacy (Estela Morales Campos, 2008). Teachers in China also feel the changes in the educational environment and realise that their social status is improving. The acquirers of education, students, can find information on any topic, but the value of the teacher is in setting the direction of the research and sharing their personal experience (Alba, 2018, pp. 181-188).

The works of Hu Jiehui and Hu Jiasheng, who have been studying the theoretical aspects of foreign language education informatisation over the past 70 years (Hu, 2020), have been analysed. In the works of other Chinese researchers, the ways for developing digital competence were identified, models for training English language teachers in specific provinces of China were proposed, and the connection between foreign language teaching and current events in the world was determined. **The objective** is to describe and substantiate good practices for developing the digital competence of academic staff in higher education institutions of

the People's Republic of China to use the positive experience of this country in reforming Ukrainian education.

**Methods.** The article conducts a theoretical analysis of scientific sources, educational institution websites, educational and professional programs, and working curricula aimed at enhancing the qualifications of scientific and pedagogical workers to determine the main positive trends in developing digital competence of higher education academic staff of the People's Republic of China.

**Results and discussion** After analysing the research of scholars on the formulation of the concept of digital competence, we agree with K. Ala-Mutka (Ala-Mutka, 2011) and present the concept of digital competence as follows.

*Digital competence* is a set of skills, knowledge, and abilities, including instrumental skills and knowledge, which include technical skills in working with digital devices, knowledge and skills in the safe use of media environments; advanced skills and knowledge, which include effective interaction and communication, information management, online learning, and participation in digital activities; attitudes, which are understanding and acceptance of intercultural differences, ability to establish intercultural interaction, critical attitude to information and its quality, openness to digital creativity and learning using digital technologies, possession of cybersecurity skills, compliance with the ethics of the digital environment.

The Ukrainian researchers G. Romanova and K. Tsytsiura (2020, p. 176-177) emphasize that digital competence is a prerequisite for the development of distance education, and the rapid development of information technology is driving the modernisation and reform of education around the world. Distance learning has already become widespread, and its popularity is growing rapidly every year (Seiko, & Yershov, 2021, p. 60). For example, in the United States, Canada, and the United Kingdom, virtual universities have been established as an alternative to traditional education, where every student can take basic distance learning courses at any university. Today, European educational policies take into account the «Digital Agenda for Europe» initiative and the «Europe 2020: A strategy for smart, sustainable and inclusive growth» European economic development strategy (European Commission, 2020), which emphasise the importance of taking advantage of information and communication technologies in the education sector and beyond national borders.

In Europe, the adoption of new educational technologies and their integration into the organizational mainstream is manifested through the emergence of social institutions such as tele-universities, information centers, tutoring centers, and centers for distance learning and retraining. These developments enable individuals to receive proper education and attain the necessary skills even during systemic crises and financial constraints. However, despite a large number of scientific studies, modern distance education in Eastern Europe sometimes continues to use outdated approaches and insufficiently utilises the possibilities of fundamentally new forms and methods of teaching. Compared to the countries of Western Europe and North America, where in the late 1960s and early 1970s the implementation of open and distance learning already began, in the countries of Eastern Europe, varieties of correspondence education, in particular extramural education, have been used for a long time in the countries of the former Soviet Union since the 1920s, for example, or «non-attendance learning» in Romania since the 1980s, as well as its other varieties in the countries of the former socialist camp.

The researchers highlight some contradictions in the system of training specialists using distance learning in the post-totalitarian countries of Eastern Europe: between the need for a student-oriented approach and the insufficient provision of individual educational trajectories of students; between the requirements for the development of graduate competencies and the imperfection of the information and educational environment of universities; between the development of distance learning technologies and the unpreparedness of teachers to use them. An urgent problem of training specialists with higher education degrees in Eastern Europe is the use of modern achievements of science and technology, ideas of integration of education and production, and the search for innovative teaching technologies. The introduction of progressive foreign experience in universities in these countries contributes to the development of higher education and its quality (Tsytsiura, & Romanova, 2020, p. 177).

Today, the implementation of distance learning in Eastern European countries remains localised and unevenly accessible and requires constant modernisation and active training of teaching staff in the digitalisation of education. The search for and testing of effective forms of teacher-student and student-student interaction plays an important role in the effective implementation of this form of

education. An equally important factor is also the competent selection of functional software – computer and mobile platforms ensuring high quality of learning in distance education (Khan, Ally, 2015).

Given two important factors in the development of society, i.e., education and technology, where education is the primary priority, let us focus on the issue of developing digital competence in the representatives of the educational sector (Ladbrook, & Probert, 2011).

By analyzing the unique features of public administration in highly developed countries, it becomes evident that certain programs prioritize the education sector. Consequently, the quality of education in a state serves as a determinant of the state's ambitions. For example, to make future students dream of studying in specific high-level HEIs, some countries seek to differentiate HEIs by prestige (United Kingdom); realise ambitions for the best education in the world (United States); focus the state's potential on memorising information (EIT in Ukraine); use the potential of education for the development of society (South Korea); perceive education as a tool for propaganda (North Korea), etc.

To solve the complex problems of reforming the education of Eastern European countries, it is advisable to analyse, study and use the progressive experience of other countries in the field of effective implementation of distance and face-to-face learning through the development of digital competence of academic staff and students (Seiko, & Yershov, 2021). The following Pacific Rim countries should be paid special attention to: China, South Korea, Japan, and Singapore (Korobili, 2011, pp. 78-87). The vast majority of these countries have demonstrated incredible economic, educational, and scientific development over the past 70 years (Earp, 2009).

China has established a "world factory" within its borders and has prioritized reforms in the field of education and science. With the backing of the public sector, the initial phase of educational development focused on providing internships for Chinese educators in Europe and the United States, with a commitment to their eventual return to their home country. The next rather important step taken by the Chinese government was the acquisition of well-known world scientific periodicals and the printing of publications in English, and later in Chinese (Chen Xi, 2017). The given description of the powerful support for education by the leadership of the PRC indicates a statesmanlike approach in

this area.

K. Tsytsiura and G. Romanova emphasize the successful combination of distance learning and traditional learning in China, at the same time pointing out that now that the epidemiological situation in the world leaves no chance to use only the principles of traditional learning, the study of the effectiveness of using online platforms, methods of teaching in force majeure circumstances, and testing new forms of interaction between teachers and students for educational purposes have come to the forefront of the national policies of developing and reforming distance education in the country. However, at the very beginning of the introduction of distance learning in force majeure circumstances, academic staff of Chinese higher education institutions noted that it was not easy to create an atmosphere of fruitful online learning, and the effectiveness of such learning could not be guaranteed. Some methods of interaction between students and teachers are not sufficiently developed in the remote form; during the educational process, the network or platform used for conducting classes may be overloaded and work with delays, which affects the learning outcomes. That is why work has begun to improve educational content, the quality of distance learning, and the development of the digital competence of academic staff, which must be guaranteed by Chinese higher education institutions (Tsytsiura, Romanova, 2020, p. 178).

Chinese researcher Liu Meng believes that the reform, which concerns higher education, is an important impetus for raising the level of social development in China (Liu, 2017). But such a development of higher education would not have been possible without the digitalisation of the economy, elements of which are increasingly penetrating the everyday life of citizens. Since the implementation of China's reform and opening-up policy in 1978, there has been a significant expansion in the country's information and communication technologies. According to Peng Bingzhuan, with the advent of big data technologies, it is becoming increasingly difficult for teachers to arouse students' interest in learning using traditional methods and fully satisfy their needs for self-improvement (Peng, 2017). Moreover, since the emergence of microelectronics and computers in the 1980s, followed by the introduction of the internet in the 1990s, the 2000s witnessed the rise of robotics, artificial intelligence, and blockchain technologies. In recent years, there has been a more rapid growth in the digitalisation of the economy, particularly in the areas of e-commerce, financial

technology, manufacturing, and education. Along with the One Belt, One Road initiative, China's leader is using international platforms to highlight the growing role of digital technologies in the country's economy. Thus, the processes of digitalisation and technological development in China are linked to global trade, which is fundamentally important for the country's export-oriented economy.

The widespread adoption of the Internet, advancements in infrastructure, and the increasing technological sophistication of the educational process have resulted in more effective delivery of educational programs and enabled students to acquire relevant knowledge, skills, and new digital competencies. Such skills, which are essential for modern life in a digital society, help to expand creativity and develop critical thinking in both students and academic staff. That is why modern representatives of the educational domain have appreciated all the advantages of the Internet, which is not only a technology but also a new environment allowing them to receive the necessary information regardless of their position in time and space and ensuring individualisation of learning in the context of network interaction outside the traditional system of higher education and other generally accepted forms of education (Volkova, 2019, pp. 38-49.).

Chinese higher education institutions are widely recognized as some of the world's best, and as a result, their leadership expects academic staff to possess professionalism, experience, and the necessary competencies. The content of the concept of «digitalisation» is considered by scholars to be the transformation of information into digital form, as well as a comprehensive solution of managerial, infrastructural, cultural and behavioural nature (Havrilova, 2017, pp. 1-14). Thus, we can conclude that the main technologies of digitalisation are the development of the Internet and mobile communications.

The digitalization of higher education in China entails implementing a range of measures, taking into account global digitalization trends and analysing the current state and future prospects of education in modern school, as well as the priority areas of the state project «Human Resources for the Digital Economy» of the «China's Digital Economy» programme. These activities include the development and implementation of new digital educational content, digital teaching and learning complexes (programmes, materials, tools for assessing the formation of key competencies); gamification of the educational process by higher education teachers, development and active implementation of educational games and digital simulators (training

devices, virtual laboratories) based on modern visualisation technologies and augmented reality solutions; development of distance education, expansion of the range of MOOCs (Massive Open Online Courses) from the best teachers in various general education subjects and areas of additional education; development of mobile applications in education and training of a modern teacher of the digital future (Tsytsiura, & Romanova, 2020, p. 181-182). Let us comment on these measures and study them in more detail.

Chinese researchers Fan Wang, Yanli Wang, and Xia Hu proposed and tested a game-based curriculum design model for college students professional training and believe that such methods play an important role in increasing students' activity, motivation, and engagement in classroom work (Fan Wang, Yanli Wang, & Xia Hu, 2017). This Chinese researcher believes that teaching based on MOOCs can be successfully combined with traditional forms of education (Xiong, 2018).

The Ministry of Education of the People's Republic of China recommends that mobile applications for education be registered in the national state registry called the National Digital Education Resources System. Mobile applications for educational purposes should have a standardised data management system that should be constantly updated in the national state register and monitored by the Education Department for expediency, modernity, and effectiveness. According to the Chinese researchers Zou Bin and Li Jiaying, as well as the team of researchers consisting of Yang Bowen, Zhou Shijun, and Ju Weijie, mobile applications are particularly effective for learning foreign languages, as well as allow for the rapid exchange of information and the introduction of new methods of interaction between teachers and students in the educational process (Zou, & Li, 2015; Yang, Zhou, & Ju, 2013, pp. 27-38).

A modern teacher of the digital future should be able not only to effectively use existing IT, editors, information processing tools, and software for creating electronic presentations but also to master new technologies, and pay special attention to self-improvement and development of their own digital literacy and necessary digital skills. Chinese researchers Ma Wenjing, Lin Fengxun, and Lin Jinchao suggest that it is especially important to develop a model of the competencies of an excellent teacher, which includes personal and professional skills (Ma, Lin, 2013).

According to experts, such measures will allow China to set higher requirements for teacher-

student interaction, effectively implement high-level combined and fully remote learning for students without losing efficiency, and motivate students to be actively involved in the process of acquiring knowledge.

The Chinese researcher W. Gao and the Ukrainian researcher K. Tsytsiura paid special attention to studying the digital competence level of Chinese academic staff. She carried out this study based on higher education institutions in Zhejiang Province, which is in the southeast of the country and is one of the most developed provinces of the PRC.

The study of the level of development of digital competence of academic staff in higher education institutions of the PRC was conducted by W. Gao and K. Tsytsiura using a questionnaire. A total of 129 academic staff members from different categories (assistants, associate professors, and professors) participated in the study. The questionnaire consisted of 26 questions with a single correct answer. The researchers used a random sampling technique to ensure equal opportunities for all participants in the research and experimental work. The sample was selected in accordance with the requirements of teaching research methodology, which included representative characteristics of the population and consideration of the specifics of the study, such as the level of development of digital competence of higher education teachers in the PRC.

Subsequently, according to the principles of quality, an overall score of the level of digital competence was calculated by W. Gao and K. Tsytsiura, and the higher the score is, the higher the level of information literacy, respectively. The responses to the 26 questionnaire items help to form a comprehensive understanding of the problem of developing digital competence among scientific and pedagogical workers in Chinese higher education institutions, including the existence of a conscious need among Chinese teachers to develop their own information literacy; the perception of information literacy as a component of a teacher's competence and an acquired trait and lifestyle of the individual; understanding that information literacy enables a broader and more successful realization of the individual in modern society.

Simultaneously, the survey unveiled obstacles to developing digital competence, such as the need to enhance proficiency in office software, the requirement to elevate the level of information literacy through training, analyzing best practices, participating in seminars, and more. Based on the re-

sults of the experiment, recommendations were formulated to improve the level of digital competence of academic staff in higher education institutions (Gao, & Tsytsiura, 2021, p. 142-143).

Improving the digital competency of higher education teachers in the PRC, who are involved in scientific, professional, and teaching activities, should be regarded as a positive process of enhancing various components of this competency, which can be achieved through innovations, new advancements, and updated information resources.

According to real-life experience and the results of W. Gao and K. Tsytsiura's survey on the professional activities of Chinese teachers shows that it is possible to develop their digital competence through innovative methods. To bring about a shift in their mindset, it is necessary to ensure that they acquire the necessary information and process it into knowledge. Thus, a crucial objective in fostering digital competence is for educators to perceive it as a vital component of their teaching proficiency, encompassing both theoretical knowledge and information management skills, as well as an ethical and principled approach towards information resources (Gao, & Tsytsiura, 2021).

Another important finding of W. Gao and K. Tsytsiura's research is that developing Chinese teachers' digital competence is more effective in creative activity. The proposals of these researchers for solving the issue of developing digital competence and information literacy of university teachers are as follows:

- Investigating teachers' intentions to use web technologies in modern educational settings for distance learning and understanding the realities of using these technologies for teaching purposes.
- Enhancing the management of interactive learning by college and university administrators to ensure quality teaching, learning, and interaction between participants in distance and blended learning.
- Improving the timeliness of feedback from teachers and students to promptly correct mistakes

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and resolve problematic situations in digitalized learning.

- Enriching the variety of interactive forms and means of increasing the efficiency and effectiveness of learning to improve the interaction between teachers and students.

- Identifying the best online courses and programs and organizing experience exchange events for academic staff of higher education institutions to participate in training, workshops, seminars, and other forms of scientific interaction organized by experienced practitioners on digital competence, and identifying difficulties and ways to solve them.

- Conducting active educational activities to emphasize the importance of digital competence for academic staff of higher education institutions.

- Encouraging teachers to timely adjust online training content, teaching methods, and student interaction based on student feedback and suggestions.

- Developing connections between universities through video conferences and discussions of effective forms and methods of digitalized learning to promote effective online work (Gao, & Tsytsiura, 2021).

**Conclusions.** Today, acquiring basic digital competence is a challenge, especially in a country like China that has adopted numerous technological advancements, particularly in education. Therefore, it is crucial for Chinese teachers to attain an optimal level of digital competence. Analyzing the successful experiences of higher education institutions in China could provide the basis for developing a methodological framework for utilizing interactive methods, such as seminars, training, round tables, workshops, and more, to enhance the digital competence of teachers. In our view, investigating how foreign institutions combine interactive methods with IT technologies to improve the digital competence of academic staff is a promising area for research.

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# ПОЗИТИВНІ ПРАКТИКИ РОЗВИТКУ ЦИФРОВОЇ КОМПЕТЕНТНОСТІ НАУКОВО-ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ ЗАКЛАДІВ ВИЩОЇ ОСВІТИ: ДОСВІД КИТАЙСЬКОЇ НАРОДНОЇ РЕСПУБЛІКИ

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## Реферат

*Актуальність* дослідження зумовлена потребою у розвитку цифрової компетентності викладачів закладів вищої освіти у міжнародному вимірі.

*Мета:* описати та обґрунтувати позитивні практики розвитку цифрової компетентності науково-педагогічних працівників закладів вищої освіти у Китайській Народній Республіці задля використання позитивного досвіду цієї країни в реформуванні української освіти.

*Методи:* теоретичний аналіз наукових джерел, веб-сайтів освітніх установ, освітньо-професійних програм та робочих навчальних планів з підвищення кваліфікації науково-педагогічних працівників – для визначення основних позитивних тенденцій розвитку цифрової компетентності науково-педагогічних працівників закладів вищої освіти у Китайській Народній Республіці.

*Результати:* сформульовано та уточнено поняття цифрової компетентності, проаналізовано проблему сформованості цифрової компетентності у представників вищої освіти різних країн світу та актуальні дослідження її розвитку у науково-педагогічних працівників ЗВО. Охарактеризовано заходи щодо реалізації цифрової освіти в КНР та сформульовано пропозиції у вирішенні проблеми розвитку цифрової компетентності та інформаційної грамотності викладачів закладів вищої освіти.

*Висновки:* встановлено, що розвиток цифрової компетентності китайських викладачів є більш ефективним у творчій діяльності. Визначено, що вдосконалення контролю інтерактивного навчання керівниками коледжів та університетів, покращення своєчасності зворотного зв'язку та взаємодії між викладачами та студентами в процесі навчання, збагачення різноманітності інтерактивних форм та засобів підвищення ефективності та результативності навчання, виокремлення найкращих онлайн-курсів та програм з метою організації заходів обміну досвідом для науково-педагогічних працівників ЗВО, забезпечення ЗВО участі викладачів у тренінгах, воркшопах, семінарах та інших формах наукової взаємодії є ефективними засобами підвищення рівня цифрової компетентності та інформаційної грамотності викладачів закладів вищої освіти.

**Ключові слова:** *цифрова компетентність, Китайська Народна Республіка, дистанційне навчання, науково-педагогічний працівник закладу вищої освіти, взаємодія «викладач-студент».*

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