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ABSTRACT

to the dissertation on the topic "The role of Internet technologies in the criteria-based assessment of mathematical knowledge of secondary school students" for the degree of Doctor of Philosophy (PhD) in the specialty 6D010900-"Mathematics"

Research topic: The role of Internet technologies in the criteria-based assessment of mathematical knowledge of secondary school students.

The purpose of the study is to develop a methodology for the organization of criteria-based assessment using Internet technologies in teaching mathematics in secondary school and its experimental verification.

Research objectives: The goal is aimed at solving the following problems:

1. To consider the psychological and pedagogical foundations of the criteria-based assessment of mathematical knowledge of secondary school students.

2. To identify and substantiate the basic requirements for the use of Internet technologies in teaching mathematics in the process of criteria-based assessment.

3. To develop a methodology for the organization of criteria-based assessment of mathematical knowledge of secondary school students using Internet technologies.

4. Determination of the effectiveness of the developed methodology by statistical and mathematical processing of the results of a pedagogical experiment.

Research methods: the study of philosophical, psychological, pedagogical, scientific and methodological literature related to the definition of the role of Internet technologies in the criterion assessment of mathematical knowledge; analysis of normative documents of the Ministry of Education of the Republic of Kazakhstan; conducting a pedagogical experiment and statistical and mathematical processing of its results; the study and dissemination of advanced pedagogical experience concerning the criterion assessment of students' knowledge.

The main provisions for defense:

1. Theoretical foundations of the criteria-based assessment of mathematical knowledge of students in secondary school.

2. Requirements for the use of Internet technologies in the organization of criteria-based assessment in the learning process.

3. Methodology of the organization of criteria-based assessment using Internet technologies in the primary school.

Description of the main results of the study:

1) the meaning and purpose of knowledge assessment, including criterion assessment, its place, role and principles in modern educational conditions are defined;

2) the popular Internet technologies used in the course of teaching mathematics are selected, with the help of which the requirements for the organization of criteria assessment are determined;

3) the methodology of using Internet technologies in the criterion assessment of students' mathematical knowledge has been developed;

4) The results of the research work are verified and proven in practical and experimental work; the recommendations are included in the educational process.

Justification of the novelty and importance of the results obtained:

The validity of the first scientific result is proved by studying the psychological and pedagogical foundations of knowledge assessment by the researcher, including the criteria-based assessment and its methodological foundations when teaching mathematics in secondary school through the study and analysis of normative documents, research papers, the ability to generalize and formulate own thoughts and draw the right conclusions as a result;

The validity of the second scientific result is proved through a comparative analysis of popular Internet technologies used in mathematics lessons in secondary school and determining their compliance with the requirements for an effective organization of criteria-based assessment, such as compliance with the goals of teaching mathematics, with didactic principles of education, with the reversibility of the resources offered, with the teacher's access to students' works and with the ability of student's to receive feedback;

The validity of the third scientific result is proved by the presentation of a methodology aimed at preparing samples of criteria, headings and feedback sheets for parents and students based on the comparison of tasks from Internet technologies with the goals of teaching mathematics;

The validity of the fourth scientific result was proved by conducting an experiment according to the method proposed by the researcher, analyzing the results obtained and introducing the results of research work into the educational process.

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

The study is based on the Law of the Republic of Kazakhstan "On Education", the State Standards of General Education for all levels of education, the principles of organizing the educational process for distance learning technologies, the national project "Educated Nation", quality education". Also, philosophical, pedagogical, psychological and didactic works of famous scientists, psychological and pedagogical literature, scientific and methodological literature, works aimed at the use of ICT in education, educational and methodological documents, materials of domestic and foreign scientific and practical conferences, Internet technologies form a methodological and theoretical basis of the study.

Contribution of a doctoral student to the preparation of each publication (the share of the author of the dissertation is indicated, measured as a percentage of the total volume of the publication):

The content of the dissertation is reflected in 17 scientific papers.

– Publications included in the international Scopus database:

1 Effective teacher feedback: adapting Internet technologies for criteria-based assessment // World Transactions on Engineering and Technology Education. - 2022. - Vol. 20.-No.3. – p. 196-202. (co-authors Kozhabaev K.G., Gabdullin R.S. Share of doctoral student 90%).

– Publications included in the international Web of Science database:

2 Development of assessment system in school education // Bulletin of National Academy of sciences of the Republic of Kazakhstan. – 2020. – No. 1 – p. 148-155. (co-authors Kozhabaev K.G., Dalinger V.A. Share of doctoral student 80%).

– Articles published in publications recommended by the Committee for Quality Assurance in the Field of Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan:

3 Сравнительный анализ интернет-технологий применяемых при критериальном оценивании знаний учащихся // International scientific journal "Science and Life of Kazakhstan". – 2019. – No.7/2. – p.133-140 (co-author Kozhabaev K.G. Share of doctoral student 90%);

4 Білім берудің маңызды компоненті ретінде бағалаудың тарихы және қазіргі жағдайы // Bulletin of the Kazakh National Women's Pedagogical University. – 2019. – No.3 – p.210-217 (co-author Kozhabaev K.G. Share of doctoral student 90%);

5 Математика сабағында интернет-технологияларын қолданудағы тиімді кері байланыстың ролі // Bulletin of the Kazakh National Pedagogical University named after Abai. - Series "Pedagogical Sciences". – 2019. – No.4 (64). – p.343-350 (co-author Kozhabaev K.G. Share of doctoral student 90%);

– Articles in collections of materials of international, including foreign, conferences:

6 Критериалды бағалауда интернет-технологияларды қолданудың тиімділігі // Iscience "Actual scientific research in the modern world". Materials of the International scientific conference. – Pereyaslav-Khmel'nitsky, 2018. – p.107-115 (co-author Kozhabaev K.G. Share of doctoral student 90%);

7 Математика сабағында қалыптастырушы бағалау тиімділігін арттырудағы кері байланыстың ролі // "Mathematical knowledge: state, problems, future". Materials of the International scientific-practical conference. – Aktobe, 2019. – p.275-279 (co-authors Kozhabaev K.G., Dautov A.O. Share of doctoral student 90%);

8 Применение интернет-технологий при критериальном оценивании на уроках математики // «Mathematics. Education. Culture» IX Proceedings of the International Scientific and Practical Conference. – Tolyatti, 2019. – p.227-233 (co-authors Kozhabaev K.G., Dautov A.O. Share of doctoral student 90%);

9 Математика мұғалімдерінің кәсіби қызметінде интернет-технологияларды қолданудың психологиялық-педагогикалық және әдістемелік аспектілері // Proceedings of the International scientific and practical conference "Shokan oqulary - 23". – Kokshetau, 2019. – p.82-86 (co-authors Kozhabaev K.G., Kuttykozhaeva Sh.N., Seitova T.Sh. Share of doctoral student 70%);

10 Математика сабағында критериалды бағалау тиімділігін арттырудың жолдары // Proceedings of the International Scientific and Practical Conference NIS Conferences. – Nur-Sultan, 2019. – p.198-205 (co-author Kozhabaev K.G. Share of doctoral student 90%);

11 Роль интернет-технологий в критериальном оценивании знаний учащихся основной школы на уроках математики // Electronic journal "Scientific and Practical Research". – Omsk, 2020 – p.71-75 (co-authors Dalinger V.A., Ermaganbetova S.K., Seitova T.Sh., Beisenbayeva G.K. Share of doctoral student 75%);

12 Әлем Smart білім беру жолында: ақпараттық-коммуникациялық технологияларды дамытудың жаңа мүмкіндіктері // Proceedings of the International scientific and practical conference "Shokan oquulary-24". – Kokshetau, 2020. – p.47-52 (co-authors Kozhabaev K.G., Kutykozhaeva Sh.N., Seitova T.Sh. Share of doctoral student 30%);

13 The role of internet technologies in the criteria-based assessment of middle school students in mathematics // Abstracts of VII International Scientific and Practical Conference. – London, United Kingdom, 2021. – p. 262-270. (co-author Kozhabaev K.G. Share of doctoral student 90%);

14 Developing Self-Regulation Skills of Children in Mathematics Lessons // Social and Cultural Transformations in The Context of Modern Globalism. European Proceedings of Social and Behavioral Sciences. – 2021. – vol 117. – p. 1776-1784. (co-authors Kozhabaev K.G., Gabdullin R.S. Share of doctoral student 90%).

– Articles published in republican scientific and methodological journals:

15 Математика сабағында қалыптастырушы бағалау барысында жиі қолданылатын интернет-технологиялардың тиімділігін бағалау // Republican scientific and pedagogical journal "Kazakhstan mektebi". – No.8. – p.3-6 (co-author Kozhabaev K.G. Share of doctoral student 90%).

– Methodological aids:

16 Математика пәнінің таңдаулы тақырыптары бойынша оқушыларға кері байланыс беру әдістемесі. – Electronic training manual. – Author's certificate No. 6408. – 13.11.2019. (100% of doctoral students);

17 Қалыптастырушы бағалау. Математика: methodological recommendations. – Nur-Sultan: AEO "Nazarbayev Intellectual Schools" Center for Pedagogical Excellence, 2022. – p.62 p. (co-author Musina A.D. Share of doctoral student 90%).