

OPINION

from

Assoc. Prof. Dr Lyubka Krasteva Aleksieva,

**member of the scientific jury for the competition for the academic position
“Professor” in professional field 1.3. Pedagogy of Mathematics and
Information Technology in Primary Education, announced in SG, issue
96/19.11.2021 for the needs of the Faculty of Educational Studies and the Arts
(FESA), Sofia University “St. Kliment Ohridski” (SU)**

This opinion is prepared in accordance with Order №ПД 38-3/04.01.2022 of the Rector of Sofia University „St. Kliment Ohridski” and the resolution of the scientific jury from their meeting on 27 January 2021. It complies with the requirements of the corresponding National Acts (ЗРАСРБ, ППЗРАСРБ).

Only one application was submitted for the announced position by Associate Professor Dr Gabriela Nikolova Kirova, FESA, SU.

1. General description of presented application documents

The submitted documents by the only candidate comply with the requirements of the corresponding National Acts (ЗРАСРБ, ППЗРАСРБ) and the Regulations on the Terms and Conditions for Acquiring Scientific Degrees and Occupying Academic Positions in Sofia University “St. Kliment Ohridski” (ПУРПНЦЗАДСУ).

According to the Regulations on the Terms and Conditions for Acquiring Scientific Degrees and Occupying Academic Positions in Sofia University “St. Kliment Ohridski” (ПУРПНЦЗАДСУ), the candidate presented the following documents for the competition: CV, copies of Bachelor and Master Degree Diplomas, copy of Doctoral Degree Diploma, document for an academic position, certificate of professional experience, documents proving the fulfilment of the requirements of art. 115, para. 1, item 2, lists of publications (a list of all publications and a list of publications presented for the competition), reference from SU Author system, reference for the implementation of the minimum national requirements for the corresponding professional field and the additional requirements of SU “St. Kliment Ohridski”, citations reference, reference for the original scientific results and achievements, reference for the indicators of art. 122, para. 2 with relevant evidences, copies of scientific papers presented

for the application, abstracts of the reviewed papers in Bulgarian and English languages, copy of the announcement in the State Gazette.

2. Candidate Data

The only applicant for the competition for the academic position “Professor” is Gabriela Nikolova Kirova. She is an Associate Professor, PhD in professional field 1.3. Pedagogy of Mathematics and Information Technology in Primary Education and Head of the Department of Primary Education at the Faculty of Educational Sciences and the Arts, Sofia University “St. Kliment Ohridski”. Assoc. Prof. Dr Kirova has long-term teaching experience and extensive research experience in the field of mathematics primary education, which includes over 100 publications in the same field. She completed her master's degree in pedagogy, with a second major in philosophy. Her doctoral thesis on “Thematic diversity of word problems in mathematics for primary school” was successfully defended in 2013 in the professional field of this competition.

Since 1987 Assoc. Prof. Dr Gabriela Kirova has been a lecturer and author of electronic learning content in more than 11 different courses in variety of specialties in FESA and Faculty of Pedagogy (FP) in SU. She participated in 16 national projects, in 3 of which she was a leader. From 2012 to the present she has been organizing the annual Student Scientific Forum at FESA, and from 2013 to 2016 she has also organized the annual Student Essay Competition at FESA. Since 2013 Gabriela Kirova has been the chairwoman of Club “Friends for Children” – the voluntary organization of students, teachers and employees of the Faculty of Primary and Preschool Education.

3. Fulfilment of the requirements for the academic position

3.1. Publications submitted for participation in the competition

The application documents include a total of 48 publications. Twenty-eight of them are independent scientific publications which include a monography, 24 papers and 3 studies published in edited volumes. The candidate is an independent author of two university textbooks and co-author of four mathematics textbooks for primary school. For the competition she also presented 14 teaching aid books in co-authorship, which are used in schools (from 1st to 4th grade).

The analysis of the presented publications demonstrated that:

a) the scientific work of the candidate complies with the minimum national requirements (under Art. 2b, para. 2 and 3 of ЗПАЧРБ) and respectively with the additional requirements of SU “St. Kliment Ohridski” for the occupation of academic position “Professor” in the scientific field of the competition (see Table 1).

Table 1. Compliance with the minimum national requirements for the academic position "Professor"

| Indicators Group | Content | Required points (according to the minimum national requirements for Professor) | Candidate points |
|------------------|--------------------------------------|--|------------------|
| A | Indicator 1 | 50 | 50 |
| Б | Indicator 2 | 0 | 0 |
| B | Indicator 3 | 100 | 100 |
| Г | Sum of indicators from 4 to 10 | 200 | 305 |
| Д | Sum of indicators from 11 to 13 | 100 | 140 |
| E | Sum of indicators from 12 to the end | 100 | 183 |

b) the scientific papers submitted by the applicant do not repeat those of previous procedures for the acquisition of a scientific degree and academic position;

c) there is no plagiarism proven in the scientific works presented in the application.

3.2. Projects participation

For this competition Assoc. Prof. Dr Kirova presented 7 projects in the period 2015 - 2020 (see Table 2). In three of them she was a leader, and in the others she had an expert role. According to a reference in the system of Sofia University "Authors", she has participated in a total of 16 projects. All presented projects are in the field of expertise of Gabriela Kirova, and her active work in the provision of electronic learning content and distance education is highlighted.

Table 2. Projects participation of Assoc. Prof. Dr Kirova

| № | Name of the project | Financing organization, contract № | Time period | Role |
|---|---|--|-------------|-----------------|
| 1 | Development of multimedia educational resources for electronic forms of distance learning | Scientific Research Fund, Sofia university, №15/2015 | 2015 | Researcher |
| 2 | Resource provision of electronic courses for distance education | Scientific Research Fund, Sofia university, №46/2016 | 2016 | Leader |
| 3 | Student internships - phase I | Operational Programme Science and Education for Smart Growth, BG05M2OP001-2.002- | 2016-2018 | Academic mentor |

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| 4 | Research on the outcomes of the mathematics and natural sciences education in I - IV grade | Scientific Research Fund, Sofia university, № 80-10-149/2017 | 2017 | Leader |
| 5 | Exploring the potential of interactive learning to improve the academic achievements of students in pedagogy specialties | Scientific Research Fund, Sofia university, № 80-10-39/17.04.2018 | 2018 | Researcher |
| 6 | Applied aspects of the preparation of students in pedagogy specialties for working with electronic resources | Scientific Research Fund, Sofia university, № 80-10-39/17.04.2018 | 2019 | Leader |
| 7 | Challenges for competence-oriented education | Scientific Research Fund, Shumen university, ПД 08-153/05.02.2020 | 2020 | Researcher |

4. Description of the presented scientific papers

The monography “The training of students – future primary teachers to work with word problems in mathematics”, presented for the academic position "Professor" is devoted to the preparation of students - future primary teachers for methodically correct work on developing primary school students’ competency for word problems solving. Based on the state of the art analysis, the author derives a didactic model for working with word problems, which she tested with 904 students - future primary teachers. The monography is structured in three chapters. In the first chapter, through a combination of theoretical and empirical work, the peculiarities of primary school students mathematical thinking and the practical aspects of working with word problems are compared. Typical errors and deficiencies in the methodology of working with word problems are presented, which serve as a basis for the didactic model building. The second chapter outlines the author's model, which includes a specific teaching methodology, implemented in face-to-face and online lectures, video tutorials and tests. The model includes methodological developments of 859 word problems and creative word problem activities, as well as author's visual representations of the content of different types of word problems. The third chapter presents the results of implementation of the model with students-future primary teachers, which includes assessment of professional competencies for teaching word problems and proves the model effectiveness.

The issue for teaching word problems in mathematics in primary school is not new, but Assoc. Prof. Dr Gabriela Kirova demonstrates its relevance and examines its current state through direct observations of practice. This issue also has long been explored in her research work - she studied and demonstrated various aspects of the methodology of teaching word

problems and providing creative activities on word problems in many of the publications preceding her monography (№12, №14, №15, №22, №23 from the list by indicator G7), including the development of system and methodology for working with mathematical problems that are not typical for the Bulgarian educational system (№16, №18, №19, №20, №21, №24 and №25 from the list by indicator D7). Her long-term observations and work in this field have contributed to the successful implementation of the monographic didactic model and guarantee the multiplication of its effect.

Another important aspect of the scientific issues studied by the candidate is related to the project-based mathematics learning – this is a research topic in several of her papers (№4, №7, №9, №10 and №13 from the list by indicator G7) and in one of her published university textbooks (№30 from the list by indicator E20). Looking for effective approaches for the development of mathematical thinking of students in primary school, Gabriela Kirova considered theoretically and tested in practice a variety of author's projects in mathematics for students from 1st to 4th grade. These publications have enriched the pedagogical practice by attempting to convert the conservative approaches of teaching in the approaches that guarantee active participation of students, development of creativity, critical thinking and collaboration skills.

In the perspective of the National educational reform from 2015, Assoc. Prof. Dr Gabriela Kirova has reviewed and explored in comparative terms the content of textbooks in elementary mathematics, using it to offer methodological ideas for teaching mathematics in primary school (№3, №5, №8, №11 from the list by the indicator G7, №26-28 from the list by the indicator G9).

The candidate presents a detailed reference for citations of her publications (Appendix №13), supported by corresponsive evidences for 17 citations, 2 of which are in a referenced and indexed in world's scientific databases journal, and 7 of which are in monographs.

5. Comprehensive analysis of the applicant's scientific and applied scientific achievements presented in the application documents

The reference of the candidate for the original scientific contributions (Appendix №14) correctly presents her scientific achievements and results. Research interests of Associate Professor Dr Gabriela Nikolova Kirova are reflected in her contributions in the field mathematics education in primary school and are focused on developing the mathematical thinking of primary school students by improving their skills in working with word problems, including creative activities and project-based learning. At the same time, in a practical perspective, Assoc. Prof. Dr Kirova works actively and contributes to the preparation of students-future primary teachers through developing their competencies for teaching mathematics, by offering a training model for working with word problems and methodological ideas for improving the effectiveness of the learning process in primary school. Assoc. Prof. Dr Kirova also have managed three projects in the professional field of competition, which resulted in the provision of electronic learning

content for face-to-face and distance education. Her research activity and scientific production fully correspond to the professional field of the announced academic position. The candidate's achievements in the presented scientific papers contribute and build on the existing scientific knowledge through implementing new ideas and methods. The publications of Gabriela Kirova demonstrate her qualities as a researcher and affirm her place among scholars in the field of didactics in mathematics.

6. Information and evaluation of the applicant's teaching activity

Assoc. Prof. Dr Gabriela Kirova has a long-term rich teaching experience, and for the last five years she has been overfulfilling her academic employment (Appendix №15). She has been teaching in a variety of courses in the educational field of the competition, mainly lectures in mathematics education (8 compulsory courses), but also elective and optional disciplines (7 in total) in different bachelor and master degree programmes in FESA and FP, SU. Moreover, the candidate has developed electronic courses for the abovementioned disciplines.

Gabriela Kirova is a member of the Faculty Council of FESA, and since 2015 she has been the Head of the Department of Primary School Education, successfully combining her administrative duties with her teaching and research activities. She supervises doctoral students in the professional field of the competition and currently has two doctoral students who have defended their doctoral degree (Appendix №15.8). She is also a leader of the master's program "Primary school education (for graduates from pedagogical specialties and specialties with teacher qualifications)" at FESA, Sofia University. Assoc. Prof. Dr Kirova leads and participates in various projects, the results of which she implements in her teaching.

7. Critical notes and recommendations

I do not have any critical comments on the work and papers, presented by Gabriela Kirova in her application. The submitted documents are well arranged and properly represent her achievements. I would recommend to Assoc. Prof. Dr Kirova to expand her focus beyond the Bulgarian educational system and to focus on the development of publications for referenced and indexed in world's scientific databases journals.

8. Personal impressions

I have known Assoc. Prof. Dr Gabriela Kirova since 2003 as my teacher in the course "Methodology of mathematics education" in the bachelor's program in which I studied. She is an outstanding lecturer who inspire students and motivate them for the teacher profession and teaching mathematics. I could confidently say that she was one of my main incentives to start my career development in the same professional field. For the past 10 years, we have been members of the same department and teaching team in which she has proven to be a responsive

and respected colleague and leader, an excellent teacher and active researcher. Her qualities and expertise fully correspond to the profile of the competition and the academic position "Professor".

9. Conclusion for the application

After reviewing the documents and scientific works presented for the competition and analysing their significance and scientific and applied contributions, **I confirm** that the candidate scientific achievements comply with the legal requirements (ЗРАСРБ, ППЗРАСРБ, ПУРПННСЗАДСУ) for the academic position Professor in the scientific and professional field of the competition.

Based on the above information, **my evaluation to the application is positive** and I strongly recommend the scientific jury to propose to the Council of the Faculty of Educational Studies and the Arts, Sofia University "St. Kliment Ohridski", to approve the application of Associate Professor Dr Gabriela Nikolova Kirova for the academic position "Professor" in the professional field 1.3. Pedagogy of Mathematics and Information Technology in Primary Education.

18.02.2022

Reviewer:

Sofia

Assoc. Prof. Dr Lyubka Aleksieva