

**SUMMARIES OF PUBLICATIONS FOR THE VACANCY OF THE ACADEMIC POSITION „PROFESSOR“ IN THE PROFESSIONAL FIELD 1.3. PEDAGOGY OF TEACHING IN... TECHNOLOGY AND ENTREPRENEURSHIP EDUCATION METHODOLOGY IN THE PRIMARY GRADES AND CLASSROOM METHODOLOGY IN PRIMARY GRADES) OF THE CANDIDATE ASSOC. PROF. LYUBEN VITANOV, DSc**

**INDICATOR B 3 Habilitation book – monograph**

1. Vitinov, L. (2022). Education in technology and entrepreneurship. Sofia: "St. Kl. Ohridski". ISBN 978-954-07-5426-0, (monographic work), COBISS.BG-ID – 54001416, 324 pages.

**Abstract:**

The monograph describes and structures the main definitions, characteristics, types and directions of technology and entrepreneurship education in primary grades. It is spread over 324 pages and includes six chapters, 29 figures, 5 tables and 281 literary sources.

The first chapter examines technology and entrepreneurship education in the school education system. The most important moments of the historical development of the methodology, its place in school preparation and normative documents are structured and analyzed. Basic goals and competencies are described as expected outcomes in the paradigm of learning taxonomies.

The second chapter analyzes the main problems in technology education. Basic definitions, types, content and characteristics of the main technologies are given: technology of the materials, mechanical technology (technique), energy technologies, information and communication technologies, agricultural technologies, food technologies. Basic guidelines and training examples are also provided.

The third chapter is devoted to engineering education. The most important definitions, main characteristics and types of engineering are systematized. Major engineering areas and content, engineering process and activities are specified. The main relationships with design and construction training are defined. Basic guidelines and examples of engineering education are structured. The main issues of STEAM education and the "Science and Technology in Society" movements are analyzed, in particular STS, STSE and SSI concepts of technology education and entrepreneurship.

The fourth chapter examines the main issues of entrepreneurship education. Important definitions, main characteristics and types of entrepreneurship are specified. Economic problems relevant to primary school education, such as needs and resources, production, money and banks, trade, consumers and producers, personal and family budgets, are examined. The main guidelines and examples of entrepreneurship training are systematized.

In the fifth chapter, the main strategies, methods and techniques of training in technology and entrepreneurship are structured. Basic concepts and learning priorities are described. A model of technology and entrepreneurship education methods has been developed on two levels: direct learning methods and techniques and active and discovery learning methods and techniques. An extended focus is given to assessment and reflection in technology and entrepreneurship education.

In the last chapter, the main issues of the organization and planning of education in technology and entrepreneurship are considered. The main problems of the lesson on technology and entrepreneurship and interest activities in technology and entrepreneurship are systematized. Attention is given to the planning of technology and entrepreneurship education in the light of reflective teacher practice. The main problems of organizing an effective learning environment in technology and entrepreneurship are indicated.

**INDICATOR G 4 A published monograph that is not presented as a habilitation book – monograph**

2. Vitanov, L. (2022). STEM education in technology and entrepreneurship. Sofia: Prosveta, ISBN 978–954–01–4229–6, 140 pages.

**Abstract:**

The monograph describes and structures the main definitions, characteristics, types and directions of STEM education in technology and entrepreneurship in the primary school. It is spread over 140 pages and includes eight chapters, 50 figures and 118 literary sources.

The first chapter examines the definition and main characteristics of STEM education. Some historical aspects of its development are indicated. The main levels and benefits of STEM education are described, as well as the orientations in its expansion. The place of technology and engineering in STEM is analyzed. Main problems of procedural STEM orientation, STEM competencies, STEM social and personal aspects, as well as important potential problems of STEM education are systematized. Space is allocated for the STEM facilitator role of the teacher.

The second chapter analyzes science in STEM education. The definition and main scientific activities, approaches and methods such as observation, research and experimental research are indicated. The main examples of STEM research activities in technology and entrepreneurship are described.

The third chapter examines technology in STEM education. The main definitions and characteristics of a technological process and the types of technologies related to the content of technology and entrepreneurship education in primary school are given. Specific guidelines and examples of STEM technology training are systematized.

The fourth chapter focuses on engineering in STEM education. Definitions and characteristics of the engineering approach and process, the learning of engineering design in STEM, and the core engineering areas of competence are systematized and analyzed. A special place is devoted to practical STEM engineering.

Chapter Five examines mathematics in STEM education. Definitions, descriptions of STEM math activities, guidelines, and examples of STEM math education in technology and entrepreneurship in the elementary grades are provided.

Chapter six focuses on the visual arts in STEM education. Definitions and types of art in STEM are described, as well as STEAM creativity and innovation. Key guidelines and examples of STEM visual learning in technology and entrepreneurship are outlined.

Chapter Seven describes STEM learning through project work. The main characteristics are defined and analyzed, as well as guidelines and examples of learning through STEM projects in technology and entrepreneurship.

The final chapter examines the core issues of STEM education through authentic practical problem solving. Definitions are systematized and main characteristics analyzed, as well as guidelines and examples of learning through STEM problem-based learning in technology and entrepreneurship.

**INDICATOR G 6 Articles and reports published in scientific journals, referenced and indexed in world-famous databases of scientific information**

3. Vitanov, L. (2022). A student-centered positive approach to education, learning and socialization in the classroom. In: *Pedagogy*. Book 1 /2022, ISSN 1314–8540 (Online), ISSN 0861–3982 (Print). p.: 52-64

**Abstract:**

The article examines a student-oriented positive pedagogical approach in the classroom, developed on the basis of humane pedagogy, positive psychology and pedagogy. A constructed teaching and learning model with four main components is described: dynamic and shared for selecting and structuring learning content; a positive approach to education and classroom management; competency-based learning; balanced approach of student-centered learning.

Methodological guidelines for the implementation of the student-oriented positive pedagogical approach in the class are also indicated.

#### **INDICATOR G 7 Articles and reports published in non-peer-reviewed peer-reviewed journals or published in edited collective volumes**

4. Vitanov, L. (2021). Technology and entrepreneurship education in the school education system. In: Education and the Arts: Traditions and Prospects. Collection of reports from the second scientific-practical conference. Sofia: "St. Cl. Ohridski". ISSN 2738-8999. p.: 465-474.

##### **Abstract:**

Teaching technology and entrepreneurship is an important part of the general education preparation at school. It is directed towards the formation of two key competences – technological and entrepreneurial, as well as towards the development of multiple transferable skills such as critical thinking, problem solving, project development, creativity, etc. This is the reason why in the area of competence and content a variety in the syllabus and its expected results is provided, supported by conditions for the realization of lots of innovative strategies and teaching methods. The following article examines the place of technology and entrepreneurship in the curriculum, the national educational requirements and the primary education syllabus. The general regulatory requirements for the content and the organization of education are systematized – competence areas, global topics and basic expected results. They are grouped in two main fields – teaching and studying technology and entrepreneurship. Several important didactic possibilities of teaching technology and entrepreneurship for the development of key and transferable competences are pointed out. The guidelines for the enhancement of contribution of education in technology and entrepreneurship in the general education preparation in several directions are systematized. The didactic possibilities of education through transfer are described, as well as the active participation in achieving STEM education, education supporting social and emotional intelligence, and the broader support for education in a positive teaching environment.

5. Vitanov, L. (2021). Innovative methods and techniques for student assessment. Pedagogical and social studies. SU "St. Cl. Ohridski", FNOI. ISSN 2683-1376 <https://fnoi.uni-sofia.bg/magazine/>, p.: 3-15

##### **Abstract:**

Student assessment is a key component in the teaching process. Not only the diagnostic of students' academic achievements but also their motivation and success in school depends on its effectiveness. Assessment is in a dynamic relationship with reflection, which allows for better planning, organizing and conducting teaching and learning. Therefore, assessment must be conducted with a variety of methods and techniques, including non-traditional, to perform its ascertaining, diagnostic, motivational and prognostic functions in the learning process. This article discusses the nature and pedagogical possibilities of some innovative methods and techniques for assessment and reflection. Many of them are used successfully in the work of very effective teachers but are not yet applied in mass practice.

6. Vitanov, L. (2022). Pedagogical priorities in technology and entrepreneurship education. Knowledge International Journal, 50 N2, 2022, ISSN (print): ISSN (online):1857-923X, Ref, p.: 221-227

**Abstract:**

The education in technology and entrepreneurship is aimed at the formation of two key competencies: technological and entrepreneurial, which makes its place in the general education preparation at the initial stage of learning especially important. This also sets higher requirements for dynamic changes and priorities in line with the priorities in the European Education Policy, as well as the new STEM orientations in education.

This article discusses the main methodological concepts and guidelines for determining pedagogical priorities in teaching and learning in technology and entrepreneurship. They are structured in several directions: constructivist, pragmatic, humanistic, connectivist, STEAM priorities, as well as orientation towards active learning. The main approaches and the resulting specific changes in approaches, methods and techniques of training are considered.

Cognitive priorities are aimed at acquiring more procedural knowledge and skills, accessibility of training in teaching learning content on a practical basis and more. The pragmatic orientation is aimed at changes in the development of generally applicable competencies and basic skills such as entrepreneurship, critical thinking and creativity, as well as strengthening practical work and integration. Constructivist priorities are based on more systematic support of students' "concepts" and perceptions of technology and entrepreneurship, as well as strengthening collaborative learning and synergies in the learning community. Humanistic priorities are aimed at teaching more personally significant knowledge, increasing the affectivity of learning as well as developing self-confidence and positive self-esteem. The priorities directed by connectivism are related to the more active involvement of information and communication technologies and the formation of skills to draw on the experience and competencies gained in digital networks. Important STEAM priorities and priorities for active learning through more research, project work, problem solving, business games, etc. are also identified.

7. Vitanov, L. (1999). Teaching and learning information technologies in the primary school. In: Education today - education for tomorrow. Bulgarian-Italian Symposium October 6-7, 1998. Sofia: "St. Cl. Ohridski". ISBN: 954-07-1344-7, COBISS.BG-ID – 1034730468. p.: 230-236

**Abstract:**

The article examines the achievements of information and communication technology education in the primary school of France, Great Britain and the United States. Their possibilities for improving the effectiveness of training in two main directions are examined: information processing and experimental research work. The main methodological directions and ideas applied in different countries for searching and collecting information, organizing the information and using it in daily training are indicated.

The possibilities of information and communication technologies for study and research in education in primary school are described.

8. Vitanov, L. (2020). Teaching in initiative and entrepreneurship in class time. In: Education and the Arts: Traditions and Prospects. Collection of reports from a Scientific and Practical Conference dedicated to the 80th anniversary of the birth of Prof. Dr. G. Bizhkov. Sofia: "St. Cl. Ohridski". ISBN 978-954-07-5061-3, COBISS.BG-ID – 44169224. p.: 597-608.

**Abstract:**

Initiative learning and entrepreneurship education takes an important part of pedagogical work in the class time. It is aimed at forming an important entrepreneurial knowledge, skills and attitudes. They are being expanded and integrated into European education policy. An approach is needed in which initiative and entrepreneurship are tied to action on opportunities and ideas in order to become worthwhile. This is applicable to both person and social life as well as business.

This article examines the definitions and main characteristics of initiative and entrepreneurship training in Europe and Bulgaria. This article examines the integrated competence approach of teaching and learning of initiative and entrepreneurship trainings competence approach defined by European educational policy. Their main characteristics are systemised as a key competence in a European educational reference framework for lifelong learning.

The main directions for conducting in-class initiative and entrepreneurial training are discussed. The pedagogic characteristics to learn by transferring and organising practical activity on student entrepreneurship are determined. Some of the major European pedagogical approaches to effective entrepreneurship education, such as active, interdisciplinary, collaborative, social and emotional learning, as well as practically oriented entrepreneurship, are outlined.

The main methodological priorities in the initiative and entrepreneurship training, designed on the development of entrepreneurial competence related to value creation, are also described. They are aimed at creating an entrepreneurial attitude for self-confidence and initiative. Formation of entrepreneurial skills for planning, creativity, financial literacy, resource management, teamwork skills. Acquiring entrepreneurial knowledge to evaluate opportunities, entrepreneurial careers and more.

9. Vitanov, L. (2006). Teaching information technology in the English primary school. In: Training of teachers and social workers on the eve of European integration. 4th scientific conference of SU "St. Kl. Ohridski - FNPP Kiten. Sofia: Veda - Slovena ŽG: 2006. ISBN: 954-8510-97-9 p. 295-299

**Abstract:**

The teaching of information technology is an important part of education in primary school in the UK. It is widely present in the entire spectrum of the curriculum and is an integral part of it. Through information technology, the development of language and work in natural sciences, geography, history, mathematics, art and design and technology, music is supported. The article examines the main aims of the UK National Curriculum, as well as the main areas of application: design and technology, mathematics, language, arts, values and relationships. In conclusion, it is stated that conditions are created for the transfer of success not only in design and technology, but also in other academic disciplines - mathematics, literature, aesthetic sciences, etc.

10. Vitanov, L. (2018). Interactive teaching and learning in the educational training course for pedagogics students. In: *Knowledge International Journal*, 2018, ISSN (print):2545-4439, ISSN (online):1857-923X, Ref 2018, p.: 445-451

**Abstract:**

Contemporary student learning is lagging in the use of interactive and computer-based technologies. Therefore, more systematic use of computer-based technologies combined with traditional methods can lead to better results in the academic preparation of student educators. This article discusses teaching and learning methods and techniques that have been designed and tested in working with student educators. They are used in 30% of the study time during the students' exercises and practical work. The methods used include research and

development of presentations by students on the main topics of teaching methodology in class - civil, health, environmental and intercultural education. Another group of methods is related to authentic e-learning assignments, assignments, and activities in e-learning textbooks for students. The third group included tasks for digital selection and arrangement of information systems, tasks and activities for conducting lessons and various classes, including working with parents, charitable activities, preparation for holidays, self-organization and more. The last group of methods relates to the development of short digital didactic materials prepared for young students by the student educators - photo galleries, games, videos, test papers, etc. mainly for safe road traffic, disaster and accident protection, environmental protection, sports and tourist activities and more. These methods and techniques were applied over a course of 30 academic hours per semester. The experimental work involved four groups - two experimental ones of 36 students and 2 control groups of 36 students. The work of the students in the experimental groups was both independent and team-based. The teams were dynamic and composed according to different criteria. The results of the study showed the effectiveness of the interactive, computer-based methods and techniques of teaching and learning by three criteria - motivation, academic achievement and teamwork skills. The highest differences of 12% -14% were obtained in the motivation and teamwork skills of the students in the experimental classes. The difference in the knowledge and skills of these students on the topics and problems studied in the methodology is not significant enough. Nevertheless, they show 8% higher results in the performed tests.

11. Vitanov, L. (2015). Methods and techniques for positive education and active learning in the classroom. In: Collection of reports from a conference with international participation held on June 6-8, 2014, organized by the Faculty of Pedagogy of Sofia University "St. Kliment Ohridski", ISBN - 978-954-07-3937-3, COBISS. BG-ID – 1284021732, p.: 119-129

**Abstract:**

The article provides an overview of some characteristics of the positive education and active learning in primary school. Techniques and methods for work on different topics during the hour of the class are proposed. The observations and approbations together with expert evaluations give reason to believe that the most effective ration between the traditional and interactive education is 75-80% to 20-25% of lesson activities during the hour of the class.

It is also pointed that the combinations of interactive learning together with positive education increase the efficiency of assimilation of educational content at the hour of the class.

12. Vitanov, L., (2011). Entrepreneurship education in primary school. In: *Primary education*, volume: 51, issue: 5, 2011, ISSN (print): 0204-4951, COBISS.BG-ID – 1238356196. Ref, p.:12-21

**Abstract:**

The article examines basic didactic issues for optimizing entrepreneurship education in primary school. The main priorities in the European education policy for this key competence are indicated. The main goals, content, learning standards, concepts and didactic opportunities for training on initiative and entrepreneurship are systematized. The main forms of education and important pedagogical requirements for effective organization of teaching and learning are also described.

13. Vitanov, L. (2005). Possibilities of the personalized didactic message for home economics and technology education. In: Ensuring and evaluating the quality of training. 3rd scientific conference of SU "St. Cl. Ohridski - FNPP Kiten. Sofia: Veda Slovena Publishing House. ISBN: 954-8510-92-8, p.: 261-262.

**Abstract:**

Effective pedagogical practices are increasingly looking for new and diverse technologies to achieve the expected results in the curricula. A number of techniques are used to enhance the strength training process. Many of them are based on "personally relevant knowledge", "interest-oriented learning" or "affective teaching and learning". Therefore, this article describes a new technique for teaching technology and entrepreneurship. A definition is given, its main types and forms are indicated, as well as its methodological content and opportunities for use in training. It is indicated that the personalized didactic message is a specific pedagogical technology that can increase the effectiveness of teaching and learning to achieve the expected results in the curricula.

14. Vitanov, L., Plachkov, S. Tsanev, N., Ivanova, M. (2005). Road traffic safety education. Sofia: Riva. ISBN:945-320-046-7, COBISS.BG-ID – 1045459684. p.: 7-9, 37-42.

**Abstract:**

In the two parts of the book, developed by L. Vitanov, the main goals of training in road traffic safety and the main guidelines for diagnosing the results of the training are described.

The content and the main forms and methods of evaluation are considered. Emphasis is placed on the specifics of road safety education diagnostics and specific guidelines and examples are given.

15. Tsanev, N., Vitanov, L. (2007). Information technology in in primary school. *Primary education*, vol. 5, 2007, , ISSN (print):0204-4951, COBISS.BG-ID – 1175522020, Ref, pp. 3-9

**Abstract:**

The article systematizes the main guidelines for organizing information technology education in primary school. The main normative documents, priorities and approaches for organizing effective teaching and learning are considered.

The wide methodological range for conducting training using information technologies is indicated.

16. Vitanov, L. (2022). Technology and entrepreneurship education in first in first grade of primary school. *Knowledge International Journal*, 2021, ISSN (print):2545-4439, ISSN (online):1857-923X, Ref 2018, pp. 341-346

**Abstract:**

Recent teaching standards and curricula in technology and entrepreneurship create a number of challenges in the early stages of education. They are related to the inclusion of technological teaching of various approaches and activities aimed at the formation of initiative and entrepreneurship. Therefore, the teacher must teach a discipline not only with a new name, but also with shifted new priorities in the curriculum, oriented between two important key competencies - technology and entrepreneurship. The asymmetrical number of topic, standard and expected results in technology and entrepreneurship requires a skillful balancing of the selection of topics, tasks and activities. Therefore, the application of effective teaching approaches is important for achieving the learning objectives. This is essentially important for young students in the first grade, where an integrated approach to teaching and learning in technology and entrepreneurship can be successfully planned and implemented. It provides opportunities to include more and more diverse activities for taking initiative and entrepreneurship in the topics of technology of the first grade in primary education. This article discusses the definition and main features of this approach. Its normative prerequisites

are described in the state educational standards for curricula and the teaching goals. The main characteristics of the integrated approach to class teaching are systematised, such as the procedural orientation and forming of positive attitude towards the technique and technologies. Important priorities in the integration of initiative and entrepreneurship education in the processes of teaching and learning in technology and entrepreneurship classes are also identified. The main opportunity of active learning in the first grade are systematised, aimed at problem solving, project work, experimental research and reflection of the students.

#### **INDICATOR D 10 Published chapter of collective monograph**

17. Vitanov, L. (2015). Strategies for active teaching and learning in the primary grades. In: Vitanov, L., et al., Methods and techniques for active learning, University Publishing House "St. Kl. Ohridski", ISBN:978-954-07-4015-7, COBISS.BG-ID - 1272820964, p.: 4-35

##### **Abstract:**

The monograph summarizes the experimental research work of a team of basic teachers and experts from Sofia and the country, who successfully tested and demonstrated methodological possibilities in all subjects of 262 methods and techniques for active learning in primary grades.

In the part developed by L. Vitanov, the main definitions and characteristics of active learning are described. Various classifications of methods and techniques are systematized and a new option for their structuring is proposed. The place and possibilities for using active learning in primary school, the hypothesis, the goal, the tasks, the scope and the research methodology for their approbation in pedagogical practice are described. The results of the experimental work are indicated, which confirm the hypothesis that strategies for active learning can be used much more systematically in the Bulgarian school, striving to narrow down without displacing the reproducing, reproductive learning.

The proposed methods and techniques, games and activities are widely used in students and teaching aids on technology and entrepreneurship and class time lessons. They are useful to all who share the need for more effective teaching and learning.

#### **INDICATOR E 20 Published university textbook used in the school network**

18. Vitanov, L., Vasova, E. (2018). Technologies and entrepreneurship for 3rd grade.

Sofia: Prosveta Plus. ISBN - 978-619-222-169-0, COBISS.BG-ID – 1286014948  
*A textbook approved by the Ministry of Education and Culture for teaching technology and entrepreneurship at school.*

19. Vitanov, L., Vasova, E. (2019). Technologies and entrepreneurship for 4th grade.

Sofia: Prosveta plus, ISBN - 978-619-222-281-9, COBISS.BG-ID – 1291751396  
*A textbook approved by the Ministry of Education and Culture for teaching technology and entrepreneurship at school.*

20. Vitanov, L., Raykova, M. (2016). Technologies and entrepreneurship for 1st grade,

Sofia: Prosveta plus. ISBN- 978-619-222-023-5, COBISS.BG-ID – 1280879844  
*A textbook approved by the Ministry of Education and Culture for teaching technology and entrepreneurship at school.*

21. Vitanov, L., Nedyalkova, D. (2017). Technologies and entrepreneurship for 2 classes,

Sofia: Prosveta plus, ISBN - 978-619-222-108-9, COBISS.BG-ID - 1283085796



*A textbook approved by the Ministry of Education and Culture for teaching technology and entrepreneurship at school.*

**INDICATOR E 21 Published university materials, used in the school network**

22. Vitanov, L. (2019). I follow the rules. Teacher Book for the 1st grade. Sofia: Riva.  
ISBN - 978-954-320-522-6, COBISS.BG-ID – 1273857252  
*Teacher Book for school teacher*
23. Vitanov, L. (2019). I follow the rules. Teacher Book for the 2nd grade. Sofia: Riva.  
ISBN - 978-954-320-285-0, COBISS.BG-ID – 1234453220  
*Teacher Book for school teacher*
24. Vitanov, L. (2019). I follow the rules. Teacher Book for the 3rd grade. Sofia: Riva,  
ISBN - 978-954-320-568-4, COBISS.BG-ID – 1279788004  
*Teacher Book for school teacher*
25. Vitanov, L. (2019). I follow the rules. Teacher Book for the 4th grade. Sofia: Riva,  
ISBN: 978-954-320-522-6, COBISS.BG-ID – 48354568  
*Teacher Book for school teacher*
26. Vitanov, L., Raykova, M. (2016). Technologies and entrepreneurship for 1. kl.  
Teacher Book. Sofia: Prosveta Plus. ISBN - 978-619-222-022-8, COBISS.BG-ID –  
1278829284  
*Teacher Book for school teacher*
27. Vitanov, L., Nedyalkova, D. (2017). Technologies and entrepreneurship for 2nd  
grade. Teacher Book. ISBN: 978-619-222-122-5, Sofia: Prosveta plus, ISBN - 978-  
619-222-110-2, COBISS.BG-ID – 1282900196  
*Teacher Book for school teacher*
28. Vitanov, L., Vasova, E. (2018). Technologies and entrepreneurship for 3rd grade.  
Teacher Book. Sofia: Prosveta Plus. ISBN - 978-619-222-172-0, COBISS.BG-ID –  
1285533156  
*Teacher Book for school teacher*
29. Vitanov, L., Vasova, E. (2019). Technologies and entrepreneurship for 4th grade.  
Teacher Book. Sofia: Prosveta plus, ISBN - 978-619-222-283-3, COBISS.BG-ID –  
1290715108  
*Teacher Book for school teacher*