ANNOTATION

on the dissertation for the degree of Doctor of Philosophy (PhD) in specialty "6D010300 – Pedagogy and Psychology"

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"Developing a future teacher's digital competence via massive open online courses"

Purpose of the dissertation: The purpose of the dissertation is to theoretically justify the development of a future teacher's digital competence via massive open online courses (MOOCs), to work out its methodology and test its effectiveness in an experiment.

Research objectives:

1. Determine the concept of digital competence of a future teacher and give content characteristics based on theoretical and methodological analysis;
2. Justify the effectiveness of massive open online courses as a tool for developing a future teacher's digital competence;
3. Work out the structural-functional model to develop a future teacher's digital competence via massive open online courses and determine digital competence measurements, indicators and levels;
4. Work out the methodology for developing a future teacher's digital competence via massive open online courses and test its effectiveness in an experiment;

Research methods:

To accomplish the research objectives, theoretical methods (an analysis of philosophical, psychological-pedagogical and scientific-methodological literature, methods of examination, generalization, comparison) empirical methods (a survey, a pedagogical control, a testing, a questioning, a pedagogical experiment) and as well as statistical methods for processing the research results were used.

The main provisions of the dissertation for defense:

1. *The digital competence of a future teacher is* an integrated set of *personal qualities* that can ensure the effective use and management of the digital educational space, the creation and organization of interaction with electronic resources, as well as information technology, management knowledge, skills and abilities.
2. "*A massive open online course is* an online course based on wide opportunities of digital, network technologies that allow students to independently master a multimedia educational program in a huge audience. A MOOC consists of substantive and procedural content."
3. The structural-functional model for the formation of digital competence of a future teacher via massive open online courses consists of the following components: *conceptual* (a goal, the methodological foundations for the formation of digital competence, the methodology of an educational system), *content* (the content of the formation is considered the unity of the procedural form, methods, aids and stages), *level* (indicators, levels) and *productive* (identification, formation, the productiveness of the experiment; its educational component and qualification stages of formation). Additionally, it includes creating a digital space for personal/collaborative/online learning; providing flexibility in interaction, cooperation and collaboratively creating knowledge; and implementing pedagogical conditions for organizing effective professional interaction student-content, student-student, student-teacher.

4. The methodology for developing the digital competence of a future teacher via massive open online courses will be effective in a condition of active use of digital, network, virtual, interactive methods, forms and teaching tools based on the content we present.

Description of the main results of the study:

- based on theoretical and methodological analysis, the meaning of the concept of digital competence of a future teacher and its components are determined, its content characteristics are given;

- the content of massive open online courses was determined, and content descriptions were made. Its capabilities in developing the digital competence of a future teacher are determined and MOOC is justified as a tool for the formation process of digital competence;

- a structural and functional model for the formation of digital competence of a future teacher was created via massive open online courses, and its indicators and levels of development have been determined;

- a methodology for developing the digital competence of a future teacher via massive open online courses has been developed and its effectiveness has been tested during an experiment.

Justification of the novelty and importance of the results obtained:

The results have been achieved by the author using methodological principles, the use of theoretical and empirical methods, the logical connection of research objectives and content; with statistical processing of experimental results and have been determined by assumption confirmation.

The validity of the first scientific result is - based on the analysis of domestic and foreign psychological and pedagogical literature related to the research problem, the author's definition of the concept of digital competence of a future teacher was presented, its structure and a description of its content were determined;

The importance of the second scientific result is - based on a comprehensive analysis of foreign literature and Kazakh scientists, based on clarifying the meaning of the concept of massive open online courses, determining its content and methodological structure. The possibilities of creating and using massive open online courses to develop the digital competence of a future teacher is justified.

The third scientific result is explained by the determination of the above-mentioned psychological and pedagogical conditions that contribute to the justification of the research hypothesis, the determination of measurements, indicators, and levels of digital competence of a future teacher via massive open online courses, and the creation of a structural and functional model that increases its effectiveness.

The validity of the fourth scientific result is confirmed by the fact that the content of the methodology for developing the digital competence of a future teacher via massive open online courses has been tested experimentally with the stages of orientation, cognition and qualification and gives positive results. The course "Designing a massive open online course" (audio/video lectures, a set of electronic learning tasks, quizzes, online discussion

forums) to develop the digital competence of a future teacher was one of the first to be uploaded on the online course website of the distance learning center of KazNPU named after Abai, validity of the course was based on the theory of connectivism principles.

The results of the study will be used in the practice of higher and special educational institutions to improve the professional qualifications of future and current teachers, and to develop digital competence.

Compliance with the directions of scientific development or government programs:

The main idea of the study is the educational project "Digital Pedagogy", developed in accordance with the concept of the development of science and higher education in the Republic of Kazakhstan for 2023-2029, approved by the Decree of the Government of the Republic of Kazakhstan in March 2023.

For example, in the concept for the development of preschool, secondary, technical and vocational education in the Republic of Kazakhstan for 2023-2029, the "The concept of Educational Development for 2023-2029" includes competence centers for leveling the gap in the quality of education from the remoteness of the place of residence and according to the social status of access to quality education, school support, competence centers, "digital teacher", summer school, staff rotation, implementation and other necessary mechanisms are indicated. And for this purpose, it is necessary to effectively implement the training of a future digital teacher, to introduce the capabilities of higher pedagogical educational institutions, scientific and methodological research and their results in this direction into practice. Also, the Concept for the Development of Higher Education and Science in the Republic of Kazakhstan for 2023–2029, approved by the Decree of the Government of the Republic of Kazakhstan in March 2023, clearly outlines the priorities for the further development of this area in the medium term. From this point of view, the state plans to pay special attention to the following issues in the field of higher education: "accessibility of higher and postgraduate education; qualified staff; development of infrastructure and digital architecture of higher education institutions; internationalization of higher and postgraduate education; third mission of the university; development of lifelong education; development of a system of continuous education and recognition of the results of non-formal learning; development of a certification system and expansion of coverage of the population with non-formal education; increasing the digital competencies of citizens." And this makes it clear that the importance and necessity of developing the digital architecture of the university and developing the digital competence of future specialists are the tasks set by the state.

Description of the doctoral student's contribution to the preparation of each publication (the author's share of the dissertation is indicated as a percentage of the total text):

1. *Developing future teacher's digital competence via massive open online courses (MOOCs)//* Journal of Social Studies Education Research, 2022:13 (2), p. 170–195. [Electronic resource] Available at: http://www.jsser.org/index.php/jsser/article/view/4197 (Doctoral student's contribution is 80%, co-authors D. Dzhussubaliyeva, B. Moldagali, A. Suleimenova, Sh. Akimbekova 20%). This empirical study presents the results of an experiment conducted to develop the digital competence of 3rd- year students at Abai KazNPU.

2. *Жаппай ашық онлайн курстары (MOOCs) – болашақ педагогтардың цифрлық құзыреттілігін дамыту құралы*// Bulletin of KazNU named after Al-Farabi, "Series of Pedagogical Science", No. 3 (64), 2020, p. 50–60. [Electronic resource].

Available at: https://doi.org/10.26577/JES.2020.v64.i3.05 (Doctoral student's contribution is 80%, co-authors Abdigapbarova U.M., Dzhussubalieva D.M. 20%). The article deals with the possibilities of developing the digital competence of a future teacher via massive open online courses.

3. *Болашақ педагогтарды даярлауда цифрлық құзыреттілік*// Bulletin of the Academy of Pedagogical Sciences of Kazakhstan. No.1. 2020, p. 187–194. (Doctoral student's contribution is 100%.) The article deals with the concepts of general digital competence and the digital competence of a future teacher.

4. *Жаппай ашық онлайн курстарындағы пікір-сайыс форумдары білімді құру құралы*// Bulletin of KazNU, named after Al-Farabi, "Series of Pedagogical Science", No. 3 (72), 2022, p. 63–70. [Electronic resource]: https://doi.org/10.26577/JES.2022.v72.i3.066 (Doctoral student's contribution is 100%.) The article considers the possibilities of discussion forums within the framework of massive open online courses for creating knowledge.

5. *Digital competence in teacher education*// Science and Life of Kazakhstan, Vol. 7. Issue 1, 2019, p. 147–150. (Doctoral student's contribution is 80%; co-authors Dzhussubaliyeva D.M. and Abdigapbarova U.M. 20%). The article considers the concept of digital competence and analyses the importance of forming the digital competence of a future teacher.

6. *Developing future teachers' digital culture: challenges and perspectives*// IEEE European Technology & Engineering Management Summit # citiesr4living, 5-7 March 2020. (Doctoral student's contribution is 80%, co-authors Seri L., Dzhussubaliyeva D. M., Abdigapbarova U. M. 20%).

7. *Цифровая культура в современном образований: проблемы и перспективы*//International electronic scientific and practical conference "Digitalization and formation of digital culture: social and educational aspects". Russia, Astrakhan city, October 30, 2019. p. 17–21. (Doctoral student's contribution is 80%, co-author D. M. Dzhussubalieva 20%). The article considers the concept of digital culture as a component of digital competence and discusses its importance in education.

8. *Педагогикалық цифрлық құзыреттілікті қалыптастырудың жолдары*// Materials of the international scientific-practical internet conference "Issues of the development of the sphere of education, science and culture: theory, practice, and experience", October 30, Nursultan, 2019. p. 35–39. (Doctoral student's contribution is 100%). The article considers the concept of pedagogical digital competence in international studies, discusses the importance of teachers' digital competence in the modern information society, and presents the models for developing digital competence.

9. *Формирование цифровой компетентности - необходимое условие в подготовке будущих учителей //* Materials of the international scientific and practical conference "Modernization of the educational system: trends, problems and perspectives", dedicated to the 70th anniversary of the Doctor of Pedagogical Sciences, Professor S. A. Uzakbayeva on October 18, 2019. (Doctoral student's contribution is 80%, co-author D. M. Dzhussubalieva 20%). The article discusses new trends in the use of digital technologies in education, the development of digital competence of a future teacher in the conditions of the modern information society as a necessary condition for training modern personnel.

10. *Білім беруді цифрландырудың мәселелері мен болашағы*//Collection of materials of the international round table on the theme: "Professional personnel training in the conditions of digitalization of education - problems and prospects" devoted to the 75th anniversary of the doctor of pedagogical sciences, Professor D. M. Dzhussubalieva.

September 21, Almaty, 2022. p. 25-28. (Doctoral student's contribution is 100%). The article deals with a critical analysis of research in the direction of the digitalization of education, problems and their prospects.

11. *Жаппай ашық онлайн курстары (MOOCs) білім берудің жаңа бағыты*// Collection of materials of the international scientific and practical conference "Development of the research culture of teachers in the system of continuous education: experience and innovations", devoted to the 75th anniversary of Professor Sh. T. Taubaeva. - Almaty, February 17, 2023. (Doctoral student's contribution is 100%). The article discusses the possibilities of massive open online courses in the field of education and their influence on the development of digital competence.

12. *MOOCs as new technology in distance learning*// Proceedings of the International Scientific Conference "The development of Kazakhstani linguistics and literary criticism in the context of globalization and digitalization", dedicated to the 175th anniversary of Abay Kunanbayev, a great Kazakh poet and philosopher and the 1150th anniversary of Abu Nasr ibn Muhammad Al- Farabi, a Turkic scientist and philosopher. - Almaty, April 17, 2020. p.334-337. (Doctoral student's contribution is 100%). The article describes the history of the development of massive open online courses in the world and its prospects, ways of integration into the higher education system of Kazakhstan.