

REVIEW

for competition, announced in SG, iss. 96 of 19.11.2021 for the academic position "Professor" with a sole candidate **Assoc. Prof. Dr. Gabriela Nikolova Kirova** in the professional field 1.3. Pedagogy of teaching in... (Methodology of teaching mathematics in primary school)

Biographical data:

Assoc. Prof. Dr. Gabriela Nikolova Kirova graduated in Pedagogy, with a second major in Philosophy at the Faculty of Philosophy of Sofia University "St. Kliment Ohridski" in 1986. In 2013 at Sofia University "St. Kliment Ohridski, FNPP (Faculty of Primary and Preschool Pedagogy) she defended a dissertation on the topic: "Thematic diversity of text problems in mathematics for primary school" and became a doctoral holder in the professional field 1.3. Pedagogy of teaching in... (Methodology of teaching mathematics in primary school).

The professional path of Assoc. Prof. Dr. Gabriela Kirova as a lecturer at FNPP (now FNOI), Department of Primary School Pedagogy is as follows: assistant (1987-1990); senior assistant (1990-1999); chief assistant (1999-2015); Associate Professor (2015 - present).

Analysis of scientific achievements:

In the competition for professor, Assoc. Prof. Dr. Gabriela Kirova participates with 48 publications of which: habilitation thesis – monograph (1); Articles and reports published in scientific journals, referenced and indexed in world-famous databases of scientific information (1); Articles and reports published in non-peer-reviewed journals with scientific review or published in edited collective volumes (23); Studies published in non-peer-reviewed journals with scientific review or published in edited collective volumes (3); Published university textbook or textbook used in the school network (6); Published university handbook or handbook used in the school network (14). 8 of the publications are in a foreign language and this is proof of the positive assessment of her research achievements outside the borders of our country.

Considered in its entirety, the scientific publications of Assoc. Prof. Dr. Gabriela Kirova outline a multi-layered research field, reflecting the current dimensions of modern methodological knowledge, but not in some encapsulation, but in deep connection with a wider range of scientific problems of general pedagogical knowledge. defining the modern vision of teaching in the primary grades in general, and teaching mathematics in the foreseeable and clearly presented specifics.

The scientific works of Assoc. Prof. Dr. Gabriela Kirova are not the result of speculative interpretations, but show an enviable connection between scientific achievements in various scientific fields (psychology, sociology, didactics...) with those of the subject field of mathematical knowledge and current needs of pedagogical practice. Each scientific thesis of the author finds its meaningful justification and practical projection. Systematized innovative theoretical and technological insights are the result of individual long-term research. This makes them reliable and applicable.

In the research of Assoc. Prof. Dr. Gabriela Kirova there is a consistency and a definite trend – from the profile of the young student (mental, intellectual and social characteristics) to the specifics of mathematics education, subject to these features and the well-defined pursuit of further full development of the young student. That is why there is a deep connection and subordination between the individual publications. Each time you focus on a certain topic, this synergistic connection of complementary information sections is evident.

The monographic habilitation thesis "Training students – future primary teachers to work with text problems" is proof of this. It highlights the author's scientific maturity in this direction. Considering one of the biggest challenges in teaching mathematics in the initial stage of the basic educational degree (solving text problems), the author manages on a broad methodological and technological basis to reveal the possibilities for solving the most sensitive issues. The manuscript compares interesting observations on the work of the teacher and the reactions of the students in the classroom. A working didactic model for composing, analysing and solving text problems is offered. 859 text problems and creative exercises with text problems for I, II, III and IV grade were analysed; 65 author's schematic models for visualization when working with different types of text tasks are proposed. The effectiveness of the model in training 904 students – future primary teachers has been studied and proven. The achieved level of competence for methodologically correct work of students

with textual tasks in mathematics with students from I – IV grade is also analysed. In the analysis there is a very good combination between the scientific justification of the problem and the possibilities for its practical implementation through deriving the specifics of the lecture work, experiential training of students, their attitudes, expectations, self-esteem and real readiness to work in the classroom.

Another problem around which many of the research studies of Assoc. Prof. Dr. Gabriela Kirova gravitate is the formation of mathematical competence of primary school students. The author reveals various possibilities for achieving good results when working with educational content (forming the concept of "number", finding an unknown divisor, composing and solving text problems, working on a project...), but also solving mathematical problems uncharacteristic of traditional curriculum for I – IV grade in Bulgaria: solving problems on data tables; map orientation and problem solving; compiling and solving tasks with schedules; solving problems with pie charts; approximation problems, Euler-Venn diagrams and Carol diagrams. The author shows working innovative variable strategies and techniques for mastering the tabular multiplication and division, makes a classification of creative exercises, outlines the framework of project work, gives an up-to-date meaning to the illustration method. She systematizes the typical mistakes of students in solving various types of tasks and offers a differentiated approach to overcoming them, and all this through the mechanisms of competence, integrative and holistic approaches. On this basis, Assoc. Prof. Dr. G. Kirova outlines a stable methodological system of updated didactic opportunities to provoke the cognitive interest of students and its transformation into a stable intellectual state. Serious emphasis in this plan is placed on the fun element in learning, the development of independence, creative imagination and the components of students' mental activity. And this leads to the formation of stable meta-learning skills, transferable in other subject-specific cognitive situations. The humane and personal aspects of teaching mathematics are also highlighted, related to both the teaching and the evaluation of students' results. Thus, through the semantic unity and combination of different publications, the author defends the thesis that mathematics as a subject performs not only its specific functions, but also favours the overall full development of students. Competently and responsibly Assoc. Prof. Dr. G. Kirova analyses the typical mistakes in the work of teachers

in teaching and assesment, rejects a number of inherited stereotypes in the technology of work, but also points out ways to overcome them.

In general, Assoc. Prof. Dr. G. Kirova manages to make an in-depth analysis of existing textbooks in mathematics and thus derive acceptable basic criteria for shaping their modern structure – in line with the socio-psychological appearance of modern students in primary school classes and modern goals of mathematics education.

As proof of the indisputable contribution of Assoc. Prof. Dr. G. Kirova in the field of methodology of teaching mathematics are the co-authored textbooks in mathematics for first, second, third and fourth grade and teacher's books (developed in co-authorship), which are used successfully in pedagogical practice.

Research activity:

The research activity of Assoc. Prof. Dr. Gabriela Kirova is impressive with its scientific soundness, social significance and positive response among the professional community.

Her yearly efforts to involve students and teachers in volunteer activities aimed at rethinking values and improving the current pedagogical reality leave irresistible traces on the understanding of the mission of the modern pedagogue. Assoc. Prof. Dr. G. Kirova is the chairman of the club "Friends of Children" (since 2013); organizer of the annual student essay competition (2013-2016) at the FNOI (Faculty of Primary and Preschool Pedagogy); organizer of the annual student scientific forum (from 2012 to the present); participates with current works in thematic scientific conferences.

Assoc. Prof. Dr. Gabriela Kirova also participates in the development of 8 projects (as a leader and member of the teams). The research results are not parcelled out into autonomous information totality, as often happens in practice, but are in meaningful coherence with the overall research directions of the author and are of great importance for the organization of professional training of students – future teachers and as well as for the current needs of the pedagogical practice related to the primary school: "Development of multimedia educational resources for electronic forms of distance learning"; Resource provision of electronic courses for distance learning; "Student Internships",

"Study of the results of teaching mathematics and science in I – IV grade"; "Exploring the possibilities of interactive learning to improve the academic achievements of students – pedagogues"; "Applied aspects of the preparation of students – pedagogues for work with electronic resources"; "Challenges to competence-oriented education"; "The competence approach – traditions and innovations".

Traditionally, Assoc. Prof. Dr. G. Kirova participates in thematic scientific conferences, where she presents interesting individual research.

Teaching commitment:

Assoc. Prof. Dr. Gabriela Kirova is the titular of basic / compulsory and elective courses, with a clearly defined semantic share in the general professional training of students:

Bachelor's degree in NUPCHE (Primary school pedagogy and foreign language) and PUPCHE (Preschool pedagogy and foreign language), Music: Didactics of mathematics first and second part; Creative work on text problems in mathematics in I – IV class; Methodology of teaching mathematics in primary school; Introduction to primary school pedagogy, primary school pedagogy – lectures and seminars; Work on projects in the teaching of mathematics in primary school – lectures; Diagnosis and external evaluation of learning outcomes in primary school – practical exercises.

Master's degree in the specialties NUPCHE and PUPCHE, Music: Didactics of Mathematics – modern trends and approaches – lectures; Didactics of mathematics – modern trends and approaches – lectures (for graduates of pedagogical specialties and specialties with teacher qualifications), distance learning, compulsory discipline; Didactics of mathematics (after professional bachelor), part-time study; Work on projects in mathematics education – lectures, masters (for graduates of pedagogical specialties and specialties with teacher qualifications), part-time education; Creative work on text problems in mathematics in I – IV class – lectures (for graduates of other specialties), distance learning, elective course; Creative work on text problems in mathematics in I – IV grade (for graduates of pedagogical specialties and specialties with teacher qualifications) part-time education; Diagnosis and external evaluation of learning outcomes in primary school – practical exercises (for graduates of other specialties) part-time training, optional discipline;

Diagnosis and external evaluation of learning outcomes in primary school – practical exercises (for graduates of pedagogical specialties and specialties with teacher qualifications) part-time training, optional discipline.

The candidate has developed 20 electronic courses for distance learning (mixed form), which give completeness to the professional efforts of the author for full training of students – future teachers.

The education of the students is provided with the necessary set of textbooks, developed in co-authorship: "Current problems of the didactics of mathematics in the primary grades" and "Work on projects in the teaching of mathematics in the primary grades". Of course, all other manuals such as "Collection of Mathematics for fourth grade", "Colourful mathematics for first"; second, third and fourth grade "; "Mathematics tests for fourth grade", which are also used successfully in school for compulsory and elective student training, expand the overall basis for professional training of students.

Assoc. Prof. Dr. G. Kirova has provided and continues to provide successful scientific guidance to more than 30 graduates. This is a serious guarantee for her teaching commitment in the professional training and the formation of research skills of students.

Scientific contributions:

I fully accept the scientific contributions formulated by the author in theoretical-systematic, experimental-research and practical-applied terms. In summary, they can be presented as follows:

1. An in-depth, value-oriented analysis of the existing research achievements in the field of methodological mathematical knowledge has been carried out. The main deficits in the theoretical knowledge, mediating the problems in the real pedagogical practice, are clearly outlined;
2. Based on the results of theoretical and systematic research, using the holistic, competence and integrative approach, an author's concept for the formation of mathematical competence of students in the initial stage of the basic educational degree has been developed; A system of creative exercises conducive to its formation is proposed; A study was made with author's tools and indicators for checking the mathematical competence at the end of the first grade of the new curriculum. A detailed analysis of the results of each of the test

tasks has been published and the relevant conclusions and recommendations have been made.

3. A model for training students in the specialties for preparation of primary school teachers for work with text problems in mathematics (in their variants) has been created and tested: - methodical development of lecture content; - author's model for analysis of 859 text problems and creative exercises with text problems for I, II, III and IV grade; - 65 author's schematic models for illustration when working with different types of text problems. The effectiveness of the model in training 904 students – future primary school teachers has been studied and proven; The typical mistakes of teachers related to solving text problems are systematized. Various strategies and techniques for overcoming them are proposed;

5. Methodological ideas for visualization in the formation of mathematical concepts through individual didactic materials and full methodological analysis of electronic resources for first grade are introduced in mass practice. Ideas for the formation of communication skills, teamwork, Internet skills, presentation skills are developed;

6. Author's comparative content analyses of the new textbooks in mathematics for I – IV grade by different teams and publishers with strengths and weaknesses in relation to the individual components of the curriculum are made and basic criteria for shaping the structure of the modern textbook are pointed out;

7. Textbooks and teaching aids in mathematics for grades 1 – 4, which are used successfully in pedagogical practice, have been created.

Science-metric data:

Assoc. Prof. Dr. Gabriela Kirova fully meets the minimum national requirements under Article 2b of the ZRASRB (Law For The Development Of Academic Staff In The Republic Of Bulgaria) for scientific field Pedagogical Sciences, professional field 1.3. Pedagogy of teaching in... (Methodology of teaching mathematics in primary school).

Conclusion:

The analysis of the overall scientific profile of Assoc. Prof. Dr. Gabriela Nikolova Kirova presents her as an established highly erudite researcher and lecturer, aimed at overcoming stereotypes in the field of methodological mathematical

knowledge and one of the brightest modern representatives of its renewal, in conformity with the needs of the broad scientific field of Humanities and the problems of postmodern society. The candidate is well recognized as an undisputed authority among the pedagogical community in our country and in other countries. She is loved and respected by students and colleagues.

All this gives me reason to confidently recommend to the esteemed Jury to propose to the Faculty Council of FNOI to approve the candidacy of Assoc. Prof. Dr. Gabriela Nikolova Kirova to hold the academic position "PROFESSOR" in the professional field 1.3. Pedagogy of teaching in... (Methodology of teaching mathematics in primary school).

20.02.22

Reviewer: Prof. Dr. Emilia Vasileva