

OPINION
on dissertation
for the acquisition of a scientific and educational degree "Doctor"

The opinion was prepared by: Assoc. Prof. Dr. Danka Shtereva Nikolova, as a member of the Scientific jury, according to Order No. RD-38-222/ 28.04.2023 of the Rector of Sofia University "St. Kliment Ohridski"

Field of higher education: Pedagogical Sciences.

Professional field: 1.2. Pedagogy.

Doctoral program: Special Pedagogy.

University: Sofia University "St. Kliment Ohridski".

Faculty: Faculty of Educational Studies and the Arts

Name of the doctoral student: Panagiotis-Christos Konstantinos Trichas

Dissertation topic: Teaching Mathematics to Students with

Mild Intellectual Disabilities in Secondary Education

Biographical introduction of the candidate:

In 2008 Panayiotis-Christos Konstantinos Trichas completed his Bachelor's degree in Mathematics at Aristotle University of Thessaloniki , Greece. In the years from 2014 until now he worked as a mathematics teacher for adults and students with SEN in different schools in Greece, in the cities of Edessa , Giannitsa , Sindus , Foustani, Alexandria, etc. In 2010 he received his Special Education license certificate from the University of Macedonia in Thessaloniki. In the period 2012-2022 he completed three Master's programs and obtained a diploma of Master of:

- Special Needs and Inclusive Education - from the University of Sunderland (UK) - 2012;

- Management and Organization of Educational Units - from the The International Hellenic University, Thessaloniki, Greece, 2019;

- Adult Education - from the Hellenic Open University of Thessaloniki, Greece. Patras - 2022.

The curriculum vitae clearly demonstrates the doctoral student's orientation towards the scientific field of mathematics and his interest in the actual application of mathematical knowledge in the educational practice of adults and students with SEN, mild disabilities.

Relevance of the issues:

It can be argued that today there is a lack of research and publications concerning the mathematical knowledge and skills of students with mild intellectual disabilities in the high school system. Even more so, there is a lack of information on appropriate strategies in teaching this complex science aimed at the contingent of students mentioned above. In this sense, the dissertation topic is relevant and modern, and the added research questions in this dissertation are timely and innovative. The dissertation topic is well aligned to the doctoral student's professional competencies and aspirations

Structure and content of the dissertation:

The work proposed for review has a total volume of 207 standard pages and includes an introduction, five chapters, a conclusion and a bibliography of 49 sources.

The introduction contains a brief but competent justification of the term "mathematics training". The author considers it as practices for learning and teaching this field of knowledge, the content, object and purpose of which is the assimilation of mathematical knowledge "at different levels and in different forms".

The first chapter is devoted to the essence of mathematical education, to the existing different theoretical approaches based on the philosophical ideas of behaviorism and constructivism. Here, a special emphasis is placed on the sociocultural factors affecting the process of learning mathematics. The doctoral student examines the concepts of Lev Vygotsky, Jean Levé and Wenger on the mental construction of personality, on learning as a social phenomenon. A suitable place is devoted to theoretical concepts of modern authors in the period 1985-2019 for the study and teaching methodology of mathematical sciences. Chapter 1.3 examines the conceptual essence of mathematics as a scientific field, and the author makes a logical connection with chapter 1.4, which is dedicated to the role of the teacher, the system, organization and ways of teaching mathematics are considered. The theory of the so-called "professional identity" of the teacher. In this chapter, the PhD student demonstrates his skills in reasoning, summarizing and theoretical analysis of sources.

In the second chapter, a characterization of mental retardation as a terminology is presented. The author describes the existing degrees of mental retardation and the manifestation of clear deficits in the field of the educational process and social life of people with this disorder. As a long-time teacher of mathematics, the doctoral student precisely and clearly constructs the main goals related to the education of students with a mild degree of mental retardation, namely: adaptability, expressed in the selection of "techniques and strategies, tools and materials", as well as optimization of the climate in the educational environment, respectively high school course of study.

The author makes a natural and logical connection with the third chapter of the dissertation, dedicated to the specifics of teaching students with mild intellectual disabilities. Citing the publications of scientific researchers, he managed to specify and describe the main learning difficulties of students with SEN (mild and moderate form). The doctoral student also emphasizes the structuring of educational programs to help the adaptive behavior and acquisition of functional skills in the social environment and autonomous life of students with the mentioned disorder. It also gives a clear characterization of the term "functional mathematics", which refers to the acquisition of the most basic mathematical skills needed in everyday life. Building mathematical knowledge is a process that requires patience, pedagogical tact and the necessary preparation from "traditional and non-traditional materials, means and approaches". The author is convinced of the latter, as a result of his accumulated pedagogical experience.

The fourth chapter presents an overview of theoretical concepts for the learning of different areas of mathematics by students with intellectual disabilities. Chronologically arranged and cited foreign studies by the doctoral student cover the period 1991-2013. From the in-depth review, Panagiotis Trihas logically reaches important conclusions about the peculiarities of teaching mathematics to students with a mild degree of intellectual disability, namely:

- for the use of computer program products, cognitive maps, animation effects and films;
- about the role of the teacher in the preparation of specific individual educational programs affecting the main areas of mathematics.

In the fifth chapter, the results of the research are presented and analyzed. It is well planned and organized, and the procedure is described professionally, objectively and accurately (from pp. 89-197). The sample is enviably large and consists of 100 teachers in Greece teaching mathematics to students with mild mental retardation. The survey research method was used with a questionnaire consisting of 21 questions. I will note that they are clearly formulated and specifically aimed at the methods of pedagogical interaction with students in the process of teaching mathematics. I categorically believe that the methodology used is adequate to the set goals and tasks. SPSS v.25 statistical package was used for data analysis. , as well as the Chi-square test and Cross-tabulation analysis. The well-formed 56 tables give an accurate idea of the answers obtained, and the analysis shows that the obtained results are statistically significant, which means that the teaching techniques used are effective and adequate in the process of teaching mathematics to students with a slight degree of mental retardation. The conclusions drawn are short, but succinct, precise and clearly justified. They report the effectiveness of the techniques used by respondents of 100 mathematics teachers from Greece.

Scientific theoretical and practical contributions

1. A theoretical review of the existing concepts, approaches and methods in the process of teaching mathematics aimed at students with a mild degree of intellectual disabilities in a high school course was implemented. In this sense, the dissertation has an interdisciplinary character, which covers two fields - Mathematics methodology and Special pedagogy (refers to the problems of teaching students with SEN).

2. The conducted research is comprehensive, with the participation of 100 mathematics teachers from Greece.

3. The overall procedure of the study includes a well-constructed questionnaire, as well as the qualitative analysis of the results is subjected to adequate statistical processing.

Abstract

The abstract is covers 65 pages and accurately and legitimately presents all chapters of the elaborated dissertation. The basic requirements for the design and structure of an abstract have been met, but there are no highlighted contributing points.

Publications on the topic of the dissertation

The scientific publications presented by the doctoral student Panagiotis Trichas are five in total - the period is from 2019 to 2022. Four of them were published in the collections: "Education and Art: Traditions and Perspectives", University Publishing House "St. Kl. Ohridski". The 2019 publication was co-authored with scientific supervisor Prof. Dr. M. Zamfirov. The fifth publication (2022) was published in the European Journal of Educational Sciences. All publications are thematically related to the dissertation work and represent separate stages of the doctoral student's work. In terms of number and content, they meet the requirements for the author's admission to public defence.

Personal impressions

I have no personal impressions of the PhD student Panagiotis-Christos Trichas

Notes, recommendations and questions

My notes are aimed at the final shaping and presentation of the abstract and the dissertation. In the structure of the dissertation and the author's abstract, there are no separate points of

contribution from the doctoral student. I consider it necessary to point out that greater precision and accuracy should be shown in the translation of the abstract from English to Bulgarian. There are some unclear phrases in terms of meaning.

QUESTIONS:

1. What exactly do you mean by the terms "supervisory materials" and "early organizers"?
2. Based on your professional experience, please share: What software products do you use and in which areas of mathematics to support students with a mild degree of mental disabilities in perceiving the specific learning material.

Conclusion

The dissertation work submitted for defense meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of the ZRASRB and the Regulations of SU "St. Kl. Ohridski". The work is well structured, and the presented theoretical analyzes and the research methodology meet the specific requirements for the development of a scientific work of the Department of "Special Pedagogy" at FNIO. They demonstrate the doctoral student's personal interest and professional commitment to the topic.

I give my positive assessment of the discussed work, the presented abstract and general conclusions.

Everything described, in my condition, gives me reason to suggest to the ESTEEMED SCIENTIFIC JURY TO AWARD PANAYOTIS-CHRISTOS KONSTANTINOS TRICHAS THE EDUCATIONAL AND SCIENTIFIC DEGREE "DOCTOR", in the field of higher education Pedagogy, professional direction Pedagogical Sciences, Doctoral program "Special Pedagogy".

15.06.2023
Sofia

Author of the opinion: