ANNOTATION

for the dissertation of Adlet Mauletovich Kulbekov on the topic 'Formation of Chemistry teachers' readiness to teach children with special educational needs' for the degree of Doctor of Philosophy (PhD) in the specialty 8D01540 - 'Chemistry'

Topic of the research: "Formation of Chemistry teachers' readiness to teach children with special educational needs"

Purpose of the study: theoretical substantiation and experimental verification of pedagogical conditions to ensure the formation of Chemistry teachers' readiness to teach children with special educational needs.

Objectives of the research:

- To substantiate importance to form the readiness of Chemistry teachers to work with children with special educational needs and analyze the key conceptual approaches of psychological and pedagogical science related to this problem;
- To study the current state of development of inclusive education in Kazakhstan and determine to what extent future Chemistry teachers are ready to work in the conditions of teaching children with special educational needs;
- Define the content of the concept of "readiness" as a result of professional training and propose a model for its formation among future Chemistry teachers;
- To test the developed model and evaluate its effectiveness when implemented in the educational process;
- To experimentally develop and implement a model for the formation of future Chemistry teachers' readiness to work with children with disabilities, indicating its place in the general structure of specialist training in educational process of Pavlodar State Pedagogical University;
- To create, test and implement a set of methodological materials on Chemistry for children with special educational needs, including creative, research and inventive tasks in schools No. 19 and No. 48 in Pavlodar, as well as in the special boarding school No. 7 of the Pavlodar region;

Research methods:

To solve the set tasks and test the research hypothesis, a comprehensive methodology was used that combines theoretical and empirical approaches. The theoretical part of the work included the analysis and synthesis of scientific publications, the study of philosophical, educational, methodological and normative literature, generalization of pedagogical experience, as well as modeling. The empirical level of the research included the use of expert assessments, observations, questionnaires, testing, analysis of students' learning activities, conducting a pedagogical experiment and mathematical and statistical processing of the data obtained.

Main provisions submitted for defense include:

1. Determining the readiness of Chemistry teachers to teach children with special educational needs as a professionally significant quality consisting of three components: motivational, including a value-based attitude to the chosen profession and an inclusive environment, meaningful, including the necessary

amount of knowledge on the methodology of teaching Chemistry and procedural, including a complex practical skills required in teaching.

2. A model for the formation of Chemistry teachers' readiness, which provides integrated use of the material and technical base of an educational organization, introduction of modern educational technologies, use of human resources and creation of necessary pedagogical conditions to effectively teach children with special educational needs.

3. The results of experimental pedagogical work confirming the effectiveness of the proposed model and its practical applicability in a real educational environment.

Description of the main results

Based on the results of experimental work, taking into account the analysis of educational and methodological support for students with special educational needs, the concept of "readiness of Chemistry teachers to teach children with special educational needs" was clarified, a pedagogical design and a model for the formation of the quality under study were developed, and a methodology was created that has been proven in practice as part of experimental work. The developed advanced training course for Chemistry teachers in Braille on the topic "Teacher training for inclusive education: teaching the blind and visually impaired on a Braille machine", a methodological kit for hearing-impaired children with a D.I. table, has been tested and implemented. Mendeleyev, a methodological guide for grades 7-8 in Chemistry that includes creative, research and inventive tasks, printed in Braille and other materials that include tasks for IS (individual study) and TSIS (teacher supervised independent study) as part of the course "Teaching structural and substantive sections of Chemistry at school", expanding knowledge in the field of teaching children with disabilities.

Substantiation of the novelty and importance of the obtained results:

Novelty of the research is manifested in clarifying the concept of "readiness of Chemistry teachers to teach children with special educational needs," developing a pedagogical design and model for the formation of this quality, as well as creating a methodology that has been proven in practice as part of experimental work.

The practical significance of the research lies in the development of a system for diagnosing the level of students' readiness, the creation and testing of educational materials and manuals aimed at forming the readiness of Chemistry teachers to work with children with special educational needs. The theoretical conclusions and practical recommendations can be used to improve the effectiveness of the professional training of future Chemistry teachers.

The first result is new, the importance of forming the readiness of Chemistry teachers to work with children with special educational needs is substantiated, and the key conceptual approaches of psychological and pedagogical science related to this problem are analyzed.

The second result is new, the current state of development of inclusive education in Kazakhstan has been studied and it has been determined to what

extent future Chemistry teachers are ready to work in the conditions of teaching children with special educational needs.

The third result is new, the content of the concept of "readiness" is defined as a professionally significant quality and a model for its formation in future Chemistry teachers is proposed.

The fourth result is new, the developed model has been tested and its effectiveness in the implementation of the educational process has been evaluated.

The fifth result is a new, experimental way of developing and introducing a model for the formation of future Chemistry teachers' readiness to work with children with disabilities into the educational process of Pavlodar State Pedagogical University, its place in the general structure of specialist training is indicated.

The sixth result is new, a set of methodological materials on Chemistry for children with special educational needs, including creative, research and inventive tasks was created, tested and implemented in schools No. 19 and No. 48 in Pavlodar, as well as in the special boarding school No. 7 of the Pavlodar region.

Compliance with scientific development directions or government programs.

The Law of the Republic of Kazakhstan dated July 11, 2002 No. 343-II On social, medical and pedagogical correctional support for children with disabilities (with amendments and additions as of 07/01/2023), https://online.zakon.kz/Document/?doc_id=1032168&show_di=1

On approval of the National Plan for Ensuring the Rights and Improving the Quality of Life of Persons with Disabilities in Kazakhstan

https://adilet.zan.kz/rus/docs/P1900000326

On the Approval of the National Project "Quality Education "Educated Nation". Resolution of the Government of the Republic of Kazakhstan dated 12.10.2021 No. 726

https://adilet.zan.kz/rus/docs/P2100000726

Typical qualification characteristics of positions of teaching staff and persons equated to them. By Order of the Minister of Education and Science of the Republic of Kazakhstan dated July 13, 2009 No. 338. It was registered with the Ministry of Justice of the Republic of Kazakhstan on August 17, 2009, No. 5750.

https://adilet.zan.kz/rus/docs/V090005750

Description of the contribution (the share must be at least 65 percent) of the doctoral student to the preparation of each publication:

The main conclusions, theoretical and practical results on the research topic are presented at international and national conferences: "XLIIV International Scientific and Practical Internet Conference "Problems and Prospects of modern science development in Europe and Asia" (Pereyaslav, 2022),"XLIX International Scientific and Practical Conference: Innovative Science", Moscow, 2022,"LXXVI International Scientific and Practical Conference: Experimental and Theoretical Research in Modern Science", (Novosibirsk, 2022.), "LXX International Scientific and Practical Conference: Medicine, Biology and Chemistry", (Moscow, 2024), "LXXXVI International Scientific and Practical Conference: Modern Psychology

and Pedagogy: Problems and Solutions" (Novosibirsk, 2024), "XLVII International Multidisciplinary Conference "Innovations and Trends of State-of-the-Art Science" (Rotterdam, 2024)

In total, 11 works have been published based on the results of the dissertation, 1 article in scientific journals with an impact factor included in the Scopus database - Journal of Theoretical and Philosophical psychology (Q1, perc.85%), 4 articles in scientific publications included in the list of the Committee for Quality Assurance in Education of the Ministry of Education and Science of the Republic of Kazakhstan, 4 – articles in collections of materials of international scientific and practical conferences. Teaching aids-2 and author's certificates - 3

Publications:

1. An Innovative Methodological/Pedagogical Approach to the Comprehension of Hegel's Legacy. Journal of Theoretical and Philosophical Psychology. Vol. 44 No.1, (2024) 17–29. https://doi.org/10.1037/teo0000235 (В соавторстве с Tsoy, V. I., Baturin, V. S., Kairbekova, B. D., Tsoy, R. R. , 70%)

2. The Functional Mechanism for Ensuring the Balance of Educational and Professional Activities. Bulletin of Toraighyrov University. Pedagogical Series, No. 1, 2022, pp. 384-399. https://doi.org/10.48081/UIUJ2411 (co-authored with V. N.Tsoi, A.A. Kirkhmaer, R. M.Valieva, M.A.Yelubai 70%)

3. Functional Tools of System Thinking of Professionals. Bulletin of Toraighyrov University. Pedagogical Series, No. 1, 2023, pp.278-290. https://doi.org/10.48081/dCdW7613 (co-authored with V. N.Tsoi, A.A. Kirkhmaer, R. M.Valieva, M.A.Yelubai 70%)

4. Professional Orientation and Personal Qualities of Future Teachers as a Component of their Inclusive Competence. Bulletin of Toraighyrov University. Pedagogical Series. No. 4, 2024, pp. 350-360. https://doi.org/10.48081/UGBP2132 (Co-authored with Z.R.Shuakbayeva, B.K. Ospanova, N.K.Sultanova, 80%)

5. Determination of the Readiness of Chemistry Teachers for Inclusive Education in General Education Schools of Pavlodar Region. Bulletin of KazNPU named after Abai. Series "Pedagogical Sciences", publication 86 No. 2, 2025, pp. 52-68, https://doi.org/10.51889/2959-5762.2025.86.2.005 (S. A. Nukhuly, R. Zh.Aubakirova, A. T. Tashekova 80%)

6. Logical Prerequisites and Innovative Means of Pedagogical Education and Activity. Materials of the XLIV International Scientific and Practical Internet Conference "Problems and Prospects of Development of Modern Science in Europe and Asia" // Collection of scientific papers. - Pereyaslav, 2022 - 180 p. - pp.70-72. http://conferences.neasmo.org.ua / (co-authored with B.D.Kairbekova, M. Kairbekova. G. Zhanalinov. 85%)

7. Engineering and Pedagogical Approach in Modern Education Scientific Forum: Innovative Science: Collection of articles based on the materials of the XLIX International Scientific and Practical Conference – No. 3(49). - Moscow: Publishing House of the ICNO, 2022. - 72 p. - S9-14. http://nauchforum.ru (co-authored with B.D.Kairbekova, M. T.Turdiyev 90%)

8. Means of Formation of Professional Competence of Engineering and Pedagogical Specialists. Experimental and Theoretical Research in Modern

Science / Collection of articles based on the materials of the LXXVI International Scientific and Practical Conference. No. 4 (69). Novosibirsk: SibAK Publishing House, 2022, pp. 29-33. www.sibac.info (100%)

9. Current Trends in the Preparation of Chemistry Teachers for Inclusive Education in Kazakhstan Scientific Forum: Medicine, Biology and Chemistry: collection of articles based on the materials of the LXX International Scientific and Practical Conf..– No. 7(70). Moscow: Publishing House of the ICNO, 2024. pp.9-13 http://nauchforum.ru (co-authored with A. Nukhuly, R. Zh. Aubakirov 90%)

10. Readiness of Chemistry Teachers for Inclusive Education: The Current State and Ways to Improve Modern Psychology and Pedagogy: Problems and Solutions / Collection of articles based on the materials of LXXXVI International Scientific and Practical Conference. - Novosibirsk: Publishing House JSC "Sibak", 2024. – № 9 (83) 100 S.-S. 95-98 www.sibac.info (co-authored with A. Nuhuly, R.Zh. Aubakirova. 90%)

11. Actual Problems of Chemistry Teacher Training for Inclusive education. XLVII international Multidisciplinary Conference "Innovations and Tendencies of State-of-Art Science". Proceedings of the Conference (September, 2024). Mijnbestseller Nederland, Rotterdam, The Netherlands. – 2024. - 100 p. - S – 44-48. (Co-authored with A. Nukhuly, R.Zh. Aubakirova, A. Baydildina 85%).

Educational and methodical manual:

1. The Structure of Matter and the Changes that Occur with it. Methodical Manual on Chemistry for Students with Special Educational Needs. Pavlodar, Toraighyrov University, 2025. – p.46. (co-authored with A.K. Koshanova 90%)

2. Periodic Table of Chemical Elements by D.I.Mendeleyev. Collection of Chemistry Assignments for Students with Special Educational Needs. – A.V.Parkhomenko, Pavlodar K., 2025. –10 p. (co-authored with A. Nukhuly, R.Zh.Aubakirova, M.K. Yerkibayeva 80%).

Copyright certificate:

1. Engineering and Pedagogical Training for Innovative and Technological Development of The Country. Certificate of entry of information into the State Register of rights to objects protected by copyright. April 27, 2020 No. 9465 (co-authored with V.Tsoi 80%)

2. Mock-Up of a Textbook for Solving Practical Problems of Students in a Specific Discipline. Certificate of entry of information into the State Register of rights to objects protected by copyright. November 24, 2025 №64510. (100%)

3. Methodical Guidelines to the Educational Program "Chemistry" for Students with Specific Educational Needs on the Topic: "The World of Substances: Structure, Properties and Transformations". Certificate of entry of information into the State Register of rights to objects protected by copyright. Dated December 17, 2025 No. 65468. (100%)

The structure of the dissertation includes an introduction, seven sections, a conclusion, a list of references and appendices. The thesis contains 12 tables, 64 figures, 9 formulas and a list of 248 literary sources.

Scientific consultant:
Ph.D. RK, Ph.D. RF,
Professor Aubakirova R.Zh.

РАСТАЙМЫН/ЗАВЕРЯЮ
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Кадрлық әкімшілік бөлімінің бастығы/
Начальник Отдела кадрового администрирования