

OPINION

by Prof. Dr. **Kosta Andreev Garov** – Professor at Paisii Hilendarski University of Plovdiv

on the dissertation submitted for the award of the educational and scientific degree “Doctor”

in: Area of Higher Education 1. Pedagogical Sciences

Professional Field 1.3. Pedagogy of ... Education

Doctoral Programme: Methods of Teaching Mathematics

Author: **Keti Agop Angelova**

Topic: A Technological Model for Pedagogical Interaction in Forming Elementary Quantitative Concepts in 6–7-year-old Children

Scientific Supervisor: Assoc. Prof. Dr. **Dimitrina Petrova Kapitanova**, Faculty of Education, Paisii Hilendarski University of Plovdiv

1. General presentation of the procedure and the doctoral student

By Order No. RD-22-2102 dated 27.10.2025 of the Rector of Paisii Hilendarski University of Plovdiv (PU), I have been appointed as a member of the scientific jury for conducting the procedure for the defence of the dissertation entitled: A Technological Model for Pedagogical Interaction in Forming Elementary Quantitative Concepts in 6–7-year-old Children, for the acquisition of the educational and scientific degree “Doctor” in Area of Higher Education 1. Pedagogical Sciences, Professional Field 1.3. Pedagogy of ... Education, Doctoral Programme: Methods of Teaching Mathematics. The author of the dissertation is Keti Agop Angelova – a full-time doctoral student in the Department of Primary School Pedagogy, supervised by Assoc. Prof. Dr. Dimitrina Petrova Kapitanova from the Faculty of Education at PU “Paisii Hilendarski”.

The printed materials submitted by Keti Angelova comply with Article 36(1) of the Regulations for the Development of Academic Staff at PU and include:

- Application to the Rector of PU for initiating the dissertation defence procedure;
- Curriculum Vitae in European format;

- Minutes of the Departmental Council reporting readiness for initiating the procedure and the preliminary discussion of the dissertation;
- Dissertation manuscript;
- Abstract;
- List of scientific publications related to the dissertation topic;
- Copies of the scientific publications;
- Declaration of originality and authenticity of the submitted documents.

The doctoral student has submitted 5 publications.

2. Relevance of the topic

The dissertation developed by Keti Angelova presents results in an area that is particularly relevant today, during the intensified transition to an information society. The issues addressed have both scientific and practical-applied significance. It is widely known that global educational systems are in crisis due to the rapid integration of ICT into educational practice. Mathematics education is also in crisis. One of the key reasons is believed to be gaps in early mathematics education. In this context, the submitted dissertation is relevant and may contribute to solving emerging problems effectively.

3. Knowledge of the problem

Keti Angelova demonstrates extensive knowledge and practical experience in the examined field. She skilfully analyses literature related to the topic and the results of previous studies. She expresses informed opinions regarding the nature and characteristics of the active involvement of learners in expanding their mathematical knowledge and skills. These aspects, along with the long-term classroom approbation, confirm her familiarity with the topic.

4. Research methodology

The chosen methodology allows achieving the set objectives and obtaining adequate answers to the research tasks defined in the dissertation. The methodology is consistent with the age-specific characteristics of the learners. Actively used are the Project Method, Brainstorming, collaborative group work, and others. Numerous methodological lesson plans for mathematics instruction for 6–7-year-old children are presented.

5. Characteristics and evaluation of the dissertation and its contributions

The dissertation consists of: title page, table of contents, introduction, three chapters, findings, conclusion, scientific contributions, bibliography, appendices, and declaration of originality. Its total volume is 311 pages, of which 199 contain the main text, 11 pages constitute the bibliography, and 101 pages are appendices. A total of 149 sources are cited.

The introduction clearly defines the research aim, object, subject, main hypothesis, and research tasks.

Chapter One, “Theoretical Framework of the Problem”, discusses didactic aspects of mathematics education in kindergarten and describes different models of forming quantitative concepts in preschool children.

Chapter Two, “Design of the Dissertation Research”, describes the methodological tools of the pedagogical study and presents a technological model for pedagogical interaction in forming elementary quantitative concepts in 6–7-year-olds. Specific features of applying the model in the formative experiment are discussed.

Chapter Three, “Results of the Experimental Study”, presents detailed descriptions of the results from the conducted experiments.

Each chapter concludes with appropriate findings.

The doctoral student lists 6 theoretical and 4 practical-applied contributions. I acknowledge these, although the theoretical contributions could be consolidated.

6. Evaluation of the publications and personal contribution of the doctoral student

The main results are published in 5 publications submitted by the doctoral student. This number meets the quantitative criteria for obtaining the degree “Doctor”. All publications are single-authored and written in Bulgarian. There are no co-authored publications with the supervisor. The publications are mostly in local journals and collections. No list of citations to the doctoral student’s work has been provided.

7. Abstract

The abstract consists of 32 pages and presents the main findings of the dissertation. It adequately reflects the content, contributions, and approbation. However, it lacks its own list of references and citations, which is required, since the abstract is publicly visible, unlike the dissertation.

8. Recommendations

- Chapter One is overly review-oriented and could be slightly shortened.
- The personal contribution of the author is not clearly distinguished; after each chapter the originality of results should be emphasised.
- The doctoral student should increase her English-language publications and aim to publish in internationally indexed journals.

I have no doubts regarding the doctoral student's personal contribution or adherence to academic ethics: there is no duplicate publication, no plagiarism, and no "copy-paste" practices.

CONCLUSION

The dissertation contains scientific, scientific-applied, and applied results which represent an original contribution and meet all requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, its implementing regulations, and the regulations of PU "Paisii Hilendarski".

The dissertation shows that the doctoral student possesses deep theoretical knowledge and professional skills in the scientific specialty Methods of Teaching Mathematics and demonstrates the ability to conduct independent scientific research.

I therefore give my positive evaluation and propose that the esteemed scientific jury award the degree **"Doctor" to Ketii Agop Angelova.**

17.11.2025

Prepared by:

Prof. Dr. Kosta Garov