



REVIEW

by **Prof. Dr. Darinka Nencheva Gulubova**
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of a dissertation for the award of the educational and scientific degree "DOCTOR" in:

Field of higher education 1. Pedagogical sciences

Professional field 1.3. Pedagogy of teaching in...

Doctoral program "Methodology of teaching in mathematics"

Author: Ketii Agop Angelova

Topic: "Technological model for pedagogical interaction in the formation of elementary quantitative representations in 6-7 year old children"

Scientific supervisor: Assoc. Prof. Dr. Dimitrina Petrova Kapitanova
Department of Primary School Pedagogy, Faculty of Pedagogy
of Plovdiv University "P. Hilendarski"

1. General description of the submitted materials

By order No. PD-22-2102 of 27.10.2025 of the Rector of Plovdiv University "Paisiy Hilendarski" (PU), I have been appointed as a member of the scientific jury for ensuring a procedure for the defense of a dissertation on the topic "Technological model for pedagogical interaction in the formation of elementary quantitative representations in 6-7-year-old children" for the acquisition of the educational and scientific degree "doctor" in the field of higher education 1. Pedagogical sciences; Professional direction 1.3. Pedagogy of teaching in...; Doctoral program "Methodology of teaching in mathematics". The author of the dissertation is Ketii Agop Angelova - a doctoral student in full-time study at the Department of "Primary School Pedagogy", with scientific supervisor Assoc. Prof. Dr. Dimitrina Petrova Kapitanova, Department of "Primary School Pedagogy" at Plovdiv University "P. Hilendarski".

At the first meeting of the scientific jury (Minutes 1/29.10.2025) I was selected as a reviewer of the dissertation work. This review was developed in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the Implementation of ZRASRB and the Regulations for the Development of the Academic Staff at the University of Plovdiv.

For review, I have been provided with a set of materials on an electronic medium, which is in accordance with Art. 36. (1) of the Regulations for the Development of the Academic Staff of PU. The set includes the following documents:

- CV in European format;
- minutes of the department council, related to reporting the readiness to open a procedure and preliminary discussion of the dissertation work;
- dissertation work;
- abstract;
- list and copies of scientific publications on the topic of the dissertation;
- certificate of fulfillment of the minimum national requirements for obtaining the ONS "doctor" in the professional field 1.3. Pedagogy of education in...
- declaration of originality and authenticity of the attached documents;
- certificates of participation in training and scientific forums (additionally submitted).

2. Brief biographical data about the doctoral student and doctoral studies

Keti Angelova was born in 1981. The stages of her education are:

- secondary education (1995 – 1999): Secondary School "Tsar Simeon the Great", Plovdiv, Management of medium and small businesses;
- higher education (1999 – 2005): Bachelor's degree, specialty "Agricultural Economics", Agrarian University in Plovdiv;
- higher education: Master's degree, VUARR - Plovdiv, specialty "Rural Management";
- higher education (2018 – 2021): Master's degree, specialty "Preschool and Primary School Pedagogy", Plovdiv University "P. Hilendarski";
- doctoral studies (March 2022 – February 2025) – full-time doctoral student in the Department of Primary School Pedagogy, Plovdiv University "P. Hilendarski" (PU).

The career development of the doctoral student goes through various positions. After 2021, the doctoral student builds on his basic professional competence by mastering pedagogical competencies as a master in the specialty "Preschool and Primary School Pedagogy", a kindergarten teacher and a university lecturer. The positions held are as follows:

- (2013 - May, 2014) - expert in the State Fund Agriculture;
- (2016 - 2022) - expert positions in: "Polimex - Sofia" EOOD - Plovdiv; Coordinator of the LAG Hisarya, Ministry of Internal Affairs-Traffic Police - Traffic Police;
- (2021 - 2022) - teacher in the kindergarten "Slavey", the city of Plovdiv and teacher in the kindergarten "Ralitsa" in the village of Belashtitsa, Plovdiv region;
- (2022 - 2024) - expert in the LAG "Kuklen - Asenovgrad";
- since February 2023, he has been an assistant professor at Plovdiv University "P. Hilendarski", Department of "Primary School Pedagogy".

The native language of doctoral student Keti Angelova is Armenian. She is fluent in Bulgarian and English at a good level. Her computer skills include working with MS Office, MS Outlook, Outlook Express, Internet, MS Windows, IACS.

The doctoral student has completed all activities from the individual curriculum (main lecture courses: Methodology and methods of scientific research, Statistical methods and software for processing data from scientific research; Academic writing, etc.). The doctoral student has participated in 4 scientific forums (has participated in 3 conferences with reports, is a listener in the scientific conference "Interdisciplinary education through arts, sports and digital technologies - Pamporovo (10.2023). During the period of doctoral studies she has participated in 10 trainings:

- (2022): Training seminar "Teaching in an academic environment";
- (2023): "Academic communication: real, virtual, public: new practices and challenges"; StrikePlagiarism training; "Integrating the competency-based approach in the preparation of future teachers"; "Digital platforms for active learning"; "Design and educational resources with CANVA";
- (2024): "Artificial intelligence in education"; "Teamwork"; "Integrating STEM/STEAM projects in school education"; "Digital psychology" and others.

The dissertation has successfully passed a preliminary defense. It receives positive opinions and very good grades for the results achieved in the dissertation (Protocol No. 2 /14.10.2025 from a preliminary discussion in the training unit, Department of NUP of the Faculty of Pedagogy of the University of Plovdiv). The procedure for the training of the doctoral student is in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria (Art. 4/ para. 1; para. 2.) and the Regulations for its implementation (Art. 2./para. 1-2; Art. 30/para. 3; Art. 31/para. 1), in compliance with the Regulations for the Development of the Academic Staff of Plovdiv University "Paisiy Hilendarski" (sections IV and V).

3. Relevance of the topic and appropriateness of the goals and objectives set

The dissertation work of doctoral student Keti Angelova is dedicated to the current topic of the mathematical competence of children in kindergarten (European Framework for Key Competences and the Recommendation to it from 2018). The emphasis is on the formation of competencies from the educational core "Quantitative Relations" (Appendix 2 of Regulation No. 5 on Preschool Education from 2016), which is in continuity with the area of competence "Numbers"

(curriculum, First Grade). Within the framework of the research problem, "quantitative concepts and relations" are studied in the context of STEM education, which has become relevant after 2010 in our country. The doctoral student clarifies the significance of the problem and correctly points out (p.82) that: In recent years, the integration of STEM design (Science, Technology, Engineering, Mathematics) in primary and preschool education has placed new demands on educational paradigms. Innovative learning is characterized by the formation of key competencies at different levels of integrativity between the individual STEM areas. It is also important to understand the interdisciplinary nature of key competencies (language, mathematics, digital, etc.). This means that mathematical competence must be developed in every educational direction in kindergarten (and in every subject at school). From the declarative presentation of knowledge to children, it is required in the 21st century to create an integrative subject-information educational environment (this is declared very well on pp. 82 - 89), in which children can explore and independently discover mathematical relationships. In a provided developing environment, children begin to build the STEM skills of the 21st century (problem solving, communication, creativity, critical thinking, collaboration, etc.). In this regard, studying mathematics by integrating the areas of STE(A)M (science, technology, engineering, art, mathematics) is a modern trend in education. This allows me to define the dissertation research as an attempt to create an innovative model with included STEM components in modern preschool education. To create the model, the doctoral student set two main goals and specified 6 research tasks aimed at achieving goal 1) Theoretical research, development and testing in practice of an interactive, interdisciplinary model of pedagogical interaction with 6-7-year-old children for the formation of elementary quantitative concepts and relationships and goal 2). Creating an innovative approach to taking into account the intellectual and mathematical readiness of 6-7-year-old children for school; describing an innovative approach to mathematical pedagogical interaction with children (1.1.5/p.68 and 2.4/ p.95-97). The goals, tasks and hypotheses are correctly formulated, adequate and achievable within the framework of the study.

4. Knowledge of the problem (scope of the bibliography and citation skills)

The doctoral candidate has studied a sufficient number of specialized publications in the scientific fields of pedagogy, psychology, and mathematics teaching methodology. The bibliography includes 149 titles (74 - in Bulgarian, 35 - in Russian, 28 - in Latin; 12 - electronic publications with Internet access). The doctoral candidate knows the history and development of pedagogical, psychological, and methodological science for the upbringing and training of children in mathematics. The entire content of the work is subordinated to a logical line for revealing the basic concepts of the study and their connections, leading to the description and testing of a technological author's model. In the text of the work, references are made to fundamental research on the problem of children's mathematical and cognitive development and innovative approaches to stimulating them. Due to the multifaceted nature of the issue, there are meaningful repetitions and jumping into different thematic fields (e.g., interactive board - readiness for school, p.83). The texts are descriptive and unnecessarily detailed, probably due to the doctoral student's scientific research among the many classical and contemporary theories of child development, methods and tools for teaching mathematics, and many concepts that the doctoral student decided to clarify in detail. There are some texts without specific references (citations). For others, I assume that they are inaccurate translations from Russian (due to inaccurate terms and unclear statements). There is a broken style of citation: there are lines of source titles and links to them (pp. 69, 71–76). The text of the thesis is at a good scientific and terminological level.

5. Research Methodology

The methodology of pedagogical research is presented by the research methods used, which the doctoral student divides into three groups (pp. 99 - 104):

- empirical methods (theoretical research, survey No. 1, survey No. 2, observation, demonstration, conversation, story, exercise and game; didactic experiment, expert consultation, testing), which, according to the reviewer, are not correctly classified according to the theory of pedagogical research methods (G. Bizhkov, Ivan Ivanov, etc.). Theoretical research is not an empirical method. There is a mixture of pedagogical research methods with kindergarten teaching

methods (and they are not empirical either). According to the topic of the work, the method of didactic modeling can be added;

- statistical methods for processing, systematizing and summarizing empirical data: descriptive statistics, a method for checking reliability using Cronbach's alpha, Mann-Whitney test for rank data for two independent samples, and specialized software Microsoft Excel with added statistical functions was used.

- additional methods: comparative analysis of experimental data and content analysis (analysis of qualitative data from surveys, etc.).

The selected research methodology allows achieving the set goals and testing the hypotheses. Its application leads to the successful achievement of the goals and solving the tasks.

6. Characteristics and evaluation of the dissertation work

The dissertation work contains the necessary components of a doctoral dissertation – the structure and requirements for conducting a scientific and pedagogical study of this type have been met. Structurally, the dissertation consists of an introduction, three chapters, conclusions, conclusion, scientific contributions, publications on the topic of the dissertation work, bibliography, 2 declarations, appendices.

The volume of the work is 311 pages – main text 199 pages and appendices in the volume of 101 pages. The appendices contain 1 plan-synopsis, 3 modules with a total of 40 appendices (fairytale situations, modeling quantitative relationships, didactic mobile games, 2 questionnaires, a sample form of a primary protocol for filling in results according to 7 criteria). The graphic design of the dissertation work is very good – there are 4 tables, 50 figures and many illustrative color images.

The dissertation explores ideas and concepts of leading authors in the field of mathematics didactics, presents and approves an author's didactic model. The main text of the dissertation is structured in three chapters. In his theoretical research (chapter ONE, 6 paragraphs) the doctoral student clarifies the state of the problem of children's mathematical development by presenting classical and contemporary pedagogies, as well as private-methodical author's models, normative laws and regulations, textbooks and didactic resources (1.1.4./p.60-68), principles, approaches, etc. The SECOND chapter "Design of pedagogical research" has 7 paragraphs that outline the essence and significance of the research problem. The parameters of the dissertation research (object and subject, 2 goals and objectives, hypotheses of the study, design of the experimental study - toolkit, and presentation of the methods for pedagogical research: pedagogical experiment in three stages, survey of pedagogical specialists, test diagnosis and assessment of children) aged 6-7 years from the cities of Plovdiv, Haskovo, Sofia participate in the experiment. The formative experiment lasts one academic year (September, 2023 - May, 2024). The experimental group participates in 17 pedagogical situations from the author's technological model for forming quantitative representations of children. The didactic toolkit of the study is the developed author's interactive game technologies (didactic games, exercises with visual material, presentations for an interactive board). CHAPTER THREE presents and analyzes the results of the didactic experiment and the survey. Statistical methods were used to process and present the results. Software for statistical data processing was applied, using methods such as mean, standard deviation, t-test for independent and dependent samples, etc. The statistical significance of the differences between the control and experimental groups was determined. Conclusions are drawn about the effectiveness of the tested interactive technological model. A quantitative and qualitative analysis of the results was performed to confirm the hypotheses raised, visualized with numerous diagrams and comparisons.

The evaluations of the dissertation work are systematized in 5 aspects:

- 1). **Pedagogical aspect:** The ideas of the classical pedagogues on the upbringing of children (M. Montessori, S. Freyne, Reggio pedagogy, etc.) are presented, emphasizing the principles of free upbringing, the role of the environment and art in developing the independence, intellectual development and creativity of the child. The current normative documents for preschool education are known (ZPUO 2016; Regulation No. 5 on preschool education, 2016, etc.) and regulations for the formation of key competencies through the application of a personality-oriented, competency-based and interdisciplinary approach.

2). **Technological aspect:** To create an educational-technological author's model, the doctoral student correctly focuses on a theoretical analysis of pedagogical technologies (Chapter One). Systematizes modern pedagogical technologies and models for preschool education. Mainly analyzes the technology of project activity, game technologies, ICT (digital technologies, visualization and interactive whiteboard, virtual laboratories, etc.), technologies for solving problems and cases, technology of research activity, etc. In (1.1.5) the possibility of implementing interdisciplinary, integrative and project-based learning in kindergarten is clarified. The relevant levels are not considered for the possible integrations of STEM. In Chapter Two, educational technologies in the STEM context are developed in great detail.

3). **Mathematical and methodological aspect:** The doctoral student understands that in addition to the didactic foundations of the FEMP process, it is important to know its theoretical foundations - i.e. those mathematical concepts, relations and operations that will be mastered by children at the level of elementary representations in the conditions of the subject-schematic game activity and therefore briefly clarifies mathematical concepts. Explains in detail methods, techniques and groups of didactic means for the formation of elementary quantitative representations and relations (FEMP). Describes the ideas of fundamental foreign methodologies (F. Blecher, A. Leushina, A. Stolyar, Z. Denesh, Kuiziner) and Bulgarian methodologists (E. Peeva, V. Mihaylov, B. Spiridonova; V. Vaneva, D. Galabova, K. Getova, etc.). Quite thoroughly analyzes the role of play and didactic games with a mathematical focus.

4) **Psychological aspect:** the study is subject to the correlation "training - mental/cognitive development of children", especially important at this stage of child development (the first seven years). The child's cognitive activity has a complex structure of mental actions, on which the construction of mathematical concepts depends. The content program in mathematics (What is learned?) is directly related to the cognitive program (How is learning and what mental actions are developed?) Therefore, the doctoral student bases his research on the theories of human mental development (Chapter Two: J. Piaget, L. Vygotsky, D. Davidov, Galperin, etc.) and takes into account the importance of a well-founded methodological system and the role of cognitive motivation (p. 65).

5) **Diagnostic aspect:** the potential of mathematical integrative games and exercises as a diagnostic tool has been theoretically revealed. Indicators and a scale for assessing children's competencies in the core Quantitative Relations have been developed. The diagnostic toolkit allows the hypotheses to be proven (Chapter Three).

7. Contributions and significance of the development for science and practice

The contributions of the dissertation research are presented by the doctoral student in two groups (theoretical - 6 issues and practical - 4 issues). I do not accept contribution 1. and contribution 2., which are mandatory components of any pedagogical research. Everything described in the theoretical research in Chapter One is known for pedagogical, psychological and methodological science - there are no new theoretical models or generalizations developed by the author. The reviewer accepts and summarizes the following contributions in two groups:

First group. Scientific and theoretical contributions

1) An author's conceptual framework for interactive learning in preschool age of 6-7-year-old children has been developed, in the context of the new paradigm for interdisciplinary STEAM education.

2) An analysis and systematization of the interdisciplinary influences on the mathematical development of 6-7-year-old children in the process of learning Mathematics, educational core Quantitative Relations, was carried out, outlining a STEAM educational design of education in kindergarten.

Second group. Scientific and applied contributions

3) The main scientific and applied contribution is the developed technological author's model (p. 117). Opportunities for implementing interdisciplinary connections between all educational areas in kindergarten have been revealed. The author's model is composed of 3 modules:

- Module 1. Interdisciplinary technological model (8 pedagogical fairy-tale situations with worksheets and games, implementing STEM integration Math + BEL);
- Module 2. Didactic mobile games (2 situations with 10 games);
- Module 3. Interdisciplinary ICT technological model (5 pedagogical situations with a mathematical focus, through an interactive board).

4) A detailed content of the technological learning models has been developed, which implement some integrations of STEAM such as:

- pedagogical fairy-tale situations (texts of fairy tales and tasks with a mathematical focus; worksheets with colorful schematic models (for counting, numbering, arranging, correlating, arranging in ascending order, etc.).
- a digital interactive application with tasks on a learning display, with options for collective, group or independent activity;

5) For the purposes of the formative experiment, trainings were conducted for teachers to work with the technological model, which reflects on their methodological and digital competence.

The doctoral student practically offers kindergartens a modern STEM educational design when studying knowledge from the field of Quantitative Relations (area of competence Numbers at school). In more detail, the achieved integrations in STE(A)M can be summarized as follows: For the S-Science area, it offers familiarization and observation of models of fairy-tale situations, research by children and discovery of mathematical patterns, solving cases, making assumptions. For the T-Technologies area: it uses modern pedagogical technologies (Game technologies - didactic mobile games, didactic mathematical exercises); Project and research technologies; Technologies for activating creativity; ICT (use of an interactive educational display in integrated pedagogical situations). For the E-Engineering/Design area: it describes exercises with Cuisiner sticks, with Montessori constructive triangles, games with Lego, puzzles, etc. In the area of M-mathematics, the emphasis is on Quantitative Relations (numbers, counting and comparing up to 10; recording quantities with digits of numbers; solving elementary text problems for addition and subtraction), but the intra-subject integration with the core of Quantities (serial arrangement of objects and sequential counting) is implemented. Integrating activities between mathematics and art (Art) are proposed: fine arts (redrawing a fairy tale), theater - theatricalization through games-dramatizations of fairy tales and tasks-dramatizations, making theatrical masks (puppet theater), music and songs. Thus, the doctoral student solves the task of interdisciplinary integration of the areas of Mathematics and Bulgarian Language and Literature; Mathematics and Art; Mathematics and Technologies, etc.

8. Assessment of publications on the dissertation work

In the procedure for acquiring the educational and scientific degree of "doctor", doctoral student Keti Angelova participated with 5 (five) publications on the topic of the dissertation work. Their copies are accompanied by the titles (or the full electronic version) of the relevant collections in which they were published. All copies are full-text and readable. The publications are authored (with 1 author - K. Angelova), and the language of writing is Bulgarian. The topic, year and place of publication allow the following summary:

– 3 publications in collections of reports from scientific forums: 1) Interdisciplinary scientific conference of the Faculty of Pedagogy (PU, city of Plovdiv); 2) Sixth scientific and practical conference "Current policies and practices in education. Teaching and learning for the development of skills for the 21st century" (Pedagogical College of VTU, city of Pleven); 3) Twelfth Student Scientific Forum of the Faculty of Pedagogy (PU, Plovdiv);

– 2 publications in journals: one in the Yearbook of the Faculty of Pedagogy, University of Plovdiv "Paisiy Hilendarski", Plovdiv and one publication in the Scientific Journal of the Faculty of Pedagogy "Doctoral Studies", University of Plovdiv "P. Hilendarski", Plovdiv;

– Place and year of publication: 4 issues – published by the Plovdiv University of Plovdiv "P. Hilendarski", Plovdiv and 1 publication in the Pedagogical College of the VTU in Pleven. The years of publication are 2023 (two issues) and 2024 (three issues), which indicates a rhythmic publication activity of the doctoral student. The publications have no citations at the time of writing

the review. The presented publications satisfy the minimum scientometric requirements for indicator G. (Publication activity: 50 points) with a minimum required score of 30 points.

9. Personal participation of the doctoral student

The style of expression and the content of the publications and the dissertation leave no doubt about the personal contribution of the doctoral student in their development. The author's personal merit is the created technological model, the formulated indicators of the study, the didactic and diagnostic tools of the study. The presented empirical methods (pedagogical experiment with children in kindergartens; direct observations, surveys with teachers) were carried out with the personal participation of the doctoral student, and their results were analyzed and summarized.

10. Abstract

The abstract meets the requirements of the Regulations for the Development of the Academic Staff of the Plovdiv University "Paisiy Hilendarski" (IV – V; Art.36 (1). Its volume is 32 pages. The relevance and parameters of the dissertation research, its structure and the main content of the three chapters are briefly presented. The author's didactic-technological integrative model is very briefly presented. Conclusions and contributions of the dissertation research are formulated. There is a list of the doctoral student's publications. The text of each paragraph is very short. There is no reference to authors and a bibliography in the abstract - probably due to the limited volume.

11. Critical remarks

- In the introduction, a more convincing presentation of the relevance of the problem and the motives for conducting the pedagogical research is necessary (p.7 - 8).

- In the theoretical overview (Chapter One) the style is descriptive and verbose; semantic meanings are often repeated in different paragraphs, which disrupts the logical line in the text. The presentation of the methodology of A. Leushina, Metlina, A. Stolyar is with rather imprecise phrases (p.40-43). Greater scientific precision, similarity, generality and relevance of the studied theoretical models to the objectives of the research and the author's didactic model are needed.

- The presentation of the methods of the pedagogical research (Introduction/p.9 and Chapter Three) should be refined in accordance with the science Methodology and methodology of pedagogical research (G. Bizhkov; Iv. Ivanov, G. Kozhuharova, etc.).

- The formulation of the criteria and indicators of the study raises questions. First, in the dissertation they are called criteria, and in the abstract - indicators. Second, there cannot be indicators without criteria and vice versa. The criteria/indicators formulated here coincide with the state educational standards in mathematics (SES) for the preparatory preschool group (Regulation No. 5/Appendix 2.) determined by the Ministry of Education and Science. This choice is subject to discussion. In my opinion, the criteria and indicators of this study could take into account the degree of development of STEM skills in learning with technologies from the three modules of the interactive technological model.

- Regarding the vision, style and scientific language of the work: inaccuracies and errors are noticeable. The title of the dissertation contains the wrong professional direction 1.3... The page numbering of the dissertation work provided to me is wrong/missing. The main parts of the work do not start on a new page. Incorrect mathematical terminology is noted (the concept of a number, a set, marking the final number (p.38); quantitative and ordinal value of a number; natural series of numbers; quantitative groups (p.39); there is a passage with poorly formulated, probably translated sentences (p.41); incorrect questions such as: Which group is bigger? (p.123; p.137). There are grammatical errors (articulation, everyday terms, etc.).

- Regarding the correctness of citations: in many narrative texts and regulatory documents there is no reference to the source (Chapter One). In others (1.1.2., pp.20-22) there is full-text borrowing. It is necessary to refine the description of the sources in the bibliography and improve citation skills.

QUESTIONS to the dissertation:

1) Which principles of the alternative pedagogies described in Chapter One (1.1.) are reflected in the author's technological model?

2). What type of integrativity does project-based learning in STEM education realize? Do you use project technologies in your technological model?

3) What are the methodological techniques for 6-7-year-old children to perceive the action of subtraction based on a visual picture model? Illustrate your answer with the task on p.127 of the dissertation work - Bogdancho has nine eggs, of which 4 are broken. How many are left?

12. Personal impressions

I do not personally know the doctoral student Keti Angelova. My impressions are formed only from the analysis of the materials provided for review under this procedure. They give me reason to build a positive attitude towards the doctoral student's ambition to work in the field of mathematics teaching methodology and to follow innovation processes. I admire the author's developed didactic models, as well as the efforts of the doctoral student in writing this large-scale work.

13. Recommendations for future use of the dissertation contributions and results

a) The dissertation work refers to STEM as a modern approach in preschool education. The emphasis of this research is interdisciplinarity and therefore I consider it scientifically justified in the future to classify educational technologies according to the levels of STEAM integration.

b) In future research, the requirements of the methodology and method of pedagogical research should be observed when formulating criteria and indicators.

c) The author's technological model should be optimized, enriched and formed as a printed (or electronic) teaching aid to help students-future preschool teachers and for pedagogical practice.

d) The researcher's publication activity should be oriented towards scientific publications (in Bulgaria and abroad), referenced and indexed in world-renowned databases with scientific information.

CONCLUSION

The dissertation meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the Implementation of ZRASRB and the Regulations for the Development of the Academic Staff at the University of Plovdiv. The dissertation contains scientific and practical-applied results that enrich the science of Mathematics Teaching Methodology (in kindergarten).

The dissertation shows that its author has studied a significant amount of available specialized literature on the research problem and possesses the necessary theoretical pedagogical knowledge and good mathematical competencies in the scientific specialty "Methodology of Mathematics Education. The theoretical research conducted, the developed technological interdisciplinary didactic model and its testing through a pedagogical experiment with a large sample, as well as the results reflected in 5 publications show that the doctoral student has the qualities and skills to independently conduct scientific pedagogical research. The remarks and recommendations made are in favor of the future scientific development of the doctoral student.

In view of the above, I confidently give my **positive assessment** of the research conducted, presented by the above-reviewed dissertation, abstract, achieved results and contributions and I propose to the esteemed scientific jury to award the educational and scientific degree "**doctor**" to **Keti Agop Angelova** in the field of higher education 1. Pedagogical sciences, professional field 1.3. Pedagogy of Teaching in... , doctoral program Methodology of Teaching in Mathematics.

19.11. 2025
Veliko Tarnovo

Reviewer: /signature/
(Prof. Dr. Darinka Galabova)
(Acad. Dr., Assoc. Prof., first name, last name)