

ANNOTATION

for the thesis **“Formation of students' cognitive competence on the basis of the e-learning education system”** by **Kassymova Gulzhaina Kuralbaevna** to obtain the degree of Doctor of Philosophy (PhD) on specialty “6D010300 – Pedagogy and Psychology”.

The relevance of the research. A new stage in the informatization of education in the 21st century is associated with the introduction of an e-learning system. From this perspective, the Minister of Education and Science of the Republic of Kazakhstan Askhat Aimagambetov notes: “As part of higher education, we will introduce a mandatory distance learning module. Our future lecturers studying at the university must be proficient in all these technologies, methods and competencies.” The goal of the state program for the development of education and science of the Republic of Kazakhstan for 2020-2025 is to educate a person focused on universal human values, the development and improvement of the competitiveness of Kazakhstani education and science in the context of globalization. These goals are reflected in the Bologna Declaration, in which the change in educational programs should be based on key competencies and competences.

Analysis of the research of foreign and domestic scientists allows us to state that the formation of competences is carried out taking into account various approaches: L. S. Vygotsky, V. V. Davydov, L. S. Rubinstein, A.V. Khutorskoy, P. Ya. Halperin, K.B. Zharykhbaev, J. Namazbaeva, O.S. Sangilbaev, M.R. Arpentieva et al. considered the formation of competencies based on the study of the psychological foundations of practice-oriented learning, while scientists B. Kenzhebekov, G.S. Kudaibergenova, G. Zh. Menlibekova, N. Flindt, M.B. Triyono, H. Theelen, H. Schahl, O.V. Potanin, Sh.T. Taubaeva, A.N. Kosherbaeva, N.N. Khan, M.A. Absatova et al. investigated competence and competencies in the aspect of cognitive and professional pedagogical activity.

Currently, the scientific value is the formation of the cognitive competence of students by means of modern technologies, which is e-learning training as one of the most relevant in the face of modern challenges. In this regard, the works of scientists: B.S. Akhmetov, N.K. Ashirbaev, T.O. Balykhbaev, M.A. Bektemesov, E.I. Bidaibekov, B. Bostanov, S.G. Grigoriev, V.V. Grinshkun, B.D. Sydykov, S.M. Kenesbaev, O.A. Krivosheev, A.A. Kuznetsov, E.U. Medeuov, G.K. Nurgalieva, Zh.A. Makatova, I. V. Robert, B. Sendov, S. Senov, B. Hunter, E. Henner and others are significant on the informatization of education and related e-learning.

At the same time, it should be stated that there is a contradiction between the objective need for the formation of students' cognitive competence on the basis of the e-learning system and the current level of scientific knowledge. This is facilitated by a number of disadvantages:

- Significant lack, discrepancy between the content and technology of teaching students to the requirements of modern society;
- Inconsistency of the content, methods and means of teaching based on the e-learning system;

- Significant differences in the nature and methods of cognitive activity, caused by the violation of the stage-by-stage formation of cognitive competence, poor readiness of students to learn online;
- Reliance only on traditional forms of education does not ensure the formation of key competences of future teachers based on the e-learning training system;
- Lack of a system of criteria and indicators to assess the level of formation of students' cognitive competence.

The elimination of the above shortcomings causes a number of contradictions, the solution of which determined the topic of the dissertation research: **"Formation of students' cognitive competence on the basis of the e-learning learning education system"**.

The purpose of the research is the theoretical substantiation and development of a methodology for the formation of students' cognitive competence on the basis of the e-learning education system.

The object of the research is the educational process of the university on the basis of the e-learning education system.

The subject of the research is the formation of students' cognitive competence on the basis of the e-learning education system.

Research hypothesis - the process of teaching students on the basis of the e-learning education system will be **effective if** the components, levels, criteria of students' cognitive competence on the basis of the e-learning education system are determined, the mechanism of its formation is determined, then the purposeful formation of the content components of cognitive competence will increase the efficiency (success) of the e-learning education system, **because**, as a result of clarifying the concept of "cognitive competence", its structural components, levels, criteria, mechanisms of its formation, the structural-meaningful model of the formation of students' cognitive competence will be substantiated and experimentally tested on the basis of the e-learning education system.

In accordance with the purpose, object, subject and hypothesis, **the following research tasks** are determined:

- to determine the theoretical foundations and methodological approaches for the formation of cognitive competence of students based on the e-learning education system,
- to substantiate the didactic capabilities of mental intelligences and problem based learning in the formation of students' cognitive competence;
- to develop a structural-meaningful model of the formation of students' cognitive competence in the system of e-learning education;
- to test experimentally the effectiveness of the developed methodology for the formation of students' cognitive competence based on the e-learning learning system.

Sources of research: international legal documents, official documents of the Republic of Kazakhstan in terms of the problem under consideration; works of scientists on the topic of research, psychological and pedagogical materials published in collections of international and republican scientific and practical conferences, dictionaries, reference books, encyclopedias, scientific articles published in the main

collections of the website (Clarivate Analytics and Scopus) and on the web pages of the Internet.

Research methods: selection, analysis, synthesis, systematization of materials on the research topic; theoretical analysis of psychological and pedagogical, educational and methodological literature; comparison, modeling, psychological and pedagogical diagnostics, mathematical methods of data processing.

Research stages:

At the first stage (2017-2018), the scientific apparatus was determined, theoretical research was carried out on pedagogical and psychological problems in higher education, a review of foreign and domestic literature on the study of the formation of students' cognitive competence on the basis of e-learning education system.

At the second stage (2018-2019), empirical research, systematic and structural analysis of the collected material, generalization and description of its results were carried out. During this period, an empirical basis for the formation of cognitive competence was developed and substantiated on the basis of Abai Kazakh National Pedagogical University and Yogyakarta State University in Indonesia.

At the third stage (2019-2020), diagnostics of the formation of cognitive competence of students of Abai Kazakh National Pedagogical University, studying in the specialty "Pedagogy and Psychology" and students of mathematical faculties of Yogyakarta State University, was carried out; the research hypothesis was refined; articles were published on the research problem.

Scientific novelty and theoretical significance of the research:

- the theoretical foundations and methodological approaches to the formation of cognitive competence of students based on the e-learning education system have been determined;
- the didactic capabilities of mental intelligence and problem based learning in the formation of cognitive competence of students were substantiated;
- the definition has been clarified and a structural-meaningful model of the formation of students' cognitive competence has been developed on the basis of the e-learning education system;
- the effectiveness of the proposed methodology for the formation of cognitive competence of students based on the e-learning education system was experimentally tested.

The practical significance of the study:

- 1) program "Development of cognitive abilities by means of electronic learning".
- 2) project of the international scientific and practical Internet conference "Actual problems of science" (<https://portal.issn.org/resource/ISSN/2707-9481#>).
- 3) "Scenarios of monitoring and pedagogical measurements" aimed at developing students' cognitive skills (Monitoring and pedagogical measurements. Applied Learning Scenarios. M 81. Almaty, Kazakhstan: Abai Kazakh National Pedagogical University, 2020. - Pages 114. ISBN 978-601-298- 812-3).

Provisions for Defense

"E-learning education system" is interpreted in different contexts and characterized by the use of communication and digital technologies focused on web-based student learning.

Cognitive competence is the ability of students to effectively plan and organize their activities, acquire new knowledge, think critically and analyze problem-solving skills based on an e-learning system.

The structural-meaningful model is designed to form the cognitive competence of students based on the e-learning system, which has a phased nature.

The reliability of the research (accuracy, reliability) is ensured by the validity of the initial theoretical and methodological provisions and the practical work of the author, the use of a wide range of literary sources, the logic of theoretical and experimental research.

Approbation and implementation of the main results. The main results of the research have been tested and implemented in practice through the publication of articles and reports, and their discussion at international scientific-theoretical and practical conferences, published in the Scopus database, Clarivate Analytics (Web of Science), materials of international and Kazakhstani journals. 69 articles were published from 2017 to 2020.

In the conclusion of the dissertation, the results of the research were summed up, confirming the validity of the hypothesis put forward and the solution of the tasks; the prospects were identified for further research.

The structure of the thesis. The dissertation consists of a list of normative documents on education, a glossary, abbreviations, an introduction, three chapters, a conclusion, a list of sources used.

In the first section "*Theoretical and methodological foundations of the formation of students' cognitive competence on the basis of the e-learning education system*", the evolution of the e-learning education system in the context of informatization of education is studied, methodological approaches to the problem were analyzed.

In the second section "*Didactic foundations for the formation of students' cognitive competence on the basis of the e-learning education system*", the possibilities of mental intelligences in the formation of students' cognitive competence, problem learning are determined and a structural-бүгінгі таңда model is developed.

The third section "*The content of experimental work on the formation of students' cognitive competence on the basis of the e-learning education system*" presents an analysis of educational programs "Pedagogy and psychology in the direction of the problem, describes the methodology for the formation of students' cognitive competence in the e-learning system, describes the results of the experiment and recommendations given.