

## **REVIEW**

IN THE COMPETITION FOR ASSOCIATE PROFESSOR ACADEMIC POSITION  
in professional field 1.2. Pedagogy (Preschool pedagogy – pedagogy of mathematics in  
preschool age), announced in SG issue 22 of 16.03.2021.

**by Assoc. Prof. Gabriela Kirova, PhD**

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### **1. General presentation of the procedure**

This review was prepared on the basis of Order № RD 38-176 / 06.04.2021 of the Rector of Sofia University “St. Kliment Ohridski”, Prof. Anastas Gerdjikov, in accordance with the Law for development of the academic staff in the Republic of Bulgaria and the Regulations for its implementation of Sofia University “St. Kliment Ohridski”. The submitted documents meets the requirements and the competition is conducted in accordance with the legal provisions. Assistant Professor PhD Galina Georgieva Georgieva is the only candidate. The competition is for the academic position of “Associate Professor” in the field of higher education 1. Pedagogical sciences, professional field 1.2. Pedagogy (Preschool pedagogy – pedagogy of mathematics in preschool age) and is for the needs of Sofia University “St. Kliment Ohridski”, Faculty of Educational Studies and the Arts, Department of Preschool and Media Pedagogy. I got access to the documents of the candidate in the competition.

### **2. General presentation of the candidate – professional and career**

The documents and materials of the only candidate in the competition are carefully designed and allow for an objective and complete assessment in accordance with the requirements of the Law for Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its implementation, as well as the Regulations of Sofia University and Faculty of Educational Studies and the Arts. Ch. Assistant Professor PhD Galina Georgieva Georgieva graduated in 2002 from high school teaching foreign languages “Prof. PhD Asen Zlatarov”, Haskovo with main subjects: German, English, Informatics. In the period 2003 – 2007 she studied in the educational qualification degree (EQD) “bachelor” in the specialty Preschool pedagogy and foreign language (German) at Sofia University “St. Kliment Ohridski”. In 2010 – 2012 she studied at the Master’s Degree in the Master’s program “Pedagogy of Mass and Artistic Communication” at Sofia University “St. Kliment Ohridski”.

In 2016 she defended the educational and scientific degree (PhD) “Doctor” at Sofia University “St. Kliment Ohridski” with the topic of the dissertation: “Model for mathematical thinking development in preschool children constructive activity”. In the period 2008 – 2011 Galina Georgieva worked as a teacher, pedagogue in kindergarten 56 “Zdravets”, Sofia. Since 2011 she has been a full-time lecturer at Sofia University “St. Kliment Ohridski”, Faculty of Primary and Preschool Pedagogy (now Faculty Educational studies and the Arts). From 2011 to 2017 she held the position of “assistant”, and from 2017 she held the position of “chief assistant” leading lectures and exercises in the discipline “Pedagogy of mathematics in preschool age” in the bachelor’s and master’s degree; Exercises in “Pedagogy of constructive-technical and everyday activities” and “Applied techniques for creativity in kindergarten – constructive”, “Internship”, “Current pedagogical practice” and “Hospitality” in Bachelor’s and Master’s degree.

### **3. Presentation of the scientific production of the candidate**

Indicative of the scientific and publication activity of PhD Assistant Professor Georgieva are the high results in the reference for fulfilment of the minimum scientometric requirements, regulated by NACID. According to the indicators of group B, she covers the minimum of 100 points. The sum of indicators 4-10 of group D is 240 points, and the sum of indicators 11-13 of group D is 85 points (with a minimum of 50 points). This explains the high overall score on all scientometric indicators – 475 points.

In her documents, Galina Georgieva presented a list of 38 publications, 8 of which are co-authored. Of these, 15 publications are listed in the competition for “associate professor”. These include: 1 monograph (habilitation thesis), 1 book based on the dissertation, 1 study in the Yearbook of Sofia University, 1 article in English, published in Slovakia, 1 article in a collection of the university publishing house of Sofia University “St. Kliment Ohridski”, 2 articles in the “Education and Technologies” magazine, 1 article in the “Pedagogy” magazine, 1 article in the electronic edition Journal of Science, Culture and Education, 6 publications in proceedings of scientific conferences.

The full list of Galina Georgieva’s publications speaks of systematic publishing activity during the years of her doctoral studies and her teaching activity. Most of the scientific publications, presented in the competition, are from the period 2017-2020, which shows

increased research activity during the period of holding the academic position of “chief assistant”.

The manuals developed by the candidate for preschool age and methodical guides for teachers in kindergartens are of special scientific and practical value. Galina Georgieva is the author of a textbook and co-author of 8 (eight) textbooks for the education of preschool children, which implements her methodological ideas related to mathematical training at this age.

#### **4. Participation in projects**

In the period 2017 – 2020 the candidate Galina Georgieva participated in the following research projects: “Student Internships – Phase 2” (2020); “Analysis of educational strategies for personal support in a multicultural environment” (2019); National Program “Young Scientists and Postdoctoral Fellows” – postdoctoral fellow, second level researcher (R2) (2019); “Analysis of pedagogical practices for inclusive education” (2018); “Study of social and emotional competence of the teacher – skills and techniques of working with children from minority groups and refugee children” (2017). I would like to note that the work in the mentioned projects fully corresponds to the scientific interests and practical developments of the candidate and enriches the topic of her scientific research.

**Recommendation:** to engage in the management of university research projects. She has enough professional experience and competence.

The “Authors” system has generated 35 scientific **supervisions of diploma theses** (of which 26 of foreign students), which testifies to the extremely active work of Galina Georgieva with students in the period 2017 – up until now.

#### **5. Citations of the scientific production**

The documentation of the competition shows 9 (nine) citations of scientific publications of Galina Georgieva, which testify to the recognition and use of her works by the pedagogical circles.

## **6. Scientific – theoretical, experimental and applied contributions**

Regarding the scientific contributions of the candidate Galina Georgieva, adequately to the achievements in her scientific and teaching work, three contributions are reflected in theoretical and systematic terms, three contributions in experimental and research terms and four contributions in practical and applied terms. Theoretical contributions are related to the study, testing and validation of individual concepts related to basic concepts and methods in teaching mathematics in preschool and the relationships between them, as well as to justify the need to develop mathematical thinking and improve mathematical competence based on interactive and constructive activities through additional and problematic pedagogical situations. G. Georgieva determines the meaningful components of mathematical competence on the one hand as an aspect of personal identity related to individual skills and achievements, and on the other hand as an aspect of social identity. She is the author of a wide range of theories on mathematical concepts, mathematical thinking and mathematical competence in preschool.

In the experimental research work: An innovative model of pedagogical interaction for the formation and development of mathematical thinking, as well as of mathematical competence has been developed and tested; The correlation between a forming system of additional pedagogical situations and mathematical competence is derived and statistically confirmed; A system of a set of tasks and exercises has been developed and tested, developing key mathematical knowledge and skills of children before entering the first grade.

In practical terms, the contributions are expressed in the development and offering of mathematical problems, exercises and games for conducting basic and additional pedagogical situations through the “Wonderful World” cognitive series and “Hedgehog and Numbers” textbook; In connection with participation in a research project, e-courses for mixed type of training of students of pedagogical specialties in the Moodle system have been developed; Inclusion of models for the development of mathematical thinking and mathematical competence in the form of project tasks in the training and practice of students of pedagogical specialties; Developed new and updated curricula for university courses.

Among the scientific publications attached to the competition the monographic work “Mathematical competence in preschool age” by the University Publishing House “St.

Kliment Ohridski” 2020 has the greatest weight. It is structured in three chapters, the first of which is devoted to the theoretical substantiation of the problem of mathematical competence in preschool age. A contributing moment is the derivation of a definition of mathematical competence in preschool by the author. All aspects of this competence are presented in detail: numerical notions, quantitative notions, understanding of symbols, spatial notions, notions of geometric shapes and forms, abstract logical thinking and the ability to analyse data. A special place is given to the role of the game, which is conceptually defined, different theories about the game, types of games, the specific role and importance of different types of games in mathematics education in kindergarten (constructor games, role-playing games, rule games) are considered. The second chapter presents the concept of experimental research in a systematic way. The most important goal of the research is the formation of mathematical competence in 5-7 year old children by applying an innovative pedagogical model. In this model, the emphasis is on specific interactive activities (inclusion of constructive and interactive material, combined with counting and quantification strategies). The content of the topics of the experimental model is presented in paragraph 5 of Chapter Two. The pedagogical situations from the experimental training are methodically described in detail on pages 114 - 131. In the last third chapter, the results of the conducted research are presented and analysed in quantitative and content terms. From the examination of the hypothesis and the sub-hypothesis it is necessary to conclude that there was a significant change in the results of the children from the experimental class. The results are illustrated with tables and diagrams. The conclusions and recommendations formulated at the end of the monograph are logical and derive from the theoretical and experimental research.

The second monographic work attached to the documents in the competition is “Mathematics in children’s thinking” (2020) and is based on the dissertation of Galina Georgieva. Theoretically, classical and modern theories for the teaching of mathematics in kindergarten have been traced and presented with skill. A special place is given in the first chapter of the phenomenon of “mathematical thinking” with its varieties and its connection with mathematical abilities. The third paragraph of the first chapter presents classical theories of foreign authors about the formation of mathematical notions in preschool age. Modern models as well as neuropsychological models for numerical representations are also considered. The research part of the development is presented in the second chapter. Its essence is in the integration of constructive and technical activities (group and individual) for the formation and development of mathematical ideas and mathematical thinking in 5-7 year old children. In

addition to a didactic experiment, the author also applies the methods of observation and survey with parents. The results of the study are presented and analysed in Chapter Three. The applied mathematical-statistical methods are adequate and through them hypothesis and sub-hypotheses 1 and 2 are proved for significant difference in the results of the experimental and control groups. All results are illustrated by numerous tables and diagrams. The results of the other methods are also reported and analysed – the observation and the survey with parents. For some of the indicators, differences in gender, age, minority affiliation, social status, children with special educational needs (SEN) and children with special learning difficulties (SLD) were reported. At the end of the monograph, conclusions and recommendations are formulated that have theoretical and applied significance.

The studies of Ch. Assistant Professor PhD Galina Georgieva, dedicated to the mastery of numerical competencies by preschool children (“Mastery of numerical competencies by preschool children” – 2019) deserves attention. It presents foreign theories of prominent scientists in the field of mathematical education in childhood. Didactic games related to mathematics education at this age are offered.

The majority of the candidate’s publications in this competition reflect her theoretical and experimental achievements related to the mastery of mathematical knowledge, skills and ideas in preschool age, which is fully consistent with the profile of this competition (“Formation of mathematical competence in 5 –7-year-old children in the conditions of the kindergarten” – 2020; “Subitiation as a means of developing numerical competencies in preschool children” – 2019; “Strategies for developing a sense of numbers in preschool children” – 2019; “Teaching Mathematics Through Constructive Activities in Preschool-aged Children” – 2018; “Mathematics in everyday life and play of preschool children” – 2017; “Formation of strategies for addition and subtraction in preschool children” – 2016; “Mathematics in Bulgarian Kindergartens” – Slovakia, 2016; attached publications Nos 6, 7, 8, 9, 12, 13 and 15).

The special place of the game in mathematics education is analysed and presented in the article “The importance of the game for early mathematics education” (2020). Significant theories about the game, types of games and game forms are presented here.

Publication No 4 is dedicated to the competence approach as a means of developing children's mathematical ideas. This is a problem with emphasized relevance in the light of the educational reform in Bulgaria and this publication shows the adequacy to the modern problems of PhD Georgieva's scientific research and achievements. One of the publications in the competition is dedicated to the formation of geometric notions through the means of fine arts (2018).

The scientific research and achievements of the candidate in this competition have found applications directly in her teaching work. This is reflected in her publication "Advantages of mixed type of education with students of pedagogical specialties at the Faculty of Primary and Preschool Education" (2018), dedicated to the combination of traditional and modern forms of education in the practical training of undergraduate students.

In conclusion, I would like to note that all Galina Georgieva's scientific publications submitted for the competition reflect her high quality as a university scientist, researcher and lecturer in the field of mathematical training of preschool children.

## **7. Personal impressions**

I know Ch. Assistant PhD Galina Georgieva, as an intelligent and correct colleague who performs her teaching activity with motivation and responsibility. She is characterized by high professional activity and striving for continuous development as a scientist and researcher. I am convinced that PhD Georgieva will continue to work tirelessly to impart modern knowledge to students in preschool pedagogy, to expand research in the field of mathematical training in kindergarten and strengthen the links between scientific theory and practice.

## **Conclusion**

Presented by Ch. Assistant PhD Galina Georgieva documents and materials on the competition meet all the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria. There is a sufficient number of scientific papers published by the candidate after obtaining the educational and scientific degree "Doctor". The overall analysis of the evidence in the competition leads to the conclusion that the scientific production and teaching experience of PhD Georgieva meet the criteria for acquiring the academic position of

“Associate Professor” in the professional field 1.2. Pedagogy (Preschool pedagogy – pedagogy of mathematics in preschool age).

Giving a positive assessment to the candidate in this competition, I strongly suggest to the members of the esteemed Scientific Jury to support me and recommend PhD Galina Georgieva to the Faculty Council of Faculty of Educational Studies and the Arts at Sofia University “St. Kliment Ohridski” Ch. Assistant Professor to be deservedly elected to the academic position of “Associate Professor”.

June 11, 2020

REVIEWER:

(Assoc. Prof. Gabriela Kirova, PhD)