ABSTRACT

for the dissertation on the subject of " Methodical bases of training of history of Informatics for future teachers of Informatics in the conditions of digitalization of education" for the degree of Doctor of Philosophy (PhD) in the specialty 6D011100 - Computer Science
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Research subject: Methodical bases of training of history of Informatics for future teachers of Informatics in the conditions of digitalization of education.

Research purpose: Theoretical justification of teaching Computer Science History course in the context of digitalization in education, development of teaching methods.

Research objectives:

− to analyze the current state of teaching Computer Science History to future Computer Science teachers;

− to justify the need to improve teaching future Computer Science teachers in the field of Computer Science History based on digital educational technologies;

− to select the content of Computer Science History course and preparation of flipped learning resource in the context of digitalization in education;

− to develop methods for teaching Computer Science History course to future Computer Science teachers using flipped learning resource, and prove effectiveness of the proposed methods through pedagogical experiment.

Research methods: theoretical analysis of philosophical, social, psychological, pedagogical literature; generalization of pedagogical experience; psychological and pedagogical methods, including observation, interviewing, survey, analysis of educational activities results, method of expert assessment, mathematical and statistical methods.

The main provisions submitted for defense (proven scientific assumptions and other conclusions that are new knowledge):

The theoretical foundation of this research work consists of studying creation and development of Computer Science History, analyzing the state of Computer Science History teaching in training future Computer Science teachers at the pedagogical higher educational institutions, clarifying meaning of the concept of "flipped learning resource" based on theoretical analysis and the need to improve teaching Computer Science History based on digital educational technologies in training future Computer Science teachers.

Computer Science History course not only expands theoretical knowledge of the future Computer Science teachers, but also performs important generalizing, systematizing and clarifying functions in the current context of higher pedagogical education development. Moreover, this course optimally implements interdisciplinary connection with other professional subjects.

The proposed scientifically and theoretically based teaching methods using the selected content of Computer Science History course and flipped learning resource in training future Computer Science teachers in the context of digitalization in education ensures systematic approach to future Computer Science teachers' knowledge in their professional subject training.

The main results of the research:

− the need to improve Computer Science History teaching to future Computer Science teachers based on digital educational technologies was justified;

− the content of Computer Science History course in the context of digitalization in education was selected;

− flipped learning resource for Computer Science History course was prepared;

− methods for teaching Computer Science History course to future Computer Science teachers using flipped learning resource were developed.

Novelty and significance of the results obtained:

The first result, creation and development of Computer Science History in Kazakhstan was studied, analysis of the current state of Computer Science History course in pedagogical higher educational institutions was performed, the need to improve teaching Computer Science History based on digital educational technologies in training future Computer Science teachers was justified.

The second result, the content of Computer Science History course in the context of digitalization in education was selected based on new didactic principles.

The third result, flipped learning resource for teaching Computer Science History course in Kazakh language was created for the first time. The system of leveled tasks offered to students in the flipped learning resource allows organizing an objective assessment of their knowledge during the course and outside of classroom.

The fourth result, methods for teaching Computer Science History course were developed using flipped learning resource in the context of digitalization in education. Effectiveness of the developed methods was proved through pedagogical experiment.

Conformity of science to the directions of development or state programs:

The concept of education development of the Republic of Kazakhstan for 2022-2026 (November 24, 2022 No. 941), State of the Nation Address by the President of the Republic of Kazakhstan Nursultan Nazarbayev, New opportunities under the fourth industrial revolution (January 10, 2018), State Mandatory Standards of Higher and Postgraduate Education (July 20, 2022 № 2), State mandatory standards of preschool education and training, primary, basic secondary and general secondary, technical and vocational, post-secondary education (August 3, 2022 No. 348), President of Kazakhstan Kassym-Jomart Tokayev's State of the Nation Address. Kazakhstan in a new reality: time for action (September 1, 2020), State of the Nation Address by President of the Republic of Kazakhstan Kassym-Jomart Tokayev. Unity of the people and systemic reforms are a solid foundation for the nation's prosperity (July 1, 2021), The concept of development of the information and communication technologies and digital sphere (December 30, 2021, No. 961).

Personal contribution of the author in achieving the scientific result (measured contribution of the author of the dissertation as a percentage of the total publication):

1. Training future computer science teachers in the context of digitalisation based on the "History of informatics" course //World Journal on Educational Technology. – 2021 – Vol. 13. – Iss. 3. – P. 354-369. (Sub-authors: Oshanova, N.T., Kazhiakparova, Z.S., Salbyrova, M.T., and Sharmukhanbet, S.R. – 40%, Bukanova A.K. – 60%);

2. Болашақ информатика мұғалімдерін дайындауда метапәндік оқытуды пайдаланудың маңыздылығы //Abai KazNPU Khabarshy, series "Physical and mathematical sciences". – Almaty. – 2019. -№1(65). B. 291-295. (Sub-authors: Oshanova N.T. – 40%, Bukanova A.K. – 60%);

3. Оқытуда метапәндік жүйені пайдаланудың өзектілігі //Abai KazNU Khabarshy, series "Pedagogical Sciences". – Almaty. – 2019. – No. 1 (61). 273-277. (Sub-authors: Oshanova N.T. – 40%, Bukanova A.K. – 60%);

4. Оқу үдерісінде қолданылатын ментальды карталар //Science and life of Kazakhstan, "Pedagogy series". – Nursultan Nazarbayev. – 2020. – № 10/2 (142). B. 259-263. (Sub-authors: Oshanova N.T. – 40%, Bukanova A.K. – 60%);

5. О содержании курса «история информатики» для будущих учителей информатики //KazNPU named after Abai Khabarshy, series “Physical and mathematical sciences”. – Almaty. – 2022. – №3(79). B. (Sub-authors: Pak N.I. – 40%, Bukanova A.K. – 60%);

6. О содержании курса «история информатики» для будущих учителей информатики //Materials of the III International Conference "Informatization of Education and Methodology of Electronic Education". – Krasnoyarsk: SFU- 2019 - S.267-272. (Sub-authors: Oshanov N.T. – 40%, Bukanova A.K. – 60%);

7. Трансформационный подход к обучению «истории информатики» в условиях цифровизации //Materials of the II International Russian-Kazakh Research Seminar “Digital University: International globalization of pedagogical education” - Krasnoyarsk - 2019 - S.21-29. (In the company: Bidaibekov E.I., Pak N.I., Oshanova N.T. – 50%, Bukanova A.K. – 50%);

8. The development of the methodical system of “history of informatics” course in pedagogical universities //International Scientific Conference “ICEST-2020: Economic and Social Trends for Sustainability of Modern Society”. – Saint-Petersburg – Krasnoyarsk. – 2020. – P.994-1002. (In the company: N. I. Pak, E. Y. Bidaibekov, N. T. Oshanova. – 50%, Bukanova A.K. – 50%);

9. Болашақ информатика мұғалімдерін даярлауда «Информатика тарихын» оқытуда әртүрлі әдістерді қолдану //”Continuous education in the interests of sustainable development: new challenges. Stage 1”, materials of the International Scientific and Practical Conference. - Nur-Sultan - 2019. B. 99-101. (Sub-authors: Oshanova N.T. – 40%, Bukanova A.K. – 60%);

10. Болашақ информатика мұғалімдерінің «Информатика тарихы» курсын оқытуда тарихи-ақпараттық құзырлылықтарын қалыптастыру //Materials of the IX International Scientific and Methodological Conference “Mathematical Modeling and Information Technologies in Education and Science” - Almaty- 2020 - B. 382-385. (Sub-authors: Oshanova N.T. – 40%, Bukanova A.K. – 60%).