

REVIEW

by prof. Dora Levterova – Gadjalova, DSc

PU "Paisii Hilendarski"

of a dissertation for awarding the educational and scientific degree "PhD"
professional direction 1.2. Pedagogy (Special Pedagogy)

Author: Maria Filippou Manarioti

Topic: "Using information and communication technologies in teaching students with ADHD in Greek"

Research supervisor: Prof. Neda Zlatinova Balkanska, PhD, SU "St. Kliment Ohridski"

1. General presentation of the procedure and the PhD student

By order No. RD 38-661 of 18.12.2023 of the Rector of the University of St. Kliment Ohridski" I have been appointed as a member of the scientific jury to ensure a procedure for the defense of a dissertation work on the topic "Use of information and communication technologies in the education of students with ADHD in the Greek language" for the acquisition of the educational and scientific of a "doctor" degree in a professional field 1.2. Pedagogy (Special Pedagogy), PhD program Special Pedagogy. The author of the dissertation is Maria Phi-lippos Manarioti - full-time PhD student at the Department of Special Pedagogy, supervised by Prof. Neda Zlatinova Balkanska, PhD from SU "St. Kliment Ohridski".

The paper set of materials presented by Maria Manarioti includes the following documents:

- a request to the Rector of SU to disclose the procedure for the defense of a dissertation work;
- curriculum vitae in European format;
- minutes from the department council related to reporting the readiness to open the procedure and preliminary discussion of the dissertation work;
- dissertation work;
- abstract;
- a list of scientific publications on the subject of the dissertation;
- copies of scientific publications;
- list of noticed citations;
- declaration of originality and authenticity of the attached documents;

PhD student Maria Manarioti has attached 4 publications on the topic of the dissertation work.

2. Relevance of the topic

The issues developed in the dissertation work are current and have their high degree of significance in the conditions of the rapid development of digital technologies and digital inclusive education. The use of information and communication technologies in education has become an irrevocable model in educational systems, and for students with ADHD, the use of information and communication technologies supports the learning process.

3. Knowing the problem

PhD student Maria Manarioti knows the problems of the dissertation work and creatively interprets the scientific literature on the problems of ICT in education and of students with ADHD.

4. Research methodology

The research methodology of the dissertation work includes the use of the software Scratch Online - Google website, and the PhD student in her own created account develops four learning projects: Spelling game, Multiple choice game for 1st and 2nd grade, Multiple choice game for 3rd and 4th grade, Multiple Choice Game for 5th and 6th grade. The code used in the games is presented.

The software was developed as a means of intervention in the behavior of students with ADHD and in spelling, grammar and comprehension of grades. The skills and competence in spelling, reading and comprehension of students with and without ADHD were investigated. A comparison was made in the performance of students with ADHD and students with normal development. The effect of progress on the spelling, grammar and comprehension skills of students with ADHD compared to those without ADHD (the intervention program was not implemented in this group) after completing the exercises in the language lesson was investigated. Two measurements were taken: before and after the experiment using the Scratch software.

Respondents in the study were 100 students from primary schools in the prefectures of Northern Greece, selected by the simple random sampling method and divided into two groups: the experimental group of 50 students with ADHD and the control group of 50 students without ADHD.

Descriptive and inferential statistics were used to process the obtained results

The obtained and interpreted results demonstrate:

- when applying the method with ICT - children with ADHD syndrome show a better level of spelling, text comprehension' and 'reading' compared to children without ADHD.
- students with ADHD improve their behavior when using the software during their courses.
- the use of ICT clearly improves the performance of students with ADHD, while students without ADHD perform in the same way or even better than with the classical teaching method.
- the use of ICT significantly improves the attention and behavior of children with ADHD syndrome compared to children without ADHD syndrome. Students with and without ADHD significantly improved their attention at the second measurement compared to the first measurement.

A three-way repeated-measures ANOVA was conducted to compare the effect of time, ADHD, and gender on the agreement level of the students' attention rating facet. There was a significant main effect of time and an interaction of time with ADHD

- students with ADHD neither improve their performance (reading, comprehension, grammar - spelling) in language classes, nor their behavior after the implementation of the software compared to students without ADHD (control team). Students with ADHD significantly improved their spelling at the second measurement compared to the first, while students without ADHD remained stable.

In a three-way repeated-measures ANOVA conducted to compare the effects of time, ADHD, and gender (IVs) on percent correct spelling in Exercise 1., the PhD student demonstrated a significant main effect of time (Wilks' Lambda = .427 , $F(1, 96) = 128.875$, $p = .000$, partial eta = .573) and interaction of time in students with ADHD (Wilks' Lambda = .464, $F(1, 96) = 110.787$, $p = .000$, eta = .536).

Students with and without ADHD significantly reduced their reading error rate and reading time at the second measurement compared to the first measurement ($p < .01$). Students with ADHD significantly increased the percentage of correct reading responses at the second measurement compared to the first measurement ($p < .01$).

In summary, PhD student Maria Manarioti statistically proves that when applying an ICT method using Scratch, students with ADHD syndrome show improved spelling, improved comprehension and improved reading compared to students without ADHD.

With the conducted experiment, PhD student Maria Manarioti proves the conclusions of the analysis of the scientific literature that there is a need to investigate the issue of using the

computer as a means of teaching children with ADHD problems, and there are still many questions that need to be answered.

5. Characterization and evaluation of the dissertation work and contributions

The dissertation has undoubted merits and innovation.

I accept the following 5 contributions from the mentioned 6 contributions from the PhD student Maria Manarioti:

- Extensive literature reading and analysis of modern research in the field of education of children with ADHD has been done. Although many studies have been conducted regarding the impact of the computer on the behavior of children with ADHD, there are still gaps in the introduction of ICT in the education of this group of students. So this study is considered important as it focuses on investigating the effectiveness of incorporating appropriate educational software for children with ADHD.

- An important tool was created, which is educational software, used as a method of influence in the experimental part of the study. The implementation of such software has been shown to improve students' performance in the language course and their behavior.

- Through experimental studies, this educational software has contributed to improving the skills of children with ADHD in reading, comprehension, spelling and grammar, but also in their overall behavior compared to children with normal development.

- The educational software used can be used in the online education of children with learning disabilities, especially in this new era of change where almost everything is working remotely due to the Covid-19 pandemic.

- The specific software used can be applied to another group of children with learning difficulties in language development. The software helps students to solve some problems and perceive things in a way that facilitates their learning.

6. Assessment of the publications and personal contribution of the PhD student

The publications (a total of 4 articles) are on the topic of the dissertation work, they are made in representative editions and are full-text.

7. Abstract

The abstract is made according to the requirements of the relevant regulations, and reflects the main results achieved in the dissertation work.

8. Recommendations for future use of dissertation contributions and results

As a recommendation to the PhD student Maria Manarioti, I recommend that she publish the dissertation work so that it can be implemented in the educational process as useful for the work of the teacher and the students with ADHD syndrome.

CONCLUSION

The dissertation contains scientific, scientific-applied and applied results, which represent an original contribution to science and meet all 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 relevant Regulations of SU "St. Kliment Ohridski".

The dissertation shows that the PhD student Maria Manarioti possesses in-depth theoretical knowledge and professional skills in the scientific specialty of Pedagogy (Special Pedagogy) by demonstrating qualities and skills for independent conduct of scientific research.

Due to the above, I confidently give my positive assessment of the conducted research, presented by the above-reviewed dissertation work, abstract, achieved results and contributions, and I propose to the honorable scientific jury to award the educational and scientific degree "doctor" to Maria Manarioti in the field of higher education: 1. Pedagogical sciences, professional direction 1.2. Pedagogy, PhD program Special pedagogy.

01 February 2023

Reviewer:
(prof. Dora Levterova – Gadjalova, DSc)