

ABSTRACT

for doctoral (PhD) thesis of **Abdualiyeva Marzhan Amirbekovna** on the theme "Formation of methodological knowledge of future mathematics teachers in the application of didactic electronic tools", presented for the degree of Doctor of Philosophy (PhD) on the specialty 6D010900 - "Mathematics"

Urgency of research subject. Development of science and technology and production methods in the era of economic exuberance requires well-rounded, active, independently-minded young people. Therefore the main goal of education sector is training of clever, well-rounded people, fit for work, shaping their destiny, improving knowledge and sharpening of professional skills via improvement of training process.

This is particularly significant to teach young people to obtain education independently in the conditions of ongoing education. Providing students with the methods of independent mastering of mathematics is connected with methodological skill of math teachers. Also the question is teachers' mastering of methodological knowledge. Methodology is a doctrine on the structure of scientific knowledge, technique, means of scientific knowledge, justification of knowledge and its development. There are methods of general scientific knowledge.

For foundations of systematic knowledge many scientists (L.Ya. Zorina, N. Skatkin, I.Y. Lerner, S.A. Shaporinskiy, Sh.T. Taubayeva, S.I. Ivanov, D. Rakhymbek, D.V. Vilkeyev) mentioned the need of solution of the problem of methodological education of students.

L.Y. Zorina considers that methodological knowledge helps the students to master learning material therefore in the course of learning in subject matters it is necessary to acquaint pupils "with awareness of knowledge", that is awareness of methods of scientific knowledge.

It is known that the President of the Republic of Kazakhstan in the strategic development plan for the country till 2020 noted: "E-learning is one of the priority directions of radical modernization of education in the field of further informatization of all education system and mass introduction of e-training".

Really, one of the main problems is the necessity of increase in level and quality of learning process, focus at high level of education.

In multilateral structure of training of future math teachers special place is occupied by methodological preparation for application of didactic electronic means. It has been proved that in any education field application of didactic electronic means develops not only informative activity of students, but also creates conditions for formation of logical thinking system and creative work.

During practice assimilation of gained knowledge of future math teachers in higher educational institutions is not enough, it is necessary to use this knowledge in future life.

Priorities of study of the problem of training of future math teachers in our country, works of scientists and teachers are classified as follows:

- training of future teachers in the context of didactic and methodical view (A.Y. Abilkasymova, D. Rakhymbek, B. Baimukhanov, S.Y. Shakilikova, S.S. Mausymbayev, Ye.U. Medeuov, A. Nugysova, T.S. Sabyrov, A.A. Moldazhanova, K.Zh. Karakulov, G.B. Alimbekova, etc.);

- theory and technology of various aspects of unified pedagogical process and training of teachers (N.D. Khmel, A.A. Beisenbayeva, M.N. Sarybekov, S.T. Kargin, A.S. Karbayeva, G.Z. Adilgazinov, A.S. Magauova, M.S. Moldabekova, K.S. Uspanov, etc.);

- improvement of research culture, methodological knowledge of teachers, formation of creative search, creativity (Sh.T. Taubayeva, Ye.I. Burdina, A.A. Zhaytapova, D. Rakhymbek, B.A. Turgynbayeva, D.N. Kulibayeva, B.A. Uspanova, N.A. Shamelkhanova, R.I. Kadirbayeva, etc.);

- formation of vocational training of future experts (Sh.A. Abdraman, M.A. Kudaykulov, K.A. Duysenbayev, B.A. Toylybayev, A.A. Kalybekova, B.K. Momynbayev, Zh.A. Makhatova, Zh.Zh. Zhanabayev, S.A. Zholdasbekova, S.Z. Kokanbayev, L.M. Narikbayeva, A.M. Abdirov, O. Syzdyk, A.K. Kozybay, B.T. Ortayev, etc.);

- training of future teachers for application of information and communication technologies (T.O. Balykbayev, Ye.Y. Bidaybekov, K.M. Berkimbayev, K. Kabdykayrov, Zh.A. Karayev, R.Ch. Bekturganova, S.M. Kenesbayev, S.S. Taulanov, M.S. Malibekova, B.D. Sydykov, G.O. Tazhigulova, L.A. Shkutina, K.Zh. Azhibekov, etc.).

In spite of the fact that the works of the above-stated scientists present various aspects of psychology and pedagogical and methodical training of future teachers, the problem of formation of methodological knowledge for application of didactic electronic means for future mathematics teachers is still adequately investigated.

Introduction of computer technology in educational process, some aspects of problem of training of teachers for application of information and communication technologies were investigated in the works of T.O. Balykbayev, Ye.Y. Bidaybekov, Zh.Zh. Zhanabayev's , K. K. Kabdykayyrova, Zh.A. Karayeva, B.T. Ortayeva, Z.B. Kabylybekova, R.B. Bekmoldayeva, K.M. Berkimbayev, L.A. Shkutina, etc.

In view of the above consideration it is possible to state urgency of the research and to define developed contradictions between:

- necessity of application of didactic electronic means in practice in the course of education of students at high school; insufficient readiness of future math teachers to such activity;

- necessity of improvement of vocational and methodical training of future math teachers in general; lack of corresponding technique of training aimed at formation of sistem methodological knowledge.

Necessity of solution of these contradictions was the reason for selecting subject of the dissertation "Formation of methodological knowledge of future mathematics teachers in the application of didactic electronic tools".

Purpose and methods of research.

The purpose is definition of prerequisites and method of formation of methodological knowledge of future mathematics teachers of use of didactic electronic tools in the course of learning of mathematics for students of high school.

For achievement of this purpose of dissertation there is a solution of the following tasks:

- philosophical, pedagogical and methodological analysis of the concept methodological knowledge;
- determination of the principles and features of the use of didactic electronic tools;
- defining the role of mathematics teachers in the application of didactic electronic tools and the formation of their methodological knowledge;
- development of guidelines and a model for the formation of methodological knowledge of future teachers of mathematics;
- to prove, through the pedagogical experiment, influential signs and levels of formation of the methodological knowledge of future teachers on the use of didactic electronic tools;
- carrying out a pedagogical experiment on check of efficiency, quality and training resources regarding the program of study "Methodology of Application of Didactic Electronic Tools " under the conditions of formation of methodological knowledge of application of didactic electronic means by future math teachers.

Scientific novelty. The following scientific results were obtained in the dissertation:

- the role and the place of system of methodological knowledge specified during the course of training of future math teachers in higher educational institutions;
- the purpose, contents and necessity to pass the program " Methodology of Application of Didactic Electronic tools " defined;
- forms and methods of training in the program " Methodology of Application of Didactic Electronic Tools " proposed and efficiency of application of didactic electronic tools specified.

Practical implications. Methods of organization of teaching process proposed in the research, and the results obtained can be used in the course of training of future math teachers, also in their retraining and professional development. Training program of the program "Methodology of Application of Didactic Electronic Tools" and also its methodological support (study and electronic guides) is developed for training of future math teachers, efficiency of use of these guides when implementing the program.

Study base. South Kazakhstan State University named after M. Auezov, Zhetysay State University named after I. Zhansugurov, Training center of teachers «Center of Excellence».

Object of study. The process of applying didactic electronic tools in teaching mathematics.

Research methods. On a research problem the analysis of scientific and methodical and pedagogical literature, didactic electronic tools applied in the course of study at high school; research of practice in special objects and elective courses, generalization and conclusion; observation of future experts, conversation with teachers of high schools, questioning; statistical processing and analysis of the results of the research.

Subject of research. System of methodological knowledge of future mathematics teachers for application of didactic electronic tools.

Hypothesis of scientific research: When forming methodological knowledge of future math teachers for application of didactic electronic tools the quality of knowledge and skills of math teachers increases and creates favorable conditions for deepening.

Basic concepts, submitted for the defense of dissertation:

1. Level of methodological knowledge influences the quality of experience of future math teachers in higher education institutions for application of didactic electronic means in the course of study in secondary school.

2. The system of methodological knowledge of future math teachers for application of didactic electronic tools cannot be formed only within studying mathematical and methodical program. The special program "Methodology of Application of Didactic Electronic Tools " is required.

3. The dissertation presents teaching and learning materials "Methodology of Didactic Electronic Tools" (program, purposes. Contents, forms, methods, means).

Methodological and theoretical basis of the research consists of the theory of knowledge, systematic activity approach, differentiation and individualization of education, humanization of education, theory, related to higher pedagogical, mathematical education and methods, psychology of training of future math teacher in higher educational institutions and available methodical prerequisites.

Argumentativeness and validity of the results of the research is provided by comprehensive analysis of psychology and pedagogical, educational and methodical literature and textbooks on the research subject; compliance of scientific information of the research to the results of modern research in theoretical and methodological and practical aspects; application of complex methods from a logical point of view according to the purposes, tasks, object, subject of research; performance of theoretical concept and obtained successful results of pedagogical experiment at the faculties and in higher educational institutions on training of future math teachers, processing of the results of practice by means of mathematical statistical methods.

Evaluation of the research. The main results of dissertation were stated at the next conferences: XLVII International scientific and practical conference «Psychology and pedagogics: method and problems of practical application» (Novosibirsk, 2015), International scientific-practical conference Auezov readings-14: «Innovation potential of science and education of Kazakhstan in new global reality» (Shymkent, 2016), International scientific and practical conference "EXPO-2017: Informatization is future of society development. «Bektaev readings -2» (Shymkent, 2016), International scientific and practical conference «Problems of Mathematical Education in Information Society» (Kazakh State female-only university of Almaty city), International scientific magazine «Nauka I Zhizn Kazakhstana», (series Pedagogics No. 3 (38) 2016, Astana), journal «Vestnik» of the Academy of pedagogical sciences of Kazakhstan" (No. 3, 2016, Almaty), International conference ICITE-2016 (Shymkent 2016), VIII International scientific conference "Mathematics. Education. Culture", devoted to the 240th anniversary of the mathematician K.F. Gauss (Togliatti 2017), in «Bulletin» journal of Abay Kazakh National Pedagogical University, (series Physical and Mathematical Sciences, No. 3,4 (59,60) 2017), «Man in India» journal (ISSN: 0025-1569. Vol. 97, July (2017)), «World Journal of Pharmaceutical Sciences» journal (ISSN (Print): 2321-3310; ISSN (Online): 2321-3086), journal from the list of State Commission for Academic Degrees and Titles of Russian Federation «The Emissia. Offline Letters»: online scientific journal. 2017 (Methodical application) (S. Petersburg, 2017), International scientific-methodical conference «Development of Methodology of Research and Practical Activity in the conditions of Spiritual and Moral Revival of the Kazakhstan Society» in Al-Farabi Kazakh National University, October 13-14, 2017 (Almaty, 2017), Conference devoted to 80th anniversary of the Doctor of Education, professor Kaiyrzhan Gabdollauly Kozhabayev «Modern mathematical education: practice, problems, future» on June 8-9, 2018, (Kokshetau, 2018), News of the Khoja Akhmet Yassawi kazakh-turkish international university, Mathematics, physics, computer science series. Special issue on the materials of the conference of Mathematicians of Kazakhstan «Actual problems of mathematics» (volume II), «European Journal of Contemporary Education» journal. E-ISSN 2305-6746 2018, 7(3).

Structure and scope of the dissertation. Dissertation consists of 177 sheets in the text printed on the computer, it includes 5 tables, 19 drawings. The dissertation consists of Introduction, 2 Sections, Conclusion, List of reference and Annexes.