

ANNOTATION
to the dissertation of Karlyga Berikovna Mukhametkaliyeva
submitted for the degree of Doctor of Philosophy (PhD)
in the educational program “8D01601 – History”
on the topic “The history of enlightenment and education in the
Semipalatinsk Governorate in the 1920s: content and school teaching
methodology”

Research topic: The history of enlightenment and education in the Semipalatinsk Governorate in the 1920s: content and school teaching methodology.

Purpose of the dissertation research: to investigate the history of enlightenment and education in the Semipalatinsk Governorate in the 1920s and to develop a methodology for teaching this topic in the History of Kazakhstan course using artificial intelligence (AI).

Research objectives:

- to determine the degree to which the history of enlightenment and education in the Semipalatinsk Governorate in the 1920s has been studied in domestic and international research;
- to systematize sources on the history of enlightenment and education in the region and form the source base of the study;
- to substantiate the theoretical and methodological foundations for studying the history of enlightenment and education;
- to trace the formation of the education system in the Semipalatinsk Governorate, the organization of the campaign to eliminate illiteracy, and the development of the school network;
- to reveal the contribution of the Kazakh intelligentsia and educators to the development of education and enlightenment;
- to develop AI-based learning tasks on the history of enlightenment and education in the Semipalatinsk governorate for use in the school history of Kazakhstan course and to determine the effectiveness of their application;
- to test the methodology in educational institutions and develop scientific and methodological recommendations.

Research methods: In the course of the research, the following methods were applied comprehensively:

theoretical methods: analysis of historical sources and scholarly literature; comparative-historical, problem-chronological, and retrospective methods; systematization and typologization of data. The methodological basis comprises the principles of historicism, objectivity, and consistency, as well as regional, anthropological, microhistorical, and axiological approaches.

empirical methods: pedagogical observation, surveys of teachers and learners using Google Forms, analysis of reflection, the author's diagnostic testing (pre-test/post-test), Student Voice interviews, and the Likert scale.

applied methods: testing of the instructional module; a pedagogical experiment measuring the results of two groups before and after instruction; data processing in IBM SPSS Statistics using the Mann–Whitney U test, percentage indicators, and the Brooks–Klinkas effectiveness coefficient. The study involved 65 learners in the experimental group and 64 in the control group from three educational institutions in Semey: Shakarim Gymnasium No. 5, General Secondary School No. 35, and the Higher College of IT and New Technologies. The same tasks and assessment criteria were used in compliance with ethical requirements.

Main provisions submitted for defense (proven scientific hypotheses and other conclusions constituting new knowledge): if archival materials, pedagogical techniques, and artificial intelligence tools are applied within learning tasks in History of Kazakhstan lessons, learners' critical thinking and research skills develop, while their classroom engagement and level of mastery of the historical topic increase.

1. The principles of historicism, objectivity, and consistency, together with regional, anthropological, microhistorical, and axiological approaches, make it possible to study education in the governorate in relation to official decisions and local conditions. The source base consists of archival and statistical documents, regulatory acts, periodicals, photographic materials, and scholarly research.

2. In the 1920s, amid social and political transformations in the region, a new system of education governance was taking shape, the network of schools and literacy centers expanded, and new approaches to teacher training emerged. Alash figures addressed the development of the national school, education in the native language, and the creation of educational literature.

3. The regional features of enlightenment can be traced through the activities of M. Maldybayev, T. Zhomartbayuly, N. Mirshanov, N. Kulzhanova, T. Musapirov, and other educators who participated in organizing school education, preparing educational literature, and eliminating illiteracy. Teachers' personal files contain information about their education and professional training, appointments, official transfers, and working conditions.

4. The methodological model combines archival materials, research tasks, local-history content, and digital tools. AI is used to search for, clarify, and visualize information, while the analysis of historical sources, identification of cause-and-effect relationships, and formulation of conclusions are carried out independently by learners. The effectiveness of the model was assessed by comparing the results of the experimental and control groups.

Description of the main research results:

– the degree to which the topic has been studied in domestic and international historiography was determined;

- archival, regulatory, and statistical sources, periodical materials, and photographic documents were systematized; materials and documents from archival files from the central and regional archives of Kazakhstan and the Russian State Archive of Socio-Political History were introduced into scholarly circulation;

- the methodological foundations of research and teaching were substantiated: historical analysis was supplemented by regional, anthropological, and microhistorical approaches; the methodological component is focused on learners' independent research using AI tools;

- the formation of the education system, the organization of work to eliminate illiteracy, and the expansion of the school network were studied; it was established that the growth in the number of schools was accompanied by shortages of teaching staff, premises, educational literature, and equipment;

- the contribution of the Kazakh intelligentsia, representatives of the Alash movement, and local educators to the development of the national school, the preparation of educational literature, and teacher training was revealed;

- a methodological model was developed, combining archival, statistical, visual, and local-history materials with research tasks and the use of AI tools;

- the effectiveness of the methodology was confirmed: the average score of the experimental group increased from 7.03 to 7.78 points (58.6–64.8%), while that of the control group increased from 6.88 to 7.37 points (57.3–61.4%); the gains were 6.2 and 4.1 percentage points, respectively. Before instruction there were no statistically significant differences between the groups ($p=0.867$), whereas after instruction a significant difference was identified ($p=0.016$).

Substantiation of the novelty, theoretical and practical significance of the results obtained:

The scientific novelty and theoretical significance of the study are determined by a comprehensive examination of the history of enlightenment and education in the Semipalatinsk Governorate in the 1920s within the governorate-level framework. The distinctive features of school-network development in the districts, the organization of illiteracy elimination, and teacher training were identified; a number of educators' personal files were introduced into scholarly circulation for the first time, and the educational activities of local teachers were clarified. The contribution of representatives of the Alash movement and the Kazakh intelligentsia to the development of the national school, instruction in the native language, and the creation of educational literature was revealed. In adapting the historical findings for school teaching, archival sources, research and problem-based tasks, and the AI tools Hailuo AI, Gemini Notebook, Padlet AI, and MyLens AI were integrated into a single methodological model, whose effectiveness was tested in a pedagogical experiment.

- **practical significance:** the author's module and tasks incorporating AI tools can be used in History of Kazakhstan and local-history lessons, elective courses, teacher education, and professional development.

Compliance with the directions of scientific development or state programs:

The methodological component takes into account the requirements of the State Compulsory Education Standards (Order No. 348 of the Minister of Education of the Republic of Kazakhstan dated 3 August 2022) and the model curricula (Order No. 399 dated 16 September 2022) concerning research activity, critical thinking, and educational technologies.

The use of AI is aligned with the Concept for the Development of Artificial Intelligence for 2024–2029 (Resolution No. 592 of the Government of the Republic of Kazakhstan dated 24 July 2024) and the Conceptual Framework for the Introduction of AI into Secondary, Technical and Vocational, and Post-Secondary Education for 2025–2029.

The work is related to Decree No. 1151 of the President of the Republic of Kazakhstan dated 6 January 2026, “On Declaring the Year of Digitalization and Artificial Intelligence.” The provisions of UNESCO Education 2030 and documents on AI in education were taken into account in developing digital competencies and the responsible use of technology.

Description of the doctoral candidate’s contribution to the preparation of each publication:

Based on the research results, 6 articles were published in journals approved by the Committee for Quality Assurance in Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan:

1. «1920-шы жылдардағы Семей өңіріндегі мектептік білім беру жүйесінің тарихы: жетістіктері мен қайшылықтары». Абай атындағы ҚазҰПУ Хабаршысы. Тарих және әлеуметтік-саяси ғылымдар сериясы. – 2024. – № 2(81). – Б. 96–110. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 70% (analysis of scholarly and historical sources, preparation of the main text and conclusions). Contributions of the co-authors: B.Zh. Atantayeva – 20% (analysis of the topic, organization of the research, development of methodological approaches); G.A. Abenova – 10% (systematization of scholarly literature, editorial preparation of the text).

2. «1920 жылдардағы Семей өңіріндегі сауатсыздыққа қарсы күрес: мәселелері мен нәтижесі». Әл-Фараби атындағы ҚазҰУ Хабаршысы. Тарих сериясы. – 2024. – № 2(113). – Б. 95–110. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 70% (analysis of sources and statistical materials, preparation of the main text and conclusions). Contributions of the co-authors: B.Zh. Atantayeva – 20% (analysis of the topic, organization of the research, synthesis of the results); G.A. Abenova – 10% (review of scholarly literature, editorial preparation of the text).

3. «Білім берудегі өзгерістер: 1920 жылдардағы Семей өңіріндегі мектеп жүйесінің дамуы мен сауатсыздыққа қарсы күрес». Edu.e-history.kz. – 2025. – № 12(1). – Б. 49–65. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 70% (analysis of sources, preparation of the analytical section and conclusions). Contributions of the co-authors: B.Zh. Atantayeva – 20% (analysis of the topic,

organization of the research, development of the article structure); G.A. Abenova – 10% (systematization of materials, editorial processing of the text).

4. «1920 жылдардағы Семей өңіріндегі ағарту ісі мен білім беру жүйесін оқытуда интерактивті әдістерді қолдану». Абай атындағы ҚазҰПУ Хабаршысы. Тарих және әлеуметтік-саяси ғылымдар сериясы. – 2026. – № 1(88). – Б. 219–234. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 70% (analysis of historical and pedagogical materials, development of learning tasks, preparation of the main text). Contributions of the co-authors: B.Zh. Atantayeva – 20% (analysis of the topic, organization of the research, development of the methodology); R.D. Akhmetova – 10% (analysis of pedagogical techniques, editorial preparation of the methodological section).

5. “The Development of Pedagogical Education in the Semipalatinsk Region in the 1920s: Problems and Achievements of the Kazakh Pedagogical College”. Eurasian Journal of History. – 2026. – Vol. 31. – No. 1(121). – P. 157–169. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 70% (analysis of historical sources, preparation of the main text and conclusions). Contributions of the co-authors: B.Zh. Atantayeva – 20% (analysis of the topic, organization of the research, methodological substantiation); A. Adilzhanov – 10% (preparation and editorial processing of the English-language text).

6. “Artificial Intelligence in History Teaching: The Results of a Pedagogical Experiment”. Yassawi Journal of Education Studies. – 2026. – Vol. 139. – No. 1. – P. 99–109. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 70% (development of experimental tasks, conducting the study, processing the results, preparation of the text). Contributions of the co-authors: B.Zh. Atantayeva – 20% (organization of the research, development of the experiment methodology, analysis of the results); Y.O. Nepomyashcha – 10% (processing of experimental data, editorial preparation of the article).

Based on the research results, 2 articles were published in other scholarly publications of the Republic of Kazakhstan:

1. «Семей губерниясындағы ауыл мектептерінің мәселелері және оларды шешу жолдары: 1920-жылдар тәжірибесі». Шәкәрім университетінің хабаршысы. Тарих ғылымдары сериясы. – 2024. – № 1(1). – Б. 46–60. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 80% (analysis of scholarly and historical sources, preparation of the main text and conclusions). Contribution of co-author T.A. Kariyeva – 20% (analysis of the topic, synthesis of the results, scientific editing of the article).

2. «Семей қаласындағы ғылыми және ағарту мекемелері мен қоғамдардың қызметі». Шәкәрім университетінің хабаршысы. Тарих ғылымдары сериясы. – 2024. – № 2(2). – Б. 114–126. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 30% (analysis of selected materials, preparation of individual text fragments). Contributions of the co-authors: Z.K. Mukatayeva – 40% (development of the research concept, analysis of the topic, formulation of conclusions); T.A. Kariyeva –

30% (analysis of scholarly literature, systematization of materials, preparation of the main part of the text).

Three articles were published in the proceedings of international scientific and practical conferences:

1. «1920-шы жылдары Семей өңіріндегі ересек тұрғындар арасында сауатсыздықты жоюдың салдары». Шоқан оқулары – 28: Жаңа ғылыми парадигма: халықаралық ғылыми-практикалық конференция материалдары. – Көкшетау, 2024. – Б. 322–326. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 90% (analysis of scholarly and historical sources, preparation of the text and conclusions). Contribution of co-author B.Zh. Atantayeva – 10% (analysis of the topic, scientific supervision of the research).

2. «1920-жылдардағы Семей өңірінің оқу-ағарту тарихын оқытуда ЖИ: педагогикалық эксперимент». «NextGen ғылымы жастар көзқарасымен: жасанды интеллект пен пәнаралық шешімдер» атты XVII халықаралық ғылыми-тәжірибелік конференция материалдары. – Семей, 2026. – Т. 2. – Б. 197–200. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 70% (development of experimental tasks, conducting the study, analysis of the results, preparation of the text). Contributions of the co-authors: B.Zh. Atantayeva – 20% (organization of the research, methodological support, analysis of the results); A.E. Berikhanova – 10% (analysis of the pedagogical component, methodological editing of the material).

3. «1920-шы жылдардағы Семей өңіріндегі ағарту ісі тарихын оқытуда ЖИ-бейне мен мәтіндік материалдың оқу нәтижесіне әсері: педагогикалық эксперимент». «AIU – 2026: Жасанды интеллект және цифрлық трансформация – жастар ғылымын дамыту векторы» халықаралық ғылыми-практикалық конференция материалдары. – Астана, 2026. – Б. 1659–1664. Contribution of doctoral candidate K.B. Mukhametkaliyeva – 100% (formulation of the research task, conducting the experiment, processing the results, preparation of the text and conclusions).