

ANNOTATION OF THE SCIENTIFIC PAPERS AND SELF-ASSESSMENT OF THE CONTRIBUTIONS

*for participation in the competition for the academic position of “Associate Professor”
by field of higher education: 1. Pedagogical Sciences;
professional field 1.3. Pedagogy of Teaching ...
(Methodology of Teaching in Informatics and Information Technology)*

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For participation in the current competition (ref. *List of scientific papers for participation in the competition*) are presented **forty-five (45)** scientific papers, including **one (1)** monograph, **one (1)** book, **twenty-six (26)** scientific papers, **eight (8)** textbooks and **nine (9)** training manual. All papers are not included in the procedures for obtaining the educational and scientific degree PhD and for obtaining the academic position “Assistant Professor”.

I. MONOGRAPHS AND TEXTBOOKS

1. E. Todorova, REFLECTION IN TEACHERS' EDUCATION OF INFORMATICS AND INFORMATION TECHNOLOGY, Plovdiv, Plovdiv University Press, 2024, ISBN: 978-619-7768-23-7.

https://www.researchgate.net/publication/388953975_REFLECTION_IN_TEACHERS'_EDUCATION_OF_INFORMATICS_AND_INFORMATION_TECHNOLOGY

Some current strategies for the development of education are related to creating new methods for learning based on an action model of learning instead of the existing traditional model, as well as developing the teachers' skills for using ICT for teaching and learning. This complex and natural process conceives a new and original in its essence scientific question part of which is the problem of forming reflective skills among teachers in teaching Informatics and Information Technologies.

Subject for research in this current monograph is the process of forming reflective skills among students learning to become teachers in Informatics and Information Technologies.

In chapter one are researched modern tendencies which transform education; the need for developing reflective skills among teachers is analyzed and some reflective practices are presented from the learning of students to become future teachers. Attention is paid on the learning methods for forming and developing reflective skills – learning through experience, learning through action, adaptive electronic learning. Some reflective practices are presented for assessment and self-assessment.

Chapter two is dedicated to the formation of reflective skills among teachers in teaching Information Technologies. Problem-based and project-based learning are reviewed as methods for the formation and development of reflective skills among teachers. With the goal of realizing the reflective practices in teaching students in IT who are learning to become teachers, certain problems are developed on the following topics from the Information Technologies curriculum:

- Computer text processing – Templates in a text file; Circular documents; Templates in a text-processing system.
- Spreadsheets – Sorting and filtering in spreadsheet; Summarizing data; Connecting data; Validation.
- Computer text processing in the cloud environment Google Docs – Templates in a text file; Circular documents; Forms.

Chapter three is dedicated to the formation of reflective skills among teachers in teaching Informatics. It is practical-application in character. Some methodological approaches are reviewed for the formation of reflective skills among teachers in teaching Informatics. Practical problems are developed for teaching the subject. School course in Informatics for students learning to become teachers, as follows:

- Working with basic elements of the graphical user interface.
- Creating applications containing more than one form.
- Developing practical projects.

The emphasis is on topics related to basic areas of competence such as Object-oriented programming, Graphical user interface, Algorithms and Data structures, et al.

The developed sample problems follow the steps of the adapted model ALACT for the formation of reflective skills.

The monograph is intended for lecturers, teachers and PhD students who are interested in teaching and developing the reflective skills of teachers and students, future teachers of informatics and IT.

2. E. Todorova, REFLECTION IN SECONDARY SCHOOL INFORMATION TECHNOLOGY EDUCATION, Plovdiv, Paisii Hilendarski University Press, 2024, ISBN: 978-619-202-992-0.

https://www.researchgate.net/publication/387823069_REFLEKSIATA_V_OBUCENIETO_PO_INFOMACIONNI_TEHNOLOGII_V_UCILISE

This book explores some theoretical and pedagogical foundations of current problems of reflection in the Methodology of Teaching Informatics and Information Technology.

Chapter One presents a proprietary model aimed at forming reflective skills and key competencies in teaching Information Technology to students. The model was constructed by the author after analyzing the educational documentation of the Ministry of Education and Science and the practice of teaching Information Technology as a required subject in the Bulgarian secondary schools.

Chapter Two focuses on the author's experience with using reflection in the Information Technology education at the lower secondary stage.

The book is intended for lecturers, doctoral students, students and teachers in the field of theory and practice of Methods of Teaching Informatics and Information Technology.

II. SCIENTIFIC ARTICLES

3. K. Garov, S. Aneva, E. Todorova, SOME NEW METHODOICAL ASPECTS OF TEACHING DATABASES IN THE 10TH GRADE INFORMATION TECHNOLOGY CLASSES, Proceedings of the Forty First Spring Conference of the Union of Bulgarian Mathematicians, 9-12 April 2012, Borovets, Bulgaria, 338-344, ISSN: 1313-3330.

http://www.math.bas.bg/smb/2012_PK/tom_2012/pdf/338-344.pdf

This paper presents methodological aspects of teaching the module "Databases" of Information Technology in the 10th grade of high school. An exemplary thematic plan for teaching the module content is given.

A methodological approach is developed and the stages in solving a specific practical problem are formulated. The paper is intended for teachers in Information Technology.

4. K. Garov, E. **Todorova**, *A SYSTEM OF CLASSES ON THE TOPIC "COMPUTER PRESENTATIONS" FOR THE FORMATION OF KEY COMPETENCES*, Proceedings of the International Conference From DeLC to VelSpace, 26-28 March 2014, Plovdiv, Bulgaria, 121-128, ISSN: 0-9545660-2-5.

<https://fmi-plovdiv.org/GetResource?id=1801>

This work presents a system of lessons on the topic "Computer presentations" included in the subject Information Technology from 5th grade to 7th grade in school. The system is aimed at the formation of key competencies of students. It proposes an approach to the formation of digital competences and their relationship with other competences, also the relationship of Information Technology with other subjects in the study of the topic "Computer presentations".

5. E. Angelova, E. **Todorova**, *RELATION BETWEEN MATHEMATICS AND ART VIA INFORMATION TECHNOLOGY*, Education and Technologies, (2014) 5, 277-282, ISSN: 1314-1791.

https://itlearning-bg.com/magazines/Spisanie2014/resources/spisanie_e_book_2014.pdf

One of the problems to be solved by Mathematics teachers is the motivation of students to study the subject at school, and to increase their interest and activity by applying appropriate teaching strategies. The present work focuses on the relationship of Mathematics with art and music. Two examples of an interdisciplinary approach to Mathematics education are proposed. The first introduces concepts from Mathematics that transfer to music, and the second presents mathematical regularities that apply to art.

6. K. Garov, E. **Todorova**, E. Angelova, *FORMING REFLECTIVE SKILLS VIA INFORMATION TECHNOLOGY TEACHING IN 5. TO 7. GRADES. RESULTS FROM THE RESEARCH*, Education and Technologies, (2014) 5, 410-418, ISSN: 1314-1791.

https://itlearning-bg.com/magazines/Spisanie2014/resources/spisanie_e_book_2014.pdf

This paper presents the results of a pedagogical experiment on the formation of reflective skills and key competences in Information Technology education in a junior high school. Criteria, indicators and tools for reporting the results of the study are formulated. The stages of the conducted experiment are described in detail, which are statistically processed and the analysis of the obtained results is made.

7. K. Garov, S. Aneva, E. **Todorova**, *LEARNING CONTENT OF THE PROBLEMS IN INFORMATICS IN THE MIDDLE SCHOOL*, Proceedings of the Forty Fourth Spring Conference of the Union of Bulgarian Mathematicians, 2-6 April 2015, SOK "Kamchia", Bulgaria, 312-319, ISSN: 1313-3330.

http://www.math.bas.bg/smb/2015_PK/tom_2015/pdf/312-319.pdf

This paper presents specific problems in the secondary school computer science education. A classification of the tasks is made according to: the teaching content; the didactic goals that are

achieved by solving them; the activities carried out by the students to solve the tasks; the type of cognitive activity of the students required to solve them; the type of information activities. The focus is mainly on problems that are solved with a computer using a specific algorithmic language (C#) and programming environment. The development is intended for teachers of computer science and information technology.

8. K. Garov, S. Aneva, **E. Todorova**, *LEARNING CONTENTS IN MIDDLE SCHOOL INFORMATION TECHNOLOGY PROBLEMS*, Education and Technologies, (2015) 6, 409-419, ISSN: 1314-1791.

http://itlearning-bg.com/magazines/Spisanie2015/resources/spisanie_e_book_2015.pdf

In this paper, the problems in teaching Information Technology in junior high school are analyzed. Different classifications of the tasks are proposed in accordance with the specificity of the teaching of Informatics and Information Technology in school. Special attention is paid to the classification of tasks according to the curricular content of the topic "Computer word processing" from 5th-7th grade. More than twenty specific tasks are developed and described that can support the teaching of the topic in school. This work is intended for teachers teaching Information Technology in the junior high school.

9. K. Garov, S. Aneva, **E. Todorova**, *LEARNING CONTENTS IN MIDDLE SCHOOL INFORMATION TECHNOLOGY PROBLEMS FOR THE TOPIC „SPREADSHEETS“*, Proceedings of the Scientific Conference "Innovative ICT: Research, Development and Application in Business and Education", 11-12 November 2015, Hisar, Bulgaria, 99-119, ISBN: 978-954-8852-56-7.

<https://fmi-plovdiv.org/GetResource?id=2240>

This paper presents a methodological development to support the teaching of the topic "Spreadsheets" in junior high school. Different classifications of the tasks adapted to the specificity of the school content of Information Technology are discussed. Particular attention is paid to the classification of tasks according to the curricular content solved in the lower secondary school when studying the topic "Spreadsheets". More than twenty-five concrete examples and tasks are described that can assist teachers in teaching the topic. The work is designed for Information Technology teachers.

10. K. Garov, S. Aneva, **E. Todorova**, *LEARNING CONTENTS IN MIDDLE SCHOOL INFORMATION TECHNOLOGY PROBLEMS FOR THE TOPIC „COMPUTER PRESENTATIONS“*, Education and Technologies, (2016) 7, 338-344, ISSN: 1314-1791.

https://www.edutechjournal.org/wp-content/uploads/2017/10/7_338-344.pdf

This paper presents a methodological development to support the teaching of the topic "Computer presentations" in the junior high school. Special attention is paid to the tasks according to the curriculum content, and they are classified into eleven different learning tasks for 5th, 6th and 7th grade respectively. The proposed system of tasks supports the formation of knowledge, skills and competences in the study of the topic "Computer presentations". The work is designed for Information Technology teachers.

11. R. Mavrova, P. Rangelova, **E. Todorova**, THE HYPOTHESIS IN TEACHING MATHEMATICS, *Mathematics and Informatics*, (2016) 59(4), 381-390, WOS:000450527500003, ISSN: 1310-2230 (Print), ISSN: 1314-8532 (Online). (**Web of Science**)

This paper presents a methodological approach to the use of hypothesis in mathematics education. With the help of examples, it is illustrated how to build a hypothesis by using the methods of cognition analogy and induction (incomplete).

12. V. Arnaudova, **E. Todorova**, E Angelova, A. Rahnev, *ADAPTIVE LEARNING AND ASSESSMENT IN COMPUTER ACCOUNTING THROUGH ELECTRONIC PLATFORM DISPEL*, Proceedings of the Scientific Conference “Innovative ICT in Business and Education: Future Trends, Applications and Implementation”, 24-25 November 2016, Pamporovo, Bulgaria, 131-142, ISBN: 978-954-8852-72-2.

<https://fmi-plovdiv.org/GetResource?id=2525>

The article examines methodological approach for the implementation of adaptive e-learning on the course “Computer accounting.” Emphasis is on both structuring of learning content in lessons, in order to achieve adaptability and on creation of computer adaptive tests. For the purpose of greater precision in the assessment, we present an opportunity in order to adapt the complexity of issues according to the level of the tested student. Explore is parameterization of test questions and tasks with purpose, the students to be assessed by different but equivalent tests. Design, creation and testing evaluation is realized through distributed e-learning platform - DisPeL (Distributed Platform for e-Learning) for teaching on eligible discipline “Computer accounting” for students from Plovdiv University “Paisii Hilendarski” – affiliate Smolyan.

13. K. Garov, S. Aneva, **E. Todorova**, *SOME METHODOICAL ASPECTS IN TEACHING PROGRAMMING IN THE ELEMENTARY SCHOOL*, Proceedings of the Scientific Conference “Innovative ICT in Business and Education: Future Trends, Applications and Implementation”, 24-25 November 2016, Pamporovo, Bulgaria, 109-116, ISBN: 978-954-8852-72-2.

<https://fmi-plovdiv.org/GetResource?id=2523>

In this paper some methodological aspects of teaching Programming in primary school are discussed. It traces the teaching of Programming in Bulgarian schools. It discusses the main capabilities and features of the block programming language Scratch and its use in teaching Programming in primary school classes. The proposed draft curriculum for the subject “Computer modeling” in the 3rd and 4th grades of Bulgarian school is discussed. Forms for improving the qualification of teachers for teaching the subject “Computer modelling” are proposed.

14. **E. Todorova**, S. Chilikova, *REFLECTION IN INFORMATION TECHNOLOGY EDUCATION*, *Strategies for Policy in Science and Education*, (2016) 24(6), 647-655, WOS:000438380800008, ISSN: 1310-0270 (Print), ISSN: 1314-8575 (Online). (**Web of Science**)

This study presents a methodological approach for the formation of reflective skills of students in the study of the topic "Computer word processing" in the secondary school stage. The ALACT model is adapted for the education of 9th grade students in the subject of Information Technology, both for the acquisition of new knowledge and for the development of the student's evaluation and self-assessment. Tasks for the implementation of training according to the proposed model for the formation of reflective skills are indicated. The work is designed to support teachers' teaching and development of various cognitive skills and reflective abilities.

15. D. Boykina, E. Todorova, REFLEXIVE APPROACH IN MATHEMATICS EDUCATION, Proceedings of the Anniversary International Scientific Conference “Synergetics and Reflection in Mathematics Education”, 16-18 October 2020, Pamporovo, Bulgaria, 61-70, ISBN: 978-619-202-595-3.

<https://fmi-plovdiv.org/GetResource?id=3680>

An overview of basic investigations on reflection is presented. Ideas for applying the reflexive approach in Mathematics education are outlined – about creating ideas in forming new knowledge, for finding out solutions of unknown or non-algorithmic problems, as well as for creating new mathematical problems for the school course in mathematics.

16. E. Todorova, S. Aneva, T. Terzieva, CREATING A REFLECTION IN THE INFORMATICS TEACHING BY APPLYING ADAPTED ALACT MODEL, Proceedings of the Anniversary International Scientific Conference “Synergetics and Reflection in Mathematics Education”, 16-18 October 2020, Pamporovo, Bulgaria, 311-318, ISBN: 978-619-202-595-3.

<https://fmi-plovdiv.org/GetResource?id=3712>

The focus of the present study is the purposeful formation of students' reflective skills in informatics education. A methodological approach for the acquisition of reflective analysis and self-assessment skills is proposed by applying the adapted ALACT model. Reflective abilities, as a part of students' competence, contribute to the increase of activity in Informatics education. A concrete example of forming reflective skills in informatics education of 8th grade students is proposed.

17. S. Aneva, E. Todorova, PROSPECTS FOR DEVELOPING STUDENTS' ALGORITHM SKILLS IN TEACHING THE SUBJECT “COMPUTER MODELING AND INFORMATION TECHNOLOGIES” IN MIDDLE SCHOOL, Proceedings of the Anniversary International Scientific Conference “Computer Technologies and Applications”, 15-17 September 2021, Pamporovo, Bulgaria, 37-46, ISBN: 978-619-202-702-5.

<https://fmi-plovdiv.org/GetResource?id=3948>

In this current paper we discuss some methodical aspects of teaching Programming in the middle school which are related to the development of algorithm skills among the students by using a block-based programming language and a scripting language. In the research we present model problems related to studying elements of programming in teaching the new school subject “Computer Modeling and Information Technologies” in the middle school. Their specific realization is presented via the languages Scratch and Python.

18. E. Todorova, S. Aneva, S. Chilikova, P. Delcheva, FORMING AND DEVELOPING COGNITIVE SKILLS IN TEACHING “COMPUTER MODELING AND INFORMATION TECHNOLOGIES” IN THE MIDDLE SCHOOL, Proceedings of the Anniversary International Scientific Conference “Computer Technologies and Applications”, 15-17 September 2021, Pamporovo, Bulgaria, 103-113, ISBN: 978-619-202-702-5.

<https://fmi-plovdiv.org/GetResource?id=3961>

This article proposes an exemplary methodological approach aimed at creating appropriate conditions for a more effective acquisition of knowledge and formation of cognitive skills in the teaching of the subject “Computer modeling and information technology” in junior high school. By using the principle of visuality, the acquisition of abstract knowledge in the field of

programming is supported. In order to develop the cognitive activity of students, methodological approaches are used to develop mental operations such as analysis and synthesis, and skills are formed at the higher levels of the cognitive process. The presented tasks, implemented using Scratch and Python, support the processes of perception, understanding and application of some basic algorithms in the study of programming elements in grades 5 and 6.

19. P. Delcheva, S. Aneva, **E. Todorova**, *Stance on Robotics as an Innovative Extracurricular Activity at the Middle School Stage of Bulgarian Schools and Whether its Realization is Feasible*, Proceedings of the Anniversary International Scientific Conference „Research and Education in Mathematics, Informatics and their Applications“, 22-24 October 2021, Plovdiv, Bulgaria, 155-162, ISBN: 978-619-202-711-7.

<https://fmi-plovdiv.org/GetResource?id=4044>

This study presents some main aspects of an experimental research in the field of robotics, which was conducted with 5th grade students from a school in Plovdiv, in the form of an extracurricular activity within the framework of the Interested Activity project. In order to achieve the goal, a preliminary study was conducted on the students' attitudes towards robotics classes. A summary analysis of the results obtained according to gender, age and profile of the students is presented. The paper describes three Lego Mindstorms robot kits with over 600 parts that can be assembled in different ways to form robots with different functionalities. After the analysis, it can be concluded that by studying robotics, students' activity and motivation are increased, algorithmic skills and out-of-the-box thinking are developed. The proposed methodological toolkit can support the work of teachers.

20. S. Aneva, **E. Todorova**, *DEVELOPMENT OF DIGITAL AND ALGORITHMIC SKILLS FOR STUDENTS USING VISUAL BASIC FOR APPLICATIONS*, Mathematics and Informatics, (2024) 67(3), 314-335, doi:10.53656/math2024-3-6-dev, WOS:001310591000006, ISSN: 1310-2230 (Print), ISSN: 1314-8532 (Online). (**Impact factor (2023): 0.2, Web of Science, JCR – Q4**)

This paper presents a methodological approach for integrated intra-subject interaction and creative use of students' formed digital skills for tabular data processing. It proposes tasks for the development of algorithmic skills in programming education through the implementation of familiar algorithms from the curriculum of "Computer Modeling and Information Technology" in 5th grade in a new context and programming environment. Eight problems and their solutions are presented, implemented using the built-in programming tools in Excel. These problems aim to build on the knowledge of using linear, branching and cyclic algorithms through a variety of activities. The proposed approach and the developed learning tasks enable students to develop and deepen their practical and applied IT skills and to develop their algorithmic knowledge and skills by applying them in a new context and programming environment.

21. **E. Todorova**, O. Chelik, *MAIN CHARACTERISTICS OF TEACHING PROGRAMMING IN BULGARIAN SCHOOLS*, Education and Development, (2024) 14, 94-103, ISSN: 2603-3577.

http://www.eddev.eu/AttachmentsEdited/br_14_2024_Todorova_Chelik.pdf?cls=file

In this paper, the main features of school programming education and the practical use of different programming languages for solving specific problems are discussed. An approach for teaching Programming in school with the simultaneous use of Python, Java and C# is presented. It compares the solved examples that are part of the subject content of Computer Science for 8th grade, discusses the specifics of different programming languages, and compares their capabilities.

The aim is to develop skills in analyzing different solutions, critical thinking and choosing the most effective solution.

22. E. Todorova, S. Tsankova, *ONE METHODOLOGICAL APPROACH FOR LEARNING JAVASCRIPT IN SCHOOL*, Education and Development, (2024) 14, 105-115, ISSN: 2603-3577.
http://www.eddev.eu/AttachmentsEdited/br_14_2024_Todorova_Tsankova.pdf?cls=file

This paper presents a methodological approach for learning JavaScript in the teaching of Computer Modeling and Information Technology in 6th and 7th grade as the first scripting language to be studied. The main focus is on the smooth transition from visual programming with Scratch, to programming with JavaScript scripting language, which is demonstrated by solving practical problems in both languages and their comparison. Two JavaScript programming platforms are presented (p5js.org and codeguppy.com) that are applicable to the teaching of Programming in the junior high school. This research presents a methodological approach to achieve an effective and easier transition from one programming paradigm to another, which will prepare students for their future professional and educational engagements in the world of information technology.

23. K. Garov, S. Aneva, E. Todorova, *TEACHING PROGRAMMING IN TEACHER TRAINING*, Proceedings of the International Scientific Conference „Informatics, Mathematics, Education and their Applications“, 13-15 November 2024, Pamporovo, Bulgaria, 255-264, ISBN: 978-619-7768-15-2.
<https://fmi-plovdiv.org/GetResource?id=4872>

This current paper is dedicated to the teaching of Programming in teacher training at the Faculty of Mathematics and Informatics at the University of Plovdiv “Paisii Hilendarski”. The programming courses take a leading role in the curricula for the bachelor programs “Mathematics, Informatics and Information Technologies” and “Information Technologies, Mathematics and Education Management”, the master programs “Teach in Informatics and Information Technologies at school” and “Pedagogy of teaching Informatics and Information Technologies” and the qualification “Teacher in Informatics and Information Technologies”. In this work are analyzed current curricula in Informatics for the corresponding majors and master programs. Several ideas are presented for the methodology of teach in Programming and Computer Modeling, aimed at the middle schools. Various approaches are presented for creating the elements of the methodical apparatus.

24. S. Aneva, E. Todorova, *PROFESSOR KOSTA GAROV AT 70 YEARS*, Proceedings of the International Scientific Conference „Informatics, Mathematics, Education and their Applications“, 13-15 November 2024, Pamporovo, Bulgaria, 15-30, ISBN: 978-619-7768-15-2.
<https://fmi-plovdiv.org/GetResource?id=4889>

This paper is dedicated to the 70-year anniversary of the famous Bulgarian mathematician and informatician prof. Kosta Andreev Garov. A short description is given of his academic journey, his contributions to school education and the methodology of teaching Informatics and Information Technologies in school as well as for building a solid community of his followers in this research area.

25. S. Aneva, **E. Todorova**, *USING VISUAL BASIC FOR EXCEL APPLICATIONS FOR DEVELOPING STUDENTS' PROGRAMMING SKILLS*, Mathematics and Informatics, (2024) 67(6), 640-660, doi:10.53656/math2024-6-5-usi, ISSN: 1310-2230 (Print), ISSN: 1314-8532 (Online). (**Impact factor (2023): 0.2, Web of Science, JCR – Q4**)

This paper presents an approach for developing and improving students' practical and applied programming skills using the capabilities of Visual Basic for Applications in Excel. Five problems and their solutions implemented using the built-in programming tools in Excel are presented. The proposed approach provides opportunities for the implementation of integrated inter-subject interaction in the teaching of Computer Modelling and Information Technology in the junior high school. The proposed methodological approach and the developed tasks support the formation of knowledge and skills in the teaching of programming to high school students. The presented lessons build on the knowledge related to the use of branching and cyclic algorithmic constructs, working with one-dimensional arrays, as well as creative use of the formed digital skills of students to process tabular data. The proposed methodological approach can enrich teachers' teaching practice.

26. A. Urilski, R. Hristev, **E. Todorova**, *ENHANCING THE SECURITY AND EFFICIENCY MIGRATION FROM WINDOWS SERVER TO LINUX SERVER: RESOURCE ANALYSIS AND BENEFITS*, International Journal of Differential Equations and Applications, (2024) 23(1), 123-139, doi:10.12732/ijdea.v23i1.10, ISSN: 1311-2872 (Print), ISSN: 1314-6084 (Online). (**Scopus SJR (2023): 0.285, SJR – Q3**)

<https://www.ijpam.eu/en/index.php/ijdea/article/view/6074/329>

This article discusses the main operating systems used to provision .NET Core applications – Windows Server and Linux Server. The study covers both the technical details of infrastructure change and the strategic advantages of using Linux as an operating system to ensure the stability of Web-based applications, including e-learning systems. An original algorithm is proposed for migrating a .NET Core web-based application from Windows Server to Linux Debian Server to improve application and data security. The differences of the load on the hardware components of the same .NET Core web-based application supported by the two operating systems are analyzed, and the results are presented and compared for the two environments.

27. R. Hristev, **E. Todorova**, A. Urilski, *CHAPTER 5. SECURITY AND ACCESSIBILITY IN E-LEARNING SYSTEMS*, 138-164, N. Pavlov, T. Terzieva, V. Arnaudova, R. Hristev, S. Monov, E. Todorova, V. Dilyanov, G. Koleva, A. Urilski, *INOVATIVE TECHNOLOGIES AND TOOLS IN MODELING EDUCATIONAL STRATEGIES*, Plovdiv, Plovdiv University Press, 2024, ISBN: 978-619-7768-24-4.

https://www.researchgate.net/publication/388877488_SECURITY_AND_ACCESSIBILITY_IN_E-LEARNING_SYSTEMS

This chapter focuses on security and accessibility as key elements in e-learning systems. It explores the most common threats in these systems and analyzes approaches for data backup and recovery in web-based platforms. An algorithm is presented for backing up and restoring the functionality of web-based e-learning systems in a cloud environment that provides information recovery after a cryptovirus attack. The basic principles and technical aspects of accessibility for people with special needs are studied. The relationship between security and accessibility in the context of web-based e-learning systems is analyzed.

28. E. Todorova, M. Leseva, *TEACHING THE SUBJECT “APPLIED PROGRAMS” IN STUDYING INFORMATION TECHNOLOGIES IN THE 9. GRADE IN A CLOUD ENVIRONMENT*, Scientific works of the Union of Scientists in Bulgaria-Plovdiv, Series B. Natural Sciences and the Humanities Vol. XXV, (2025), ISSN 1311-9192 (Print), ISSN 2534-9376 (Online)

This paper presents the application of cloud computing as an innovative medium for teaching and learning the content of the subject “Information Technology”, in the high school stage. A methodological approach for teaching the subject “Applied Programs” in 9th grade is proposed, based on the use of Google Workspace capabilities. Two tasks related to the formation of competences for creating serial documents and data validation are described. The material is intended for teachers of Information Technology teaching at the high school level.

III. TEXTBOOKS

29. K. Manev, K. Garov, N. Maneva, S. Aneva, **E. Todorova**, D. Danailov, *Information Technology for Grade 6*, Sofia, Izkustva, 2017, ISBN: 978-619-7243-22-2.
https://izkustva.bg/pdf/TextBook_IT6.pdf

The textbook is intended for compulsory education students in Grade 6. The topics correspond to the curriculum of “Information Technology” and are approved by the Ministry of Education and Science.

30. K. Manev, K. Garov, N. Maneva, S. Aneva, **E. Todorova**, D. Danailov, M. Ivanov, *Information Technology for Grade 8*, Sofia, Izkustva, 2017, ISBN: 978-619-7243-23-9.
https://izkustva.bg/pdf/TextBook_IT8.pdf

The textbook is intended for compulsory education students in Grade 8. The topics correspond to the curriculum of “Information Technology” and are approved by the Ministry of Education and Science.

31. K. Manev, K. Garov, N. Maneva, S. Aneva, **E. Todorova**, D. Danailov, *Information Technology for Grade 7*, Sofia, Izkustva, 2018, ISBN: 978-619-7243-52-9.
https://izkustva.bg/pdf/TextBook_IT7.pdf

The textbook is intended for compulsory education students in Grade 7. The topics correspond to the curriculum of “Information Technology” and are approved by the Ministry of Education and Science.

32. K. Garov, S. Aneva, **E. Todorova**, D. Danailov, G. Stoitsov, *Information Technology for Grade 9*, Sofia, Izkustva, 2018, ISBN: 978-619-7243-53-6.
https://izkustva.bg/pdf/TextBook_IT9.pdf

The textbook is intended for compulsory education students in Grade 9. The topics correspond to the curriculum of “Information Technology” and are approved by the Ministry of Education and Science.

33. K. Garov, S. Aneva, **E. Todorova**, D. Danailov, G. Stoitsov, *Information Technology for Grade 10*, Sofia, Izkustva, 2019, ISBN: 978-619-7243-63-5.
https://izkustva.bg/pdf/TextBook_IT10.pdf

The textbook is intended for compulsory education students in Grade 10. The topics correspond to the curriculum of “Information Technology” and are approved by the Ministry of Education and Science.

34. K. Garov, R. Papancheva, S. Aneva, T. Glushkova, G. Stoitsov, **E. Todorova**, I. Velcheva, D. Danailov, *Computer Modeling and Information Technology for Grade 5*, Sofia, Klett, 2022, ISBN: 978-619-7669-02-2.

<https://bg.izzi.digital/DOS/200606/datastore/blocks/4954414/index.html?page=1>

The textbook is intended for compulsory education students in Grade 5 according to the updated curriculum in 2020. The topics fully correspond to the curriculum of “Computer Modeling and Information Technology” and are approved by the Ministry of Education and Science.

35. K. Garov, R. Papancheva, S. Aneva, T. Glushkova, G. Stoitsov, **E. Todorova**, I. Velcheva, D. Danailov, *Computer Modeling and Information Technology for Grade 6*, Sofia, Klett, 2022, ISBN: 978-619-7669-03-9.

<https://bg.izzi.digital/DOS/202052/datastore/blocks/4672537/index.html?page=1>

The textbook is intended for compulsory education students in Grade 6 according to the updated curriculum in 2020. The topics fully correspond to the curriculum of “Computer Modeling and Information Technology” and are approved by the Ministry of Education and Science.

36. K. Garov, R. Papancheva, S. Aneva, T. Glushkova, G. Stoitsov, **E. Todorova**, I. Velcheva, D. Danailov, *Computer Modeling and Information Technology for Grade 7*, Sofia, Klett, 2023, ISBN: 978-619-7669-07-7.

<https://sales.anubis-bulvest.com/epub/textbooks/i7kmit/index.html?page=1>

The textbook is intended for compulsory education students in Grade 7 according to the updated curriculum in 2020. The topics fully correspond to the curriculum of “Computer modeling and Information Technology” and are approved by the Ministry of Education and Science.

IV. TRAINING MANUAL

37. K. Manev, K. Garov, N. Maneva, B. Yovcheva, S. Aneva, A. Angelov, D. Danailov, **E. Todorova**, K. Harizanov, *Information Technology for Grade 5*, Sofia, Izkustva, 2011, ISBN: 978-954-9463-16-3.

The textbook is intended for compulsory education students in Grade 5. It is the second revised edition of one of the first training manual in the country. The teaching content is in accordance with the state educational requirements and is approved by the Ministry of Education and Science. It includes modern technologies such as Windows 7 and MS Office 2010.

38. K. Manev, K. Garov, N. Maneva, B. Yovcheva, S. Aneva, A. Angelov, D. Danailov, **E. Todorova**, K. Harizanov, *Information Technology for Grade 6*, Sofia, Izkustva, 2011, ISBN: 978-954-9463-17-0.

The textbook is intended for compulsory education students in Grade 6. It is the second revised edition of one of the first training manual in the country. The teaching content is in accordance with the state educational requirements and is approved by the Ministry of Education and Science. It includes modern technologies such as Windows 7 and MS Office 2010.

39. K. Manev, K. Garov, N. Maneva, B. Yovcheva, S. Aneva, A. Angelov, D. Danailov, **E. Todorova**, K. Harizanov, *Information Technology for Grade 7*, Sofia, Izkustva, 2011, ISBN: 978-954-9463-18-7.

The textbook is intended for compulsory education students in Grade 7. It is the second revised edition of one of the first training manual in the country. The teaching content is in accordance with the state educational requirements and is approved by the Ministry of Education and Science. It includes modern technologies such as Windows 7 and MS Office 2010.

40. K. Garov, A. Angelov, K. Harizanov, S. Aneva, D. Danailov, **E. Todorova**, *Information Technology for Grade 9*, Sofia, Izkustva, 2011, ISBN: 978-954-9463-67-5.

The textbook is intended for compulsory education students in Grade 9, after updating the IT curricula in 2010. The content is in accordance with the state educational requirements and is approved by the Ministry of Education and Science. It includes modern technologies such as Windows 7 and MS Office 2010.

41. K. Garov, S. Aneva, D. Danailov, **E. Todorova**, A. Angelov, K. Harizanov, *Information Technology for Grade 10*, Sofia, Izkustva, 2012, ISBN: 978-954-9463-68-2.

The textbook is intended for compulsory education students in Grade 10, after updating the IT curricula in 2010. The content is in accordance with the state educational requirements and is approved by the Ministry of Education and Science. It includes modern technologies such as Windows 7 and MS Office 2010.

42. K. Manev, K. Garov, N. Maneva, B. Yovcheva, S. Aneva, A. Angelov, D. Danailov, **E. Todorova**, K. Harizanov, *Information Technology for Grade 8*, Sofia, Izkustva, 2015, ISBN: 978-954-9463-48-4.

The textbook is intended for compulsory education students in Grade 8. It is the second revised edition of one of the first training manual in the country. The teaching content is in accordance with the state educational requirements and is approved by the Ministry of Education and Science. It includes modern technologies such as Windows 7 and MS Office 2010.

43. K. Garov, R. Papancheva, S. Aneva, T. Glushkova, G. Stoitsov, **E. Todorova**, I. Velcheva, D. Danailov, *Computer Modeling and Information Technology for Grade 5 – teacher's book*, Sofia, Klett, 2022, ISBN: 978-619-7669-04-6.

https://sales.anubis-bulvest.com/epub/KNU/i5kmit_KNU/?page=1

The teacher's book contains methodological developments and additional materials to help teachers teaching “Computer Modeling and Information Technology” in Grade 5.

44. K. Garov, R. Papancheva, S. Aneva, T. Glushkova, G. Stoitsov, **E. Todorova**, I. Velcheva, D. Danailov, *Computer Modeling and Information Technology for Grade 6 – teacher's book*, Sofia, Klett, 2022, ISBN: 978-619-7669-05-3.

https://sales.anubis-bulvest.com/epub/KNU/i6kmit_KNU/?page=1

The teacher's book contains methodological developments and additional materials to help teachers teaching “Computer Modeling and Information Technology” in Grade 6.

45. K. Garov, R. Papancheva, S. Aneva, T. Glushkova, G. Stoitsov, **E. Todorova**, I. Velcheva, D. Danailov, *Computer Modeling and Information Technology for Grade 7 – teacher's book*, Sofia, Klett, 2023, ISBN: 978-619-7669-10-7.

https://sales.anubis-bulvest.com/epub/KNU/i7kmit_KNU/?page=1

The teacher's book contains methodological developments and additional materials to help teachers teaching “Computer Modeling and Information Technology” in Grade 7.

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