ANNOTATION

for the dissertations for the degree of Doctor of Philosophy (PhD)
majoring in 6D011100-Computer Science
Anuarbekova Gulzat Dzhaparkhanovna

Research topic: Teaching algorithmization and programming at school by solving problem systems based on national features.

Learning purpose: Development of a methodology for teaching algorithmization and programming by solving a system of problems, based on national features in secondary school.

Research goals:

- Analysis of psychological, pedagogical, methodological literature on teaching algorithmization and programming at school;
- to define the concept of "national features";
- determine the need for learning algorithmization and programming by solving problems based on national features;
- Development of a calculation system based on national specifications in the Department of Algorithmization and Programming and Tool Specification;
- to determine the content and develop a methodology for solving problems, based on the national specifics of teaching algorithmization and programming;
- Experimental verification of the effectiveness of methods of teaching algorithmization and programming at school by solving a system of problems, based on national features.

Research methods: study of state special documents, laws; theoretical analysis of philosophical, psychological, pedagogical and methodological literature on research issues, as well as educational standards, curricula, teaching aids; monitoring students, interviewing them, filling out questionnaires, analyzing lessons, studying best practices, checking students' written works; Experimental work and processing of its final data in order to verify the effectiveness of the research results.

Basic principles of protection (proven scientific hypotheses and other concepts that are new knowledge): methods of teaching algorithmization and programming by solving problems based on national features, as well as content and tools for teaching algorithmization and programming by solving problems based on national features. The basis for enhancing the ability to assimilate the concepts of national identity through the study of algorithmization and programming was identified, as well as the meaning of the concept of "national identity".

The main research findings:

- the essence of the concept of "national features" and the need to teach algorithmization and programming based on national features;
- the content of teaching algorithmization and programming was determined by solving a system of problems based on national features;
- The tool for teaching algorithmization and programming has been clarified by solving a system of problems based on national features;
- developed a methodology for teaching algorithmization and programming by solving a system of problems based on national features.

The novelty and significance of the results:

The first result is new, because it is important to involve a person in education - to form a person with an explanation of national identity in order to teach science and culture, to implement the rules of learning, communication, and social experience. National identity is the goal of a person of certain social values, a person's attitude to the environment, a set of national values. In this regard, summarizing the views of scientists, the meaning of the concept of "national differences" was determined. Based on national features in the content of education is a reflection of the cultural and national values of the Kazakh people, knowledge of the factors of socio-economic development of the republic and each of its regions, respect for spiritual values. teaching students their mother tongue and other languages. This, in turn, leads to the need to teach algorithmization and programming by solving a system of problems based on national features in order to prepare modern and qualified students.

The second result is new, since for the first time the content of teaching algorithmization and programming was determined by solving a system of problems based on national features. In accordance with the curriculum of the Algorithmization and Programming section of the Informatics course, at the basic level of the school, a system of tasks based on national features was included for each class. This allows students from school age to form an idea of national features, as well as deepen their knowledge in the field of algorithmization and programming and increase their interest in the subject.

The third result is new, since for the first time a tool was developed for teaching algorithmization and programming by solving a system of problems based on national features. Learning algorithmization and programming using information tools allows you to take into account the peculiarities of modern programming languages, solve problems of national content and program them - it develops individual thinking, logic, ingenuity, perseverance, and ingenuity. In addition, this tool, which is used in teaching algorithmization and programming, was developed with the addition of information, taking into account the psychological and pedagogical foundations of teaching, individual, age and personal characteristics of students.

The fourth result is new, since for the first time a methodology for teaching algorithmization and programming was developed by solving a system of problems based on national features. The developed methodology is aimed at developing students' thinking skills, qualifications and skills by solving a system of problems based on national features. Demonstration methods are proposed as one of the main ones, which is explained by the fact that training is practice-oriented. Also, the results of the experiment showed the effectiveness of the developed methodology for teaching algorithmization and programming at school by solving a system of problems based on national features.

Compliance with the directions of development of science or government programs:

The State Program for the Development of Education of the Republic of Kazakhstan for 2020-2025 states that "the basis for the formation of a competitive personality and specialist are the values formed in the family, society and the

education system." In addition, President Nazarbayev in his Address to the people "New Development Opportunities in the Fourth Industrial Revolution" said that "it is necessary to improve the quality of teaching mathematics and natural sciences at all levels of education. Kazakhstanis, who know their history, language, culture, as well as modern foreign languages, advanced and ideological, should become the ideal of our society. The President of the Republic of Kazakhstan Kassym-Zhomart Tokayev in his article "Independence is the most precious thing" said: "One of the main symbols of our country is the state language. We can say that knowledge of the state language is the duty of every citizen of Kazakhstan. We will survive on earth as a nation only with a strong independent state. May the great support of our people - cherished Independence - be glorified with the patriotic spirit of all our people! "noted that.

Studying the above, it turns out that Kazakhstan needs to educate future generations in the national spirit, setting new requirements for the modernization of the content of modern education, taking into account national differences, historical experience, centuries-old cultural and national traditions.

The period after Kazakhstan gained independence is a period of revival and development of ethnic phenomena. It included the growth of the state language, national traditions, national culture, national identity, the growth of the essence of national statehood, the rapid development of national movements, as well as complex changes in national identity in general.

The regional aspect of education includes all the wealth of national culture, traditions, values and spiritual development, which enhances the role of the human factor in education, focusing on issues of spiritual culture, creativity, activity, intellectual development of students. Any education should give the student the culture that humanity has accumulated throughout its life.

Ministry of Education and Science of the Republic of Kazakhstan The state compulsory educational standard for all levels of education includes regional components that take into account the regional specifics of Kazakhstan. As the regulatory documents show, the inclusion of the national-regional component in the curriculum is carried out only through special disciplines (geography, biology), and the subject of informatics is not taken into account at all. Regional components are included taking into account national and regional specifics. The orientation of education to the personality requires the organization of a certain experience of mankind, which supplements the spiritual life of a person with life problems.

In the State Standard of Compulsory Education for All Levels of Education, the Ministry of Education and Science of the Republic of Kazakhstan states that one of the requirements for the content of education with an emphasis on learning outcomes is Kazakhstani patriotism and civic responsibility.

Involvement of the individual in education - teaching a person to science and culture, knowledge, rules of communication, social experience. For its implementation, it is important to form a personality with an explanation of nationality. It can be said that the formation of an individual's perception of national identity is a matter of the state level. The idea of a person's national identity is impossible without national self-awareness and patriotic qualities. National identity

is the goal of a person of certain social values, a person's attitude to the environment, a set of national values. Individual choice is integrated into national identity.

Taking into account national differences in the content of education is a reflection of the cultural and national values of the Kazakh people, knowledge of the factors of socio-economic development of the republic and each of its regions, respect for spiritual values, teaching students their native language and other languages. This, in turn, leads to the need to teach algorithms and programming by solving problems taking into account national specifics in order to prepare modern and qualified students.

Contribution of the doctoral student to the preparation of each publication (percentage of the dissertation author, measured as a percentage of the total number of publications):

1. Algorithmization and programming teaching methodology in the course of computer science of secondary school //Australian Educational Computing – 2019. – V.34. – Iss.1. (Co-authored by: Oshanova N., Shekerbekova S., Arynova G., 50%);

2. Ulttik kundyliktardi ciphrlandyry zamanauy Kazakhstanning basti bagiti retynde//Abay KazNPU Bulletin. Series of Physics & Mathematical Sciences. -Almaty. -2018. - №2 (62). - 178-181 p. (100%);

3. Algoritmdeu men programmalaudi okituda ulttik erekshelikter negizindegi esepter zhuesyne koyilatin talaptar // Abay KazNPU Bulletin. Series of Physics & Mathematical Sciences. -Almaty. -2019. - №4 (68). – 238-242 p. (Co-authored by: Oshanova N., 50%);

4. Ulttik erekshelik ugymy zhane oning many //«Pedagogy and psychology» Research journal. – Almaty. -2020. - №3 (44). – 243-249 p. (Co-authored by: Bidaybekov E., Oshanova N., 50%);

5. Ulttik erekshelikter negizinde orta mekteptegy algoritmeu zhane programmalaudi okituding tymdiligin experimenttik tekseru// Abay KazNPU Bulletin. Series of Physics & Mathematical Sciences. -Almaty. -2020. - №3 (71). – 216-221 p. (Co-authored by: Oshanova N., 50%)

6. Ispolzovanye nazhionalnih osobennostey v obucheny algoritmyzii i programmyrovanue v chkolnom kurse informatyki// Materials of the 12th International Research and Practice Conference "New Information Technologies in Education and Science: NITO-2019." – Yekaterinburg. -2019. 373-378 p. (Co-authored by: Oshanova N., 50%);

7. Ulttik erekshelikter negizinde algoritmdeu men programmalaudy okituding zholdary//Proceedings the 5th international scientific and practical conferenence «Intellectual information and communication technologies ass tools for realization of the third industrial revolution devoted for the strategy Kazakhstan-2050» – Astana. -2018. 163-166 p. (Co-authored by: Oshanova N., 50%);

8. Negizgu mektepte algoritmdeu men programmalaudy okituda ulttik erekshelikter negizindegi esepterding alatin orny//Materials of the 8th International Research and Methodological Conference "Mathematical Modeling and Information Technologies in Education and Science."-Almaty. - 2018. - 290-293 p. (Co-authored by: Oshanova N., 50%);

9. Ulttik erekshelikter negizindegi esepter zhuesin sheshu algoritmdeu men programmalaudy okituding kuraldary retinde// Collection of materials of the 9th

International Research and Methodological Conference "Mathematical Modeling and Information Technologies in Education and Science" devoted to the 75th anniversary of Prof. Ye.Y. Bidaibekov and the 35th anniversary of school information science. -Almaty. -2020. - 183-188 p. (Co-authored by: Sarsenbaeva A., 70%);

10. Algoritmdeu zhane programmalau. Ulttik erekshelikter negizindegi esepter zhuesy. Educational methodical manual.–Almaty, -2021. -160 p. ISBN 978-601-298-997-7 (Co-authored by: , Oshanova N., 50%).