

PLOVDIV UNIVERSITY “PAISII HILENDARSKI”
FACULTY OF BIOLOGY
DEPARTMENT OF „BOTANY AND BIOLOGICAL EDUCATION“

**ANNOTATIONS OF THE MATERIALS UNDER
ARTICLE 65 OF RULES
FOR DEVELOPMENT OF THE ACADEMIC
STAFF OF PAISII HILENDARSKI
UNIVERSITY OF PLOVDIV
AND SELF-ASSESSMENT OF
CONTRIBUTIONS**

of head assistant doctor **Zlatka Petkova Vakleva**
Candidate in associate professor competition

Field of higher education: 1. Pedagogical sciences

Professional direction: 1.2. Pedagogy
(Innovations in education)

ANNOTATIONS AND SELF-ASSESSMENT OF THE CONTRIBUTIONS TO THE SCIENTIFIC WORKS

OF CHIEF ASSISTANT ZLATKA PETKOVA VAKLEVA, PHD

for participation in a competition for the academic position of Associate Professor in the
area of higher education 1. Pedagogical Sciences,
professional field 1.2. Pedagogy (Innovations in education)

81 scientific papers are submitted for participation in the competition: 2 monographs, 1 textbook, 5 study aids for university students, 4 study aids for high school students and 69 scientific articles. This scientific production is not presented for the acquisition of the educational and scientific degree of "doctor".

The numbering used here reflects the sequential number of the publications participating in the competition.

MONOGRAPHS

1. Vakleva, Z. (2022) Innovations in education. Plovdiv, PU "Paisiy Hilendarski, p. 184. ISBN 978-619-202-417-6

The monograph presents the results of years of research focusing on innovation in education.

The studied aspects of innovation in education are supported by experimental research. They are in different fields: in the preparation of students as future teachers trained in the Faculty of Biology and the Faculty of Pedagogy at Plovdiv University "Paisii Hilendarski", in the qualification of pedagogical staff in formal and non-formal educational process, in the biological preparation of students.

1. The monograph begins by clarifying the importance of innovation in education. European and national strategic frameworks for the development of high-quality, inclusive, value-oriented and lifelong learning are outlined. Innovation is the mechanism that ensures flexibility and adaptability of the education policy and educational institutions.

2. Next is clarification of the essence of innovation: as a concept; factors that influence innovation; dimensions of innovation.

3. The conceptual dimensions of innovation are considered. The factors for initiating pedagogical innovations are studied and systematized. A methodological analysis of pedagogical innovations was made. The object and scope of pedagogical innovation, is specified. Analyzed and presented as models are: leading constructs of innovations in the educational process of pedagogical staff; cluster model of educational innovations in the preparation of students from pedagogical specialties at the University "Paisii Hilendarski"; three-stage model of integration of educational innovations. The analysis interprets the innovation potential of the educational system. It depends on the educational policies that are presented in detail. The possibilities for transforming the traditional pedagogical paradigm are discussed. A brief presentation of the learning organization is made as the ability to use knowledge as a resource in the development and acquisition of competences, problem solving, generation of initiatives. Educational innovation ensures that the competitiveness and technological progress of the learning organization is maintained.

4. Contextualization of pedagogical innovations. The environment in which educational innovation takes place determines the quality of the innovation process. The life cycle of innovation in education is modeled.

5. *Pedagogical monitoring of innovations in education - practical and applied models. Pedagogical monitoring is also accepted as an innovative form of assessment of educational quality and is the basis of innovative activity. Innovation is subject to pedagogical monitoring.*

Models presenting autonomous theoretical and experimental pedagogical research on the topics are discussed:

- *Competently oriented educational process for the formation of critical thinking;*
- *Integrative cross-border connections for competence formation;*
- *Didactic technologies for interdisciplinary environmental education;*
- *Development of environmental competencies;*
- *Education for sustainable development in the context of innovation in education;*
- *Key competencies and skills to support sustainable development;*
- *Consumer education in the context of sustainable development;*
- *Integrative trends in education as innovation;*
- *Information technology as a key component of educational innovation;*
- *Education in an electronic environment.*

In 24 figures and 14 tables, important components of innovation in education are modeled and systematized and data from experimental studies are presented under analysis.

Applications reveal details of the research process.

Contributions: the monograph presents an in-depth study of innovation in education by the international scientific community. A complex of theoretical and experimental pedagogical models with evidence of their effectiveness has been developed. The monograph promotes conceptual ideas and educational practices for innovation in education.

2. Vakleva, Z. (2011) *Environmental education - a vision for the future.* Plovdiv, Makros, 2011, p. 184. ISBN 978-954-561-271-8

The monograph presents current theoretical concepts and technologies for the realization of environmental education. The highlights of environmental education are discussed: history, content of the basic concepts, an idea of contemporary trends internationally. The pedagogical aspects of environmental education are clarified. Information about modern educational technologies such as project and situationally based training is studied and summarized.

Contributions: a detailed analysis of the game methods, modeling, group and team organization of the educational process is made. The structure of the lesson is analyzed using interactive methods and learning techniques. It describes the advantage of the educational portfolio, the application of local knowledge and the role of cooperation between the museum and the school in the process of environmental education. The requirements for the preparation and structuring of the considered innovative technologies, their advantages and disadvantages are outlined. Special attention is paid to a system of models of pedagogical research realized in practice and illustrated with examples. Variants of pedagogical technologies have been developed using innovative methods and techniques for environmental education.

TEXTBOOKS AND STUDY AIDS

- 3. Ishev, V., Z. Vakleva, L. Boeva** (2019) Biology and health education for 10th grade (textbook). Sofia, Prosveta AzBuki, ISBN 978-954-360-170-7.

The Biology and Health Education textbook published by "Prosveta AzBuki" publishing house is developed according to the new curriculum of the Ministry of Education and is applicable from the academic year 2019/2020. It presents innovative trends in biology and health education. It contains the topics "Multicellular Organism", "Biosphere" and "Biological Evolution". Each topic ends with a summary lesson and the "Track Your Progress" section, which includes questions and tasks for systematic verification of knowledge. There is also a glossary in which the new concepts are defined. The book is approved by the Ministry of Education and Science. It is designed to teach 10th grade students from all types of secondary schools, for preparation for the state Matriculation Examination in Biology and Health Education, as well as for candidate students in medical universities and university biology majors.

Contributions: The textbook includes a variety of lesson forms that encourage critical thinking and independent cognitive activity of the student. The acquired knowledge is the basis for the formation of competencies provided in the curriculum.

- 4. Vakleva, Z.** (2014) Environmental ethics. Plovdiv, Makros, ISBN 978-954-561-340-1, p. 100.

The book is the second one in the field of Environmental Ethics in Bulgaria, after "Environmental Ethics" by Assoc. Prof. Dr. Geno Mateev. It was developed for the purposes of training at the university in the field of "Environmental Ethics" and "Bioethics" for ecologists and biology teachers. It presents main highlights in the field. It contains up-to-date theoretical ideas on the problems of environmental ethics, practical topics and case studies.

Contributions: The theoretical foundations of a new discipline at the university have been developed. It provides enrichment of the professional competence of the specialist teacher, biologist and ecologist. Environmental ethics is an innovation in the field of Environmental Education, enriching it in an eco-ethical context.

- 5. Vakleva, Z.** (2016) Man and nature - study aid for students. Plovdiv, Makros, 2016, p. 100 ISBN 978-561-419-4

The book includes a system of fundamental knowledge about living nature, which is the basis in the preparation of teachers to teach the subjects of Native Land, Surrounding World and Man and Nature. The structure of the book body traces the thematic sequence of the information components included in the curriculum and lecture course of the discipline. The book supports the student's overall work during semester classes and in preparation for an exam.

Contributions: The textbook presents the didactically processed scientific knowledge with current accents of the biological sciences. The pedagogical design of the lecture resources is suitable for organizing interactive lectures and active independent work of students on a given topic, in the context of the discipline.

- 6. Vakleva, Z.** (2016) Man and nature – exercise guide. Plovdiv, Makros, ISBN 978-954-561-420, p. 80

The handbook includes a system of tasks, thematically selected and with diverse design. They provide practical application of the fundamental theoretical knowledge learned in the lecture course on Man and Nature. The handbook supports the realization of a competent approach in the preparation of pedagogical students for professional activity.

Contributions: It is designed as a system of tasks for practical application of the learned theoretical foundations in the discipline of Man and Nature. It is a compulsory discipline in the preparation of students from pedagogical specialties – Primary School pedagogy, Pre-school and Primary School pedagogy, Pedagogy, Special pedagogy, Primary School pedagogy with study of a foreign language. Practical activities on the implementation of tasks is a necessary condition for the formation of competences for professional pedagogical activity.

7. Vakleva, Z. (2017) Practical module on man and nature. Plovdiv, Makros, 86 pp. ISBN 978-954-561-429-3

The study aid is intended for students from the specialty "Pre-school and Primary School Pedagogy", "Primary School Pedagogy" and "Primary School Pedagogy with Study of a Foreign Language" of Plovdiv University "Paisii Hilendarski". The study aid is part of the educational documentation of the university discipline "Man and Nature" and is aimed at the practical application of the knowledge acquired in the lecture course and the acquisition of competences for professional activity.

The aid supports the practical application of the theoretical preparation in the discipline, self-assessment of the individual progress of the student.

Contributions: A complex of practical tasks has been developed. They are thematically grouped and designed to be implemented in an independent practical exercise. The sample test provides an opportunity for the student to self-assess the preparation on the discipline. The attached list of topics for independent work is aimed at students with a pronounced activity in the course and is an opportunity for their additional improvement. The applications provide an opportunity to build on the core activities included in the practicum.

8. Panayotova, M., Y. Dimova, D. Karagyozova, Z. Vakleva. (2008) Drugs, health and society (an aid to the prevention of psychoactive substance use). Plovdiv, Makros, 2008.

The formation of competencies for a healthy lifestyle is related to the prevention of addictions. Nicotine and drug addictions, the effects on the health and personality of addicts are discussed. In the design of the presented training sessions are included highlights on: objectives of the class; informative, adaptive and practical component; reflective and emotional-ending component. The development is accompanied by didactic materials oriented to the realization of the sessions. The focus of the presented topics and activities is the prevention of drug addiction.

Contributions: Sessions on selected topics have been developed. Popularized is didactic modeling based on the interactive technology "Learning by Experience" or interactive strategy based on the Kolb cycle.

9. Ishev, V., Z. Vakleva, L. Boeva (2019) Book for the teacher - Biology and health education for 10th grade. Sofia, Prosveta AzBuki, ISBN 978-954-360-171-4

The book for the teacher is part of the educational and methodical set in biology and health education of "Prosveta AzBuki" publishing house from 2019. The book offers a system of flexible educational resources developed under the new Ministry of Education and Science curriculum. The specifics of the educational content and the accents in it are described. A detailed methodological toolkit for the teacher's work in biology is presented.

Contributions: the teacher's book is a methodological tool that helps the teacher plan and conduct the learning process. It guides the biology teacher in the methodological accents for working with the textbook. Developed examples are: thematic annual distribution; system of types and kinds of lessons. A methodological model has been constructed for interactive lessons and for working on projects. A summary portfolio design for the student is presented. Guidelines are given for its development and

application in the learning process. A system of tests for incoming, outgoing and current control is presented, according to the taxonomy of cognitive goals of B. Bloom and the trends for State Matriculation Exams.

10. Ishev, V., **Z. Vakleva**, L. Boeva (2020) Biology and health education worksheets for 10th grade. Sofia, Prosveta AzBuki, 124 p., ISBN: 978-954-360-199-8

The learning aid was developed for the purpose of school biology training. It includes a system of different tasks on each topic of the textbook. The aid aims to support the work of the students in the acquisition of knowledge and skills in the subject.

Contributions: the learning tasks included in the learning aid help the interaction and application of an active approach in the training on the subject. They provide systematization of the educational material in many tables. The tool helps organize the independent cognitive activity of the student. A variety of tasks provide an opportunity for students to acquire competencies.

11. Angelova, R., L. Boeva, D. Karagyozova, M. Panayotova-Stoyanova, **Z. Hristova (Vakleva)**. Book for the biology teacher - 11th grade, profiled learning. S., Prosveta, 1996, ISBN 954-01-0795-4, p. 77. (Section: Analysis and structure of educational content. Emphasis on concepts and basic problems. 13-23; Section: Laboratory lessons. 56-62.)

Biology curriculum for 11th grade, profiled training is a didactic analogue of modern biological sciences with accents in the fields of: Histology, Molecular Biology, Genetics and Ethology. The selection and structuring of the educational content is an expression of the principle of science. The four sections and their respective topics are analyzed in detail with their theoretical and applied accents.

Contributions: the specifics of laboratory lessons are presented, the need for laboratory work in the study of Biology in 11th grade is discussed. Detailed developments of laboratory lessons with the relevant methodological features of their planning and implementation are given.

12. Stavreva, G., D. Karagyozova, M. Panayotova, **Z. Vakleva**. Health and environmental education and socialization of children deprived of parental care. Socio-pedagogical and methodical aspects. A methodological aid for teachers, educators and social workers. Plovdiv, UI "P. Hilendarski", 2007, ISBN 978-954-423-395-2, p. 100. (Third module: "Nature - our home", p. 78-99.)

The methodological handbook is designed for students, teachers, educators and social workers who are involved in solving the complex socio-pedagogical problems of the young generation. General theoretical statements and practical developments are presented in priority areas – health, environmental education and socialization of children deprived of parental care (raised in social homes).

Methodology of Health and Environmental Education and Socialization of Children includes: the essence of the key concepts "personality", "upbringing" and "socialization", as well as the methodological principles and approaches of pedagogical science. The effectiveness of Health and Environmental Education is strongly influenced by the constructed didactic technology for their implementation. The book offers theoretical foundations for the construction of training sessions on health and environmental education. There are also detailed thematic classes that demonstrate the recommended interactive strategy for the Kolb cycle. The material is related to project activities for socialization of children from a social home. The ideas are also fully applicable in traditional school practice.

Contributions: the third section of the methodological manual presents thematic sessions with an ecological focus. Each session is modeled with key stages: session goals, creating atmosphere,

generating experience, awareness, reflection, summaries and conclusions, application and planning of the next experience. Case studies, games, tables, schemes, organization of group work, developed didactic materials, complement the practical orientation of the module.

Articles and reports published in scientific publications, referenced and indexed in world-renowned databases of scientific information

13. Vakleva, Z., T. Georgieva (2021) Critical thinking as the main goal of university education. *Pedagogy*, vol. 93, No. 1, 45-56. WEB of science

Pedagogical research examines conceptual emphases of critical thinking in the context of university education. This development is a contribution to the discussion on the problem of critical thinking as the main goal of the educational process at the university.

Contributions: An in-depth analysis of the conceptual emphases on critical thinking as a primary goal of university education is done. A complex of content components and pedagogical mechanisms was modeled for the effective organization of the educational process aimed at forming critical thinking among students. One of the most popular UF/EMI critical thinking scales is presented and analyzed. In the context of critical thinking, models of the modern personality and a system of critical thinking skills are presented.

14. Vakleva, Z., T. Georgieva (2022) Education for sustainable development - practical and applied aspects. *Strategies of educational and scientific policy*, No. 3, 303-312. WEB of science

Education for sustainable development (ESD) has been a priority in school practice in recent decades. It is a tool for achieving sustainability and aims to prepare young people for a balanced, harmonious and sustainable world for present and future generations. The concept of sustainable development is constantly evolving and enriching. ESD is based on a three-component system: environment, society and economy. The sustainable development paradigm is becoming increasingly popular in the education system. It integrates the principles of ESD across all educational levels and subject areas. One of its goals is the formation of competences for sustainable development. The research focuses on didactic technology for effective implementation of ESD in school practice.

Contributions: highlights of the ESD content are interpreted; opportunities for the formation of competences for sustainability in school practice are explored. Models were developed and presented, reflecting the main components of ESD and the interrelationships between them. The development is a contribution to broadening the ESD debate and operationalizing sustainability competencies in a specific subject area.

15. Vakleva, Z. & Georgieva, J. (2021). Competence in environmental ethics in the risk management in agroecosystems. *Bulg. J. Agric. Sci.*, 27 (Suppl. 1), 55–60 Scopus Q3

Environmental ethics (EE) provides an ethical approach to the study of environmental risks in agroecosystems. As a disciplinary field in universities, environmental ethics ensures scientific quality in the preparation of students. In the present study we offer: reflections on the ethical approach in agricultural sciences; environmental ethics as a trend in the training and research of graduate students and PhD students regarding the risks in the development of agroecosystems; interpretation of the possibilities for applying an ethical approach to solving problems about the risks in the development of agroecosystems.

In this article, we look at the possibilities of integrating environmental ethics and ethical approach in solving problems related to climate change, food security, biodiversity, agricultural product quality,

etc. The study shows that the development of environmental ethics competence has a positive effect in the study of risks in agroecosystems.

Contributions: the study contributes to the improvement of environmental education on the possibilities of regulating the relationship between people and the environment with the benefits of EE; offers tools for solving environmental problems based on EE; considers the possibilities of expanding the influence of EE for the formation of EE competence as an integral part of the development of coordinated skills in biology and agricultural sciences students.

ARTICLES AND REPORTS

<p>16.</p>	<p>Vakleva, Z. STUDENTS ABILITY TO DETECT HUMAN NEGATIVE IMPACTS ON LOCAL ENVIRONMENTS AND LOOK FOR SOLUTIONS THROUGH SIMULATIONS. International Journal of Latest Research in Science and Technology Volume 6, Issue 5: Page No. 40-44, September-October 2017 ISSN (Online):2278-5299</p> <p><i>The analysis of the academic literature confirms the advantages of case studies in students' cognitive development, but it does not find evidence of students' ability to identify environmental problems in their environment and use case studies to solve them. In the study, students are encouraged to look for the negative human impact on the environment and use these observations to formulate problems and develop original solutions. Students from two secondary schools are involved in the experimental design and implementation. The trainees analyze the impact of people on the environment, discuss case studies, search for solutions, prepare and present posters with their results.</i></p> <p><i>Contributions: developed didactic technology for the formation of critical thinking skills – analysis of case study environmental situation and decision making. Criteria have been developed to assess students' skills for presenting posters and role-playing games. The positive effect of interactive teaching through case studies, role-playing games and poster presentations has been proven. Interactive lessons and didactic materials have been developed.</i></p>
<p>17.</p>	<p>Vakleva, Z. (2017) Traditions and Innovations in Environmental Education. - International Advanced Research Journal in Science, Engineering and Technology, 4(11): 1-6</p> <p><i>In a global (world) context, environmental education is seen as a key, central part of a broad social movement with the aim of optimizing the use and protection of nature and achieving sustainable development of individual countries and the world as a whole.</i></p> <p><i>The ecocentric paradigm is imposed in the content of modern environmental education. This paradigm establishes a comprehensive and ethically oriented approach to revealing the objective universal value of nature, emphasizing its uniqueness and objective self-worth. Environmental ethics is a doctrine of the ethical relations of people to nature, based on the perception of nature as a member of a moral community, a moral partner, equal and equally valuable, which also includes limiting the rights and needs of people.</i></p> <p><i>Contributions: Operationalization of the goals of environmental education and their orientation towards universal human values.</i></p>
<p>18.</p>	<p>Vakleva, Z. (2011). Theoretical model of research: exploring the possibilities of innovative technologies for ecology education of the students in biology teaching using non-conventional methods/situational, playing, project and modeling methods. <i>Trakia journal of sciences</i>, 9(4), 1-4. issn 1313-3551</p>

	<p><i>The presented project deals with the environmental education of students through the teaching of biology and the possibilities of its renewal with innovative technologies for the application of non-traditional teaching methods - situational, game, project method and modeling.</i></p> <p><i>Contributions: The characteristics of interactive learning methods are developed: essence, advantages and disadvantages. A methodology for their application in training is recommended.</i></p>
<p>19.</p>	<p>Vakleva, Z. (2012). Comparison of Role Playing and Poster Presentation in Teaching SSI (Socioscientific Issues). <i>University of south-east europe lumina educational reform in the 21st century in balkan countries, Romania, Bucharest</i>, 28-06.</p> <p><i>The analysis of academic literature confirmed the advantages of case studies in cognitive development of students, but in it we did not find comparative evidence for didactic technologies and difficulties in applying poster presentations and role playing. In the study we directed students to look for human negative impacts on the environment and use these observations for problems formulation and for development of original investigations. Students from two secondary experimental schools — one professional and the other language school, were involved in the experimental design and performance. Two groups, one from each school, prepared and presented posters with their results. Other two groups, again one from each school, prepared scenarios for role plays and presented them to the school audience. Ecological knowledge was assessed before and after the study. Students' skills for poster and role play presentations were assessed using prepared beforehand check lists with students' participation. Contributions: The results showed the positive effect of interactive teaching using case studies, role playing and poster preparation and presentation. They also pointed out the difficulties which students met in the process of skill development, and the guidance they needed from the teacher. The study proved the value of guided discovery in successful learning. The background of students also proved to be a significant factor in learning. Students from the language school scored higher than the students from the professional school and poster preparation and presentation proved to be easier to learn than role playing.</i></p>
<p>20.</p>	<p>Kostova, Z., Vakleva, Z., Vladimirova, E., & Kaleva, R. (2012). Using interactive case studies to support students understandings of local environmental problems. <i>Bulgarian Journal of Science and Education Policy (BJSEP)</i>, Volume 6, Number 2, pp. 292-320.</p> <p><i>Students' critical observations on the quality of their environment helped them to make a list of local environmental problems, implement interactive strategies in their study, and propose rational, science-based solutions. The study focused on the advantages and disadvantages of poster presentations and role-playing games and the specific learning difficulties that students had to overcome. The achievements of the students from the two experimental schools were assessed independently to give us an idea of the details of learning using different interactive strategies and of the skills acquired for performance, depending on the interests and personal abilities of the students. The three versions of the module (traditional, dominated by a teacher presentation; poster preparation and presentation in which students imitate research by a scientific team; and a role-playing game in which students not only study local environmental issues, but take on social roles to deal with them) demonstrate three levels of learning about students' autonomy. Specific assessment tests and checklists were developed to analyze, evaluate and compare student performance in each module version and in each school. Environmental knowledge assessment tests are based on Bloom's taxonomy of educational objectives.</i></p>

	<p><i>Preparations and presentations for posters and role-playing games were evaluated according to specific criteria specified in the checklists.</i></p> <p><i>Contributions: The article presents a designed and advanced interactive extended learning module for students from the 9th grade of the Secondary School in Bulgaria, based on environmental case studies. In the module activities, students from two schools studied the local environment, carried out observations and experiments, collected and analyzed data, prepared and presented posters and role-playing games, made connections between scientific processes and socio-scientific issues, and drew conclusions about the global effects of locally created environmental problems.</i></p>
21.	<p>Vakleva, Z. (2017) Project based learning in school practice. Scientific works of the Union of Scientists in Bulgaria-Plovdiv, series A. Public sciences, art and culture, Vol. IV, p. 249-252. ISSN 1311-9400 (Print); ISSN 2534-9368 (On-line)</p> <p><i>The project method has long been applied in school practice, but its use has been relatively limited. Recently, scientists have again turned their attention to this method and its ability to meet the new educational requirements. Currently, the project method is revived again by the ideas to reform education as a need for changes in the learning process when working with students and replacing the traditional teaching with new, innovative and interactive methods, as an example of action-oriented education.</i></p> <p><i>Contributions: The results of pedagogical research are popularized.</i></p>
22.	<p>Vakleva, Z., M. Panayotova, B. Stanislavov. (2021) Formation of competences for a healthy lifestyle (Healthy nutrition) through Web-based didactic technology. Scientific researches of the Union of Scientists in Bulgaria-Plovdiv, series B. Natural Sciences and the Humanities, Vol. XXI, ISSN 1311-9192 (Print), ISSN 2534-9376 (On-line), p. 9-12.</p> <p><i>The research presents an experimental study of 9th grade students on the degree of formation of competencies for healthy lifestyle (healthy eating) through web-based didactic technology. The study involved 45 students in the educational process in "Biology and Health Education" – 9th grade, working on a methodology developed in three variants. The data obtained from the experiment are presented in tables and graphs and subjected to statistical processing and analysis. The conclusions serve to confirm the working hypotheses.</i></p> <p><i>Contributions: The results of pedagogical research are popularized.</i></p>
23.	<p>Panayotova, M., Z. Vakleva, B. Stanislavov (2021) Essence and content of the term "Healthy lifestyle" and its place in the curriculum of biology and health education in 8th grade. Scientific researches of the Union of Scientists in Bulgaria-Plovdiv, series B. Natural Sciences and the Humanities, Vol. XXI, ISSN 1311-9192 (Print), ISSN 2534-9376 (On-line), p. 4-8.</p> <p><i>The study aims to define the concept of "healthy lifestyle", which is the basis of this thesis. In a brief theoretical review, we present the essence and content of the term. We present a conceptual model developed by us for the formation of healthy lifestyle skills in the context of the study of biology and health education in the 8th grade. It is based on the normative documents for school education, the content of the healthy lifestyle and the activity approach realized in an interactive educational environment.</i></p> <p><i>Contributions: On up-to-date study has been conducted and the results of a pedagogical experiment have been popularized.</i></p>

<p>24.</p>	<p>Vakleva, Z., T. Palova. (2020) Didactic technologies for interdisciplinary ecological education. Scientific Research of the Union of Scientists in Bulgaria – Plovdiv, series B. Natural Sciences and Humanities, Vol XX, p. 146-151. ISSN: 1311- 9192 (Print), ISSN:2534-9376 (On-line)</p> <p><i>The new State Educational Standards and Curricula create integrative mechanisms for the implementation of environmental education. Effective environmental education is much more than a one-way transfer of knowledge about environmental laws and issues. It is a tool for positive change in attitudes, values, as well as skills for engagement and practical action to protect, restore and sustainably develop the environment. The way to achieve these results is multifaceted. Quality environmental education involves a partnership between many stakeholders. In the study, we present different perspectives of researchers. We identify solved and unsolved problems on how to improve the quality of environmental education. The contribution of this study is to help keeping the discussion on environmental education in Bulgaria up to date. In order to better understand how positive results can be achieved in the field of environmental education, in view of the current environmental situation, we critically review leading research on the topic and focus on a generalized model of pedagogical research to establish working mechanisms for effective environmental education.</i></p>
<p>25.</p>	<p>Vakleva, Z. T. Palova, Y. Uzunova (2020) Integrative inter-sector relations between biology and chemistry for the formation of environmental competences. Scientific Works of the Union of Scientists in Bulgaria - Plovdiv. Series C. Technics and Technologies. Vol. XVIII, ISSN 1311 - 9419 (Print); ISSN 2534-9384, p. 152-156.</p> <p><i>The purpose of this work is to show the integrative links between the teaching methodology of Biology and Chemistry. On the other hand, these are the integrative links between the subjects "Biology and Health Education" and "Chemistry and Environmental Protection".</i></p> <p><i>Contributions: Knowledge of these connections is necessary because it helps students to master the integrative approach, to increase competence and the implementation of integrative processes in high school education when planning and carrying out the lesson activity in the study of living and non-living nature. The article offers methodological ideas for implementing the integrated approach in the educational process in the specified subject areas. The integration between biology and chemistry is based on the formation of environmental competences in students.</i></p>
<p>26.</p>	<p>Vakleva, Z., T. Palova, Y. Uzunova (2020) Survey results on the role of inter-sector links for the formation of environmental competences. Scientific Works of the Union of Scientists in Bulgaria - Plovdiv. Series C. Technics and Technologies. Vol. XVIII, p. 157-161. ISSN 1311 - 9419 (Print); ISSN 2534-9384 (Online)</p> <p><i>The current study presents the results of a survey aimed at identifying changes in students' attitudes to critical thinking for the formation of environmental competences in the 9th and 10th grade students on the subject of Chemistry and Environmental Education.</i></p> <p><i>Contributions: Developed didactic technology for the formation of critical thinking with a multiplying effect.</i></p>
<p>27.</p>	<p>Vakleva, Z., M. Panayotova, M. Barzeva (2020) Results of a preliminary pedagogical experiment for the formation of health and ecological competences in the training in Man and nature in 5-6. class. Scientific Works of the Union of Scientists in Bulgaria - Plovdiv. Series C. Technics and Technologies. Vol. XVIII, ISSN 1311 -9419 (Print); ISSN 2534-9384 (Online), p. 148-151.</p>

	<p><i>One stage of the dissertation research on the formation of health and environmental competences in the study of "Man and Nature" is presented. 5-6th grade. Data from a preliminary pedagogical experiment are described. A content analysis of the experiment was made.</i></p> <p><i>Contributions: The methodology of a pedagogical experiment, developed for ONS Doctor, has been popularized. Data from a preliminary pedagogical experiment were tested.</i></p>
28.	<p>Vakleva, Z., P. Djambazova. (2020) Environmental education in the digital environment - practical aspects in teaching biology and health education. Scientific Research of the Union of Scientists in Bulgaria – Plovdiv, series B. Natural Sciences and Humanities, Vol XX, p. 157-160. ISSN: 1311- 9192 (Print), ISSN:2534-9376 (On-line)</p> <p><i>Environmental Education aims to prepare young people to deal with environmental problems and build a harmonious relationship between people and their environment. It is an integrative component at all levels in the biological preparation of students. Environmental Education is an emphasis in the methodology of Biology Education as a specific organization, implementation and evaluation of the quality of the learning process. Digitalization in education, which has been observed in recent months around the world, has influenced the development of new perspectives in the environmental preparation of students. The transformation of Environmental Education with the means of the e-learning environment needs a theoretically justified and experimentally proven didactic model for the organization of the lesson. This research focuses on the process of methodological modeling of the biology lesson conducted in an electronic environment. We are looking for answers to the questions: How to model the lesson in an electronic environment? What are the features of virtualization and illustration of the learning process on environmental issues? The formation of skills for identifying, solving and evaluating environmental problems, as well as behavior for the protection and sustainable development of the environment, is also subject to rethinking as a methodological justification.</i></p> <p><i>Contributions: The present work contributes to the discussion of the research problem, as well as to the development of a generalized methodological model of an e-learning lesson in Environmental Education.</i></p>
29.	<p>Vakleva, Z., S. Ivanova (2020) Education for sustainable development – application in biology and health education. Scientific Research of the Union of Scientists in Bulgaria – Plovdiv, series B. Natural Sciences and Humanities, Vol XX, ISSN: 1311- 9192 (Print), ISSN:2534-9376 (On-line), p. 152-156.</p> <p><i>Education for Sustainable Development (ESD) is a tool for achieving sustainability. It aims to prepare young people for a balanced, harmonious and sustainable world for present and future generations. The concept of sustainable development on the one hand is not easy to define, but on the other hand it is constantly evolving. Three components are taken as the basis for sustainable development: environment, society and economy. The paradigm for sustainable development is gaining popularity in the education system. It reflects the urgency set out in the 2030 Agenda for Sustainable Development to integrate the principles of education for sustainable development into all levels of education. One of the goals set in the program is the development of competencies for sustainable development. We use the methods of pedagogical research: systematic review of the literature, content analysis of curricula, pedagogical diagnostics, methodological modeling. In the research we focus on: the relationship between the content of sustainable development, the formation of competencies for sustainability and tools for their assessment in the biological preparation of students; the development of methodological models applicable in educational practice.</i></p>

	<p><i>Contributions: The development of educational standards for sustainable development and operationalization of sustainability competencies in a specific subject area.</i></p>
30.	<p>Vakleva, Z., M. Panayotova, T. Georgieva, D. Penkov. (2020) The BLUP procedure as a statistical tool in pedagogical research on the influence of web-based educational resources in the formation of environmental competences in the biological preparation of seventh graders. Professional education - Methodology and experience, volume 22, book. 4, pp. 355 – 369. ISSN 1314–8567 (Online), ISSN 1314–555X (Print)</p> <p><i>The research presents highlights from a pedagogical experiment on the contribution of web-based educational resources to the formation of environmental competences in teaching Biology and Health Education (BHE) in the 7th grade. It has been established that web-based educational resources are one of the effective forms of ICT implementation in BHE. Experimental data are subjected to statistical processing using a procedure model BLUP (Best Linear Unbiased Prediction). The possibilities for the application of this statistical model in pedagogical research are analyzed.</i></p> <p><i>Contributions: the possibility of applying new statistical processing of results in pedagogical research studies has been investigated.</i></p>
31.	<p>Panayotova, M., Z. Vakleva, M. Teneva, St. Karamfilov, D. Penkov (2020) Results of application of web-based educational resources for the formation of health competences in the teaching of "Biology and health education" in the VII grade. Professional education - Methodology and experience, volume 22, book. 2, pp. 135-147 ISSN 1314–8567 (Online), ISSN 1314–555X (Print)</p> <p><i>The article analyzes the results of an experimentally verified methodological model for the application of web-based educational resources for the formation of health competencies in the teaching of "Biology and Health Education" in the VII grade. A BLUP (Best Linear Unbiased Prediction) procedural model was used for processing and analysis of the results, which has not been applied in pedagogical research so far. The object of the research are students from a basic school with a high degree of interest and success in the field of natural sciences.</i></p> <p><i>The results of the study (in-between averaging) indicate that the "teacher - health knowledge" system reliably affects the differences in the achieved results of the "gender difference - teacher - skills" system, in favor of girls. The teacher-health knowledge system reliably influences the achievement gap of the gender difference-web knowledge system, but in favor of boys. A high positive correlation is reported between the results obtained for health knowledge and skills when teaching according to the traditional methodology (teacher).</i></p> <p><i>The study is a contribution to the development of educational standards for Sustainable Development and operationalization of sustainable competencies in a specific subject area.</i></p>
32.	<p>Stankova, G., Z. Vakleva, D. Karagyzova-Dilkova (2020) A model for the development of communicative and presentation skills in the English tuition of university students. APNat (Acta Pedagogica Naturalis'2020), Vol 3, No 1, 2020, Page 71 of 77. ISSN 2603-4468</p> <p><i>The study presents a didactic model for the development of communication and presentation skills in teaching English to students majoring in "Biology and Chemistry", "Biology and English" at the Faculty of Biology of Plovdiv University "P. Hilendarski". The model is based on the textbook "English for Biology Students" (with author G. Stankova). The system of tasks included in it supports the formation of communicative competence in English.</i></p> <p><i>The contribution of the study is the developed algorithm for the formation of communicative competence in English.</i></p>

<p>33.</p>	<p>Stanislavov, L., Z. Vakleva, M. Panayotova (2019) Conceptual model of web-based education for healthy lifestyle. Scientific works of the Union of Scientists in Bulgaria – Plovdiv. Series A. Public sciences, art and culture. Vol. V, p. 139-143 ISSN 1311-9400 (Print); ISSN 2534-9368 (Online)</p> <p><i>The article presents the results of the application of a preliminary experimental model for the use of web-based educational resources for the construction of health knowledge and competences in the teaching of Biology and Health Education - 7th grade. The results were obtained after statistical processing of the data, using multivariate variance analysis (SAS-SPSS – 2016), based on the BLUP (Best Linear Unbiased Prediction) procedural model. Data analysis served to optimize a conceptual model for web-based learning to build health knowledge and competencies in students for a healthy lifestyle.</i></p> <p><i>Contributions: An optimal conceptual model for web-based learning to build students' health knowledge and competencies for a healthy lifestyle was developed.</i></p>
<p>34.</p>	<p>Ilieva, S., Z. Vakleva, M. Panayotova (2019) Forming competencies for sexual and reproductive health in biology training (8th grade) - design of pedagogical study. Scientific works of the Union of Scientists in Bulgaria – Plovdiv. Series A. Public sciences, art and culture. Vol. V, ISSN 1311-9400 (Print); ISSN 2534- 9368 (Online), 2019, p. 148-152.</p> <p><i>The article defines the concepts of sexual and reproductive health in humans. In regards to these concepts, we performed a content analysis of the curriculum of Biology and Health Education in 8th grade. Based on this analysis, we defined knowledge, skills and competences for sexual and reproductive health, meant to be acquired by students. We present a design of a dissertation pedagogical study of the process of their constructing, validating and reporting of the level of formation as expected learning outcomes.</i></p> <p>Contributions: <i>A didactic technology was developed, including the process of construction, validation and reporting of the level of formation of sexual and reproductive health competencies.</i></p>
<p>35.</p>	<p>Barzeva, M., Z. Vakleva, M., Panayotova. (2019). Conceptual model for research of health-environmental competences of students in human and nature training in 5th and 6th grades. Scientific works of the Union of Scientists in Bulgaria – Plovdiv. Series A. Public sciences, art and culture. Vol. V, p. 144-147. ISSN 1311-9400 (Print); ISSN 2534-9368 (Online)</p> <p><i>The article defines the concepts of “health” and “environmental competences” in the context of the cognitive and affective sphere. In regards to these concepts, we performed a content analysis of the biological modules in the “Man and Nature” curricula in 5th and 6th grade, regarding the health and environmental knowledge, skills and competencies, meant to be acquired by students. A model of contents and procedure is presented for the health and ecology competencies that should be formed in these subjects’ training. The theoretical study is a preliminary stage of dissertation research on the subject.</i></p> <p><i>Contributions: The possibilities have been studied and a didactic technology has been developed for the formation of health and environment competences in the teaching of “Man and Nature” - 5th and 6th grade.</i></p>
<p>36.</p>	<p>Vakleva, Z., E. Paitashka, I. Gechkova, A. Karamfilova. (2019) Relationship "Health - food technology" in pedagogical practice. Scientific Research of the Union of Scientists in Bulgaria – Plovdiv, series B. Natural Sciences and Humanities, Vol XIX, p. 117-120. ISSN: 1311- 9192 (Print), ISSN:2534-9376 (On-line)</p>

	<p><i>The research presents the need to integrate knowledge of new food technologies into the educational process in the biological preparation of students. It is concluded that good awareness is the basis of the right nutrition choice for adolescents. Ideas are presented to reveal the connection "health-food technologies" in educational practice.</i></p> <p><i>Contributions: the link "health – food technologies" is analyzed. Opportunities are offered for its interpretation in school education.</i></p>
37.	<p>Vakleva, Z., D. Karagyozova, M. Panayotova. (2006) Regarding the master's degree in health and environmental education at PU "P. Hilendarski". Jubilee national scientific conference with international participation "20 years of SUB, Smolyan, 57 - 70.</p> <p><i>The object of the study is the Master's program "Health and Environmental Education" and the first steps in its development. The purpose of the study is to present the conceptual design, theoretical frameworks and implementation technology of some of the leading methodological disciplines in the Master's degree - Health Education and Education, Individualization and Differentiation in Education, Environmental Education and Upbringing. The disciplines are described with the corresponding number of hours, lecture courses, seminars and exercises. The unifying link between the three disciplines is the interactive technology implemented in them. Constructivism is a methodological basis along with situation-oriented learning and the so-called interactive learning.</i></p> <p><i>Contributions: A technological model of the classes is presented. A system of tasks aimed at implementation in each of the specified disciplinary areas is described.</i></p>
38.	<p>Vakleva, Z., D. Karagyozova, M. Panayotova, Gr. Stavreva. (2006) Program for health and environmental education and socialization of children deprived of parental care. – Biology, Ecology, Biotechnology, 6, 30 – 39.</p> <p><i>A program is proposed, which is part of a research project for the "Scientific and Applied Activity" division of Plovdiv University "Paisii Hilendarski". The program examines the possibilities for socialization of children deprived of parental care, placed for upbringing and education in social homes, by developing a program for organizing their free time in elective activities with a health and environment focus.</i></p> <p><i>Contributions: Developed design of interactive sessions based on experiential learning. Organizational and technological requirements for conducting the sessions are described.</i></p>
39.	<p>Vakleva, Z., A. Karamfilova (2019) Education for sustainable development in the context of teaching „Biology and health education“ in the 10th grade. Collection with reports from Scientific conference for students and young scientists "Ecology - a way of thinking" 11, May 11, 2019., Plovdiv, PU „Paisii Hilendarski“, pp. 15-20, ISSN 2367-475X</p> <p><i>Education for Sustainable Development (ESD) needs promotion and fresh ideas. The article offers an analysis of the main international events related to the emergence and development of ESD. The characteristics of sustainable development and ESD are described. The need for interactive didactic technologies in this area is indicated. The method of the projects and its possibilities for implementation when considering the problems of sustainable development in the educational process at school are analyzed in detail.</i></p> <p><i>Contributions: Theoretical and applied aspects of ESD have been developed.</i></p>
40.	<p>Vakleva, Z., Sv. Koleva (2019) Reflective practices for environmental education in the first age group of kindergarten. Sat. with reports from Scientific conference for students and young</p>

	<p>scientists "Ecology - a way of thinking" 11, May 11, 2019., Plovdiv, PU "Paisiy Hilendarski", pp. 7-14, ISSN 2367-475X</p> <p><i>The purpose of the research is to explore the possibilities of applying reflective practices for environmental education in the first age group of the kindergarten. The following was done: content analysis of study documentation; selection of research-appropriate reflective practices for environmental education. A system of reflective practices for experimental research has been developed. The results of a pedagogical experiment are presented and analyzed.</i></p> <p><i>Contributions: A theoretical qualitative analysis of literary sources was made. Didactic modeling of reflective practices was carried out, in accordance with the objectives of the study. A model of relating the four aspects of reflection to the levels of the pedagogical situation in the kindergarten was developed. The reflexive potential of the pedagogical situation has been developed.</i></p>
41.	<p>Vakleva, Z., R. Tarpova, K. Nikolova (2018) Environmental education for the definition of critical thinking in „Human and nature“ training 5. - 6. class. Scientific researches of the Union of Scientists in Bulgaria-Plovdiv, series B. Natural Sciences and the Humanities, Vol. XVIII, pp. 229-232. ISSN 1311-9192 (Print) ISSN 2534-9376 (On-line),</p> <p><i>This study presents the possibilities for critical thinking formation in two schools from Plovdiv, Bulgaria. The study subjects to a critical review the theoretical and experimental developments on the issue of critical thinking and the possibilities for its formation in school: capabilities and achievements in the promotion of critical thinking; specific considerations for the teaching of critical thinking with regard to the issues dealt with in the „Man and Nature“ course. It describes research carried out with students in studying the opportunities for the formation of critical thinking on the problems for the protection of the environment. Key words: Critical thinking, problems of education in a bachelor's degree, resolving ethical problems in environment protection.</i></p> <p><i>Contributions: Investigated possibility of formation of critical thinking in the teaching of "Man and Nature" 5th and 6th grade.</i></p>
42.	<p>Vakleva, Z., R. Tarpova, I. Vidolov, M. Kostadinova (2018) Interactive environmental education in “Human and natural educational” process 5., 6. class - results from pedagogical study. Scientific researches of the Union of Scientists in Bulgaria-Plovdiv, series B. Natural Sciences and the Humanities, Vol. XVIII, p. 233-236 ISSN 1311-9192 (Print), ISSN 2534-9376 (On-line)</p> <p><i>The interactive cognitive activity of students in school education and the opportunities related to the formation of environmental competencies are the basis of the study. The report presents a pedagogical study in which interactive learning is presented in a complex system that includes interactive strategies, interactive technologies and interactive techniques. A methodological model was studied in three variants, in different schools in the country. The aim is to identify the impact of the model on the degree of environmental competency of students. A brief diagnosis of the results is described. They are analyzed to demonstrate the effectiveness of the research model.</i></p> <p><i>Contributions: Presented an original study design. The experimental data will help to prove the effectiveness of the used methodology for the formation of critical thinking in students.</i></p>
43.	<p>Vakleva, Z. (2018) Civic education in a socioecological context. Sat. Civic education in the natural sciences, Plovdiv, Makros, ISBN 978-954-561-465-1, pp. 36-42.</p>

	<p><i>The study highlights that: there is a need to promote the integration of environmental emphases in civic education to mediate environmental competence in a socio-ecological context; biology subjects at school can play an important role in shaping the new global citizen.</i></p> <p><i>Contributions: The following were developed: - components of environmental competence; - groups of environmental competences in a socio-ecological context; - the aspects of civic competence - knowledge, skills and civic attitudes, as well as their content.</i></p>
44.	<p>Vakleva, Z. (2017) About the category of ecological culture. Scientific works of the Union of Scientists in Bulgaria-Plovdiv, seriesA. Public sciences, art and culture, Vol. IV, p. 257-261. ISSN 1311-9400 (Print); ISSN 2534-9368 (On-line)</p> <p><i>In the article, an in-depth analysis of the concept of ecological culture in the context of education is made. Ecological culture is not a dogma, but a dynamically developing system that correlates with the problems and development of society and nature. The possibilities for development, taking into account the degrees of its formation, are considered.</i></p> <p><i>Contributions: Aspects of ecological culture and its role in achieving sustainability (one of the Millennium Development Goals) are analyzed.</i></p>
45.	<p>Vakleva, Z. (2017) Integrative environmental education. Scientific works of the Union of Scientists in Bulgaria - Plovdiv, seriesA. Public sciences, art and culture, Vol. IV, p. 245-248. ISSN 1311-9400 (Print); ISSN 2534-9368 (On-line)</p> <p><i>Integration is a tendency and a powerful tool for upgrading the educational process. This is particularly valid for environmental education. In the study, integrative environmental education is considered in two aspects: content-oriented and didactic-applied. The possibilities for integration of environmental education in the training of biology teachers, educators in the field of primary school education, retraining of teachers and the training of school students are described and analyzed.</i></p> <p><i>Contributions: The study aims to direct the attention of professors and researchers to integrative environmental education as a new paradigm in education through didactic models that have experimentally verified their effectiveness.</i></p>
46.	<p>Vakleva, Z. (2017) Educational portfolio for the plant systematics seminars. Scientific Works of the Union of Scientists in Bulgaria-Plovdiv, series C. Technics and Technologies, Vol. XV, p. 220-223. ISSN 1311 -9419 (Print), ISSN 2534-9384 (On- line)</p> <p><i>The portfolio is increasingly being implemented in the university system of education, as a modern and versatile educational technology available to the teacher. This paper presents theoretical analysis and findings of the practical application of an educational portfolio in the plant systematic seminars in the study course for students at PU „P. Hilendarski“.</i></p> <p><i>In the present, work portfolio is interpreted as an educational technology based on a person-oriented approach. In the center of the learning process is the student - his/her purposeful cognitive, emotional, and creative activity. The experimental model of research is related to the practical application of the educational portfolio in plant systematic seminars as a reflexive practice in the work of second year students.</i></p> <p><i>The practical realization of the portfolio was implemented within two consecutive academic years (one semester each) for 108 students from the above courses and years of training.</i></p> <p><i>Contributions: Theoretical and experimental features are established in the application of the portfolio in the learning process at the University. The application of the educational portfolios in teaching at the university involves certain requirements for the teacher. Among them are his/her ability to: motivate students; to provide timely positive feedback, support, to encourage creativity, partner students accepting their personalities, encourage self-confidence.</i></p>

47.	<p>Vakleva, Z. (2016) Environmental education in the training of students of Pedagogical programs. Scientific works of the Union of Scientists in Bulgaria-Plovdiv, series G. Medicine, Pharmacy and Dental medicine, Vol. XIX, ISSN 1311-9427, 69-72.</p> <p><i>The study presents an empirical research of ecological training of students of the Pedagogical Faculty of Plovdiv University „Paisii Hilendarski“. Environmental Education is addressed in two contexts: 1) as a process of professional training of students; 2) as a result of this process. These dynamics were monitored in the course Methods of Teaching the subject „Man, Nature, Society.“</i></p> <p><i>Contributions: The results of the study are aimed at updating the design of the educational process in the discipline, an essential part of which is the process of environmental education.</i></p>
48.	<p>Vakleva, Z. (2016) Dimensions of environmental competence. Scientific works of the Union of Scientists in Bulgaria-Plovdiv, series G. Medicine, Pharmacy and Dental medicine, Vol. XIX, ISSN 1311-9427, 64-68.</p> <p><i>The theme of environmental competencies is as familiar as it is modern in scientific research. The elements of innovation are necessitated by increasing demands on modern education and increasingly established multi-aspectuality of environmental issues. This study attempted to answer the questions: What is the nature of environmental competencies? How are environmental competencies formed, detected and measured? What are the projections of environmental competencies in educational practice?</i></p> <p><i>Contributions: Current highlights on the topic under study have been developed.</i></p>
49.	<p>Vakleva, Z. (2016) Integrated and competently oriented environmental education for the 21st century-conceptual model of research. Scientific works of the Union of Scientists in Bulgaria-Plovdiv, series G. Medicine, Pharmacy and Dental medicine, Vol. XIX, ISSN 1311-9427, 19, 58-63.</p> <p><i>The needs and demands of modern environmental education in various directions are increasing. Some of them in the paper are interpreted: the need for formation of environmentally professional competence in the students ‘training, competence approach in the development of higher education, integration of biological, medical, philosophical, business knowledge in the context of environmental education. The construction of a conceptual model of competence-oriented and integratively-modeled environmental education is a complex process involving a system of theoretical and empirical research. This paper presents a phase of an extensive research in this area. The study included students from the Faculty of Biology of Plovdiv University „Paisii Hilendarski“ in various stages of their training. The processes of formation of environmental competencies in their training in certain subjects have been monitored. As accents are considered factors impacting directly the process of formation of professional environmental competence in future biologists and biology teachers.</i></p> <p><i>Contributions: The integral essence of ecological education is revealed. A conceptual model of large-scale pedagogical research has been developed.</i></p>
50.	<p>Vakleva, Z. (2016) Civic education in support of environmental literacy. Sat. Civic Education, Plovdiv, Makros, ISBN 978-954-561-229-9, pp. 61-67.</p> <p><i>The study examines the relationship between environmental and civic education. It is based on the challenges facing the new millennium and goes beyond the scientific framework for the application of scientific achievements in modern life. Active citizenship and shared responsibility are needed to solve environmental, energy, resource and other problems.</i></p>

	<p><i>Contributions: Revealing interrelationships between civic education and aspects of environmental education (formation of environmental literacy). Recommendations have been made for the formation of active citizenship and an active civic position.</i></p>
51.	<p>Vakleva, Z. (2016) Environmental and civic education – integrative elements. Sat. Civic education, Plovdiv, Makros, ISBN 978-954-561-229-9, c. 29-34.</p> <p><i>The study examines the relationship between Environmental and Civic Education. It builds on the challenges of the new millennium and goes beyond scientific frameworks to apply scientific advances to modern life. Active citizenship and shared responsibility are needed to solve environmental, energy, resource and other problems.</i></p> <p><i>Contributions: The issue of civic education is interpreted in a modern aspect.</i></p>
52.	<p>Kostova, Z. M. Panayotova, Z. Vakleva (2016) Philosophy of ecology and civic education. Sat. Civic education, Plovdiv, Makros, ISBN 978-954-561-229-9, c. 35-42.</p> <p><i>Philosophical aspects of Environmental Education are discussed. An interdisciplinary integrity is constructed and presented in a scheme.</i></p> <p><i>Contributions: the philosophical views on Environmental Education are enriched with the research concept.</i></p>
53.	<p>Panayotova, M., Z. Vakleva, R. Tarpova, Z. Nikitova. (2016) Formation of health-environmental, social and civic competences through the study of man and nature in 5th and 6th grade. Sat. Civic Education, Plovdiv, Makros, ISBN 978-954-561-229-9, c. 35-42.</p> <p><i>The process of formation of Health and Environmental competences in the context of Civic Education is discussed. Opportunities for Integrative connections in the process of formation of civil competences are sought.</i></p> <p><i>Contributions: the discussion on the problem of competence formation in adolescents is enriched.</i></p>
54.	<p>Vakleva, Z., & Margarita, P. (2015) The key skills in natural sciences through the view of the teachers. Научни трудове на Съюза на учените–Пловдив. Серия А: Обществени науки, изкуство и култура, 1, 274-277.</p> <p><i>In the proposed study results are presented from a survey on the attitudes of the teachers in science to the key competencies, included in the project of the Ministry of National Educational Requirements for educational content. 32 teachers from Plovdiv and Kardzhali are polled. The questions of the survey and the results are presented in four tables. The analysis of the results lead to the conclusion that the teacher must build a strategy for flexible, dynamic and responsive to the specific situation behavior to achieve the objectives of the State Educational Requirements (SER) on key competences and adequate training of the adolescents for their future effective realization both in professional and personal plan.</i></p> <p><i>Contributions: A design of pedagogical and research has been developed with application of the concept of keyforex competences in natural sciences.</i></p>
55.	<p>Vakleva, Z. (2015) Place and role of information and communication technologies in the training in the course „environmental ethics“ in the universities. Scientific Research of the Union of Scientists in Bulgaria – Plovdiv, series G. Medicine, Pharmacy and Dental medicine, Vol. XVII, ISSN 1311-9427, 230-233.</p>

	<p><i>Presented in the study is a review of the trends in the use of information and communication technologies (ICT) to support good teaching practices. Emphasizing this trend is the training in the course Environmental Ethics in higher education in respect to the place and the role of ICT in teaching and learning; Use in the education process of any relationships in the development of the technologies and the study of environmental and eco-ethical problems. A provocation in the examination of the relationship between environmental problems and ICT is the indisputable trend that the future of humanity depends on these two factors - technology and environmental situation.</i></p> <p><i>Contributions: The ICT-environmental education relationship can be very positive in terms of technology for teaching, managing and solving environmental problems with the help of information technology. The integration of these trends and relationships into the learning in the Environmental Ethics course is a promising educational practice.</i></p>
<p>56.</p>	<p>Vakleva, Z. (2015) Didactic aspects of the „Environmental ethics“ course in the education process in higher education. Scientific Research of the Union of Scientists in Bulgaria – Plovdiv, series G. Medicine, Pharmacy and Dental medicine, Vol. XVII, ISSN 1311-9427, International Conference of Young Scientists, 11 – 13 June 2015, Plovdiv, p. 234-237.</p> <p><i>An analysis of the didactic characteristics of the course „Environmental Ethics“ in the education process in higher education is presented in the paper. The genesis of Environmental Ethics as an academic subject in higher education is connected with growing awareness of environmental problems, in redefining the relationship between humans and nature in an ethical aspect. Although introduced in a different manner in the formal education systems in the world, the teaching of EE is associated with certain restrictions: the predominant case nature of field topics; the consideration of issues too controversial for science and human practice, for example GMOs and reproductive technologies; the traditional framework of the subject system in Bulgarian education and the process of learning.</i></p> <p><i>Conservation: The paper aims to offer an optimised model of an educational process in the course, aimed at the development of the student in cognitive, values and competence oriented aspects.</i></p>
<p>57.</p>	<p>Vakleva, Z. (2014). Possibilities for the formation of critical thinking in the students seminars on environmental ethics. Scientific Researches of the Union of Scientists in Bulgaria–Plovdiv, Series A. Public sciences, art and culture(1), 282-285.</p> <p><i>This study presents the possibilities for critical thinking formation in BA degree students during the Environmental Ethics course at Paisii Hilendarski University, Plovdiv, Bulgaria. The study subjects to a critical review the theoretical and experimental developments on the issue of critical thinking and the possibilities for its formation in universities: educational components for the formation of critical thinking, capabilities and achievements in the promotion of critical thinking; specific considerations for the teaching of critical thinking with regard to the issues dealt with in the Environmental Ethics course.</i></p> <p><i>The study describes research carried out with second-year students majoring in Ecology and Conservation of the Environment, in the Environmental Ethics course, for the study of the possibilities for the formation of critical thinking on the ethical problems for the protection of the environment.</i></p> <p><i>Contributions: The discussion on critical thinking is enriched by the specific results of the study. The findings of the conducted research are popularized.</i></p>

<p>58.</p>	<p>Z. Vakleva, M. Panayotova (2014) The key skills in natural sciences through the view of the teachers. Scientific research of the Union of Scientists in Bulgaria-Plovdiv, seriesA. Public sciences, art and culture, Vol. I., Union of Scientists, ISSN 1311-9400, pp. 274-277.</p> <p><i>A pedagogical study of key skills is presented. The aim and objectives of the research focus on the exploration of theoretical and experimental concepts of competence. The research presents: an overview of different ways in which competence and in particular key competences for sustainable development are conceptualized and defined; analysis of theoretical models of key competencies for sustainable development and attempts to categorize them; discussions on theoretical reference systems of competencies; findings and conclusions on the subject.</i></p> <p><i>Contributions: The theme of key competencies for sustainable development in theoretical and practical-applied aspects is developed.</i></p>
<p>59.</p>	<p>Todorova, N., Z. Vakleva (2014) Key competencies for a sustainable lifestyle. Sat. Sixth student scientific conference "Ecology - a way of thinking" - 6, Plovdiv, UI "Paisiy Hilendarski, 128-140 ISSN 2367-475</p> <p><i>The paper presents a theoretical pedagogical study of key competencies for a sustainable lifestyle. The aim and objectives of the research focus on the exploration of theoretical and experimental concepts of competence. The research includes: a review of different ways in which competence and in particular key competences for sustainable development are conceptualized and defined; analysis of theoretical models of key competencies for sustainable development and attempts to categorize them; discussions on theoretical reference systems of competences for sustainable development; findings and conclusions on the subject.</i></p> <p><i>Contribution: Presented a meta-analysis of the concept of competency approach in education.</i></p>
<p>60.</p>	<p>Vakleva, Z., H. Petkov. (2013) Environmental aspects of Consumer education in the context of Environmental ethics. Scientific research of the Union of Scientists in Bulgaria-Plovdiv, series C. Natural Sciences and Humanities, Vol. XVI, ISSN 1311-9192, ISSN 1311-9192, p. 166-170.</p> <p><i>Consumer education is a realized necessity in modern society. We consider that the environmental aspects of consumer education can successfully correspond to the issues of environmental ethics and be considered in their context. We find that both consumer education and environmental ethics often remain outside the scope of pedagogical research in school education. This article presents an empirical study of the possibilities for integration of the environmental aspects of consumer education in the context of environmental ethics in the biology studies</i></p> <p><i>Contributions: The research concept is described as well as the results of preliminary experiments on the problem researched. The carried out analyses and drawn conclusions present the effectiveness of the research and opportunities for its development.</i></p>
<p>61.</p>	<p>Vakleva, Z. (2011) Formation of communication and decision-making skills in the process of environmental education of students through biology education. -Biology, ecology, biotechnology, 4, 2011, 53-57.</p> <p><i>Building communication and decision-making skills is important for adolescents. Decision-making models and the peculiarities of the communicative process are examined. The advantages of interactive methods in this direction are described.</i></p> <p><i>Contributions: They are theoretically substantiated and guidelines are given for the practical implementation of communication and decision-making skills in a specific pedagogical situation.</i></p>

<p>62.</p>	<p>Vakleva, Z. (2007) Disadvantaged children and drugs - informational and educational strategies. Sat. scientific reports "Children, family, school and society at the beginning of the 21st century", Plovdiv, "Kameya Design" OOD, 2008, 224-229.</p> <p><i>The opinions of the specialists regarding the possibilities for the prevention of drug addiction are not unanimous, especially if it is related to disadvantaged children. The paper describes the groups of disadvantaged children: children living in families in an unequal social situation; disabled children; children with deviant behavior; child victims of violence; street children; children without parents; children in institutions. Important aspects in the field of prevention are analyzed.</i></p> <p><i>Contributions: New directions in drug addiction prevention have been defined. One of them is adequate targeting of educational strategies to improve the process of "coping" (prevention).</i></p>
<p>63.</p>	<p>Ваклева, З. (2008) За екологичната култура (из опита на обучението по биология). Научни тр. ПУ „П. Хилендарски”, т. 45, кн. 2, 2008, ISSN 0861-279X, с. 55-61.</p> <p><i>In the study, various opinions are presented to define the concept. A model is constructed in the context of the study.</i></p> <p><i>Contributions: The theoretical assumptions about the concept of ecological culture and the process of its formation are enriched.</i></p>
<p>64.</p>	<p>Vakleva, Z. (2008) Contemporary aspects of environmental education. Collection of scientific reports. Anniversary Scientific Conference on Ecology, PU "P. Hilendarski", Faculty of Biology, 1. XI. 2008, pp. 410-419.</p> <p><i>The paper presents an analysis of current aspects in the development of environmental education. The main stages in the development of environmental education are traced. The tendency to enrich the content of the concept of "ecological education" is analyzed. Special attention is paid to such concepts as ecological literacy, ecological consciousness, responsible attitude to the environment, ecological culture, ecological ethics.</i></p> <p><i>Contributions: Contemporary trends in the development of environmental education are outlined. Emphasis is placed on education for sustainable development.</i></p>
<p>65.</p>	<p>Vakleva, Z., P. Slavova. (2007) Possibility of modernization of environmental education through implementation of computer lessons. Scientific tr. PU "P. Hilendarski", item 44, vol. 2, 2007, ISSN 0861-279X, pp. 17-24.</p> <p><i>Possibilities for modernization of environmental education were considered. The computer as a technical teaching tool provides unique opportunities for didactic lesson design. Computer lessons with an ecological focus are distinguished by a system of concepts for the teacher and the students. In the article they are detailed for the different stages in the course of the lesson. A content analysis was made of the environmental topics from the Man and Nature and Biology and Health Education subjects.</i></p> <p><i>Contributions: A methodology has been developed for the application of computer lessons for environmental education.</i></p>
<p>66.</p>	<p>Vakleva, Z., Z. Duran. (2006) Integrating biodiversity issues into 7th grade biology education in the context of education for sustainable development. Scientific tr. PU "P. Hilendarski", item 43, vol. 2, ISSN 0861-279X, pp. 55-64.</p>

	<p><i>World environmental forums raise the theme of sustainable development of biological resources and biodiversity protection. The study presents a methodology of education for sustainable development with an emphasis on biodiversity. The main characteristics of a monovariant didactic experiment are described. The data obtained during the research are presented and systematized in tables and a diagram. The results are accompanied by qualitative and quantitative analysis.</i></p> <p><i>Contributions: The conclusions drawn and the applied didactic materials contribute to enriching the theory and practice of biology education.</i></p>
67.	<p>Stavreva, Gr., D. Karagyozova, M. Panayotova, Z. Vakleva. (2005) The health and environmental education and socialization of children deprived of parental care. On Sat. "Biological education and the challenges of the 21st century. Second National Scientific and Practical Conference on Biology. Collection of reports.", Burgas, 19 - 21. V. 108 - 114.</p> <p><i>The paper reflects a stage of scientific research under a project at the "Scientific and Applied Activity" division of Plovdiv University "Paisii Hilendarski". The topic of the research project refers to an important socio-pedagogical problem - the health and environmental education and socialization of children deprived of parental care, which are the object of research. The subject of research is the process of education and socialization of children placed for upbringing and education in social homes. The purpose of the theoretical research presented in the development is to determine the methodology and develop the methodology of the experimental program.</i></p> <p><i>Contributions: The tasks, the stages of the empirical research, the theoretical- methodological stage of the research and the target group are described. The content and organizational structure of the program are presented.</i></p>
68.	<p>Vakleva, Z. (2005) Distance learning - essence and characteristics. Jubilee scientific conference "State and problems of agricultural science and education", Scientific works of AU-Plovdiv, volume 1, vol. 3, pp. 245-250.</p> <p><i>The paper presents the theoretical foundations of distance learning. The historical development, nature and characteristics of distance learning are described. The main concepts and participants in the distance learning process have been thoroughly analyzed. The methods and means of distance learning, the possibilities for evaluating the achievements of the learners, the necessary information technologies for implementation are presented.</i></p> <p><i>Contributions: The features of distance learning that influence its effectiveness are examined. The analysis is based on an extensive literature review.</i></p>
69.	<p>Vakleva, Z., P. Slavova. (2005) On Information Technology, the Computer and the School. Anniversary Scientific Conference "State and Problems of Agrarian Science and Education", Scientific Papers AU-Plovdiv, volume 1, vol. 3, pp. 251-256.</p> <p><i>The entry of information technologies into the educational process is determined by two objective factors: 1/ high level of computer skills of teachers and students; 2/ a variety of software products that stimulate the positive attitude of students towards the learning process.</i></p> <p><i>The work analyzed: the concept of information technology; the main qualities of information systems; the computer as a teaching and technical tool; didactic features of its application in education. The dependencies "teacher - computer" and "student - computer" were examined. Contributions: Emphasis is placed on the computer lesson and its technology. Conclusions and recommendations are made for the implementation of this type of lesson in educational practice.</i></p>

70.	<p>Vakleva, Z. (2005) Science of countryside in education of biology (Краезнанието в обучението по биология). Balkan Scientific Conference of Biology, Proceedings B. Gruev, M. Nikolova, A. Donev (editors), 19-21 May 2005, Plovdiv, Bulgaria, pp. 517-52.</p> <p><i>Local (area) knowledge is an interesting and understudied topic. The article presents theoretical statements of the problem. Although there are known studies on the application of local knowledge in biology education, practice shows that the issue of the didactic essence, content and forms of local knowledge work in the teaching process of biology is not sufficiently developed. The research is aimed at teaching local knowledge and clarification of its didactic essence by defining the object, subject, tasks of teaching local knowledge and its categorization. Contributions: the theoretical basis has been developed to determine some of the highlights in the study of local knowledge in biology education: accumulated experience, local history materials, forms of local history work, thematic plan of application, meaning.</i></p>
71.	<p>Vakleva, Z. (2004) Seminar classes in the teaching of Natural Science 5th grade - theory and practice. Scientific tr. PU "P. Hilendarski", 41, 2004, 2, ISSN 0861-279X, pp. 41-46.</p> <p><i>The seminar as an organizational form for training and a type of lesson has its specific features. In the paper, they are interpreted in the context of learning in Science for the 5th grade. The most common mistakes in organizing and conducting seminar lessons are highlighted.</i></p> <p><i>Contributions: A seminar lesson technology was developed with an emphasis on the teacher's activity and the student's activities, respectively. Guidelines are given and recommendations are made to teachers for the use of the seminar lesson in school practice.</i></p>
72.	<p>Vakleva, Z. (2003) On the group work of students in the learning process. Scientific tr. of PU "P. Hilendarski", item 40, vol. 2, ISSN 0861-279X, pp. 33-40.</p> <p><i>The group organization of training has its essential characteristics presented in the paper. The concept of "group work" and its psychological aspects are examined. Information about definitions of group work, typology of group work, techniques and methods of group work is systematized in tables.</i></p> <p><i>Contributions: Some requirements are highlighted and recommendations are made to teachers for the application of group work in the learning process. The characteristics of teamwork are also described.</i></p>
73.	<p>Vakleva, Z. (2002) An opinion on the question of the formation of competences in students through school education in biology. Scientific works Union of scientists - Plovdiv, Series B. Natural and humanitarian sciences, volume II, 341-346.</p> <p><i>The category "competencies" is discussed in connection with the change of the educational content and the introduction of State Educational Requirements. The article interprets the theoretical statements of the problem. The concept of "competence" is analyzed as a basic paradigm for the educational process. The way of formation of competences is discussed. The types of competences are analyzed.</i></p> <p><i>Contributions: The specifics of the relationship competences and school education in biology are sought. Conclusions and recommendations are made for the needs of practice in the context of the problem under consideration.</i></p>
74.	<p>Vakleva, Z., G. Trifonova. (2002) Innovating the Workshop Using Audio Visual Visualization. Scientific tr. PU "P. Hilendarski", 39, 2, ISSN 0861-279X, pp. 87-101</p> <p><i>Seminar classes are something well known, but the application of audio-visual presentation can radically change the traditional didactic technology of the seminar lesson and reveal new</i></p>

	<p><i>innovative possibilities for organizing the learning process. The results of a didactic experiment developed with two options for the application of audio-visual presentation in a seminar lesson are discussed. This technology is implemented in a thesis. The purpose, subject, object, tasks, stages and variants of the research are described. The technology of the experimented lessons and the results of the pedagogical experiment are presented in detail.</i></p> <p><i>Contributions: The analysis of the data and the conclusions drawn have a practical implementation. A system of criteria, indicators, variants and results of the experiment are given in the appendices. A detailed lesson development with the researched technology and tests to report the results complement the presented research work.</i></p>
75.	<p>Vakleva, Z. (2002). A statement on the problem of the necessity of school-teaching in biology for competence in the students. <i>Scientific Session of the Young Scientists „History, Philology, Pedagogy “, Series B. Natural Sciences and the Humanities, 2, 341-346.</i></p> <p><i>The category „competencies“ is discussed in connection with the change of the educational content and the introduction of State Educational Requirements. The article interprets the theoretical statements of the problem. The concept of „competence“ is analyzed as a basic paradigm for the educational process. The way of formation of competences is discussed. The types of competences are analyzed. The specifics of the relationship competences and school education in biology are sought.</i></p> <p><i>Contributions: Conclusions and recommendations are made for the needs of practice in the context of the problem under consideration.</i></p>
76.	<p>Vakleva, Z. (2001) Video lesson in biology education - methodology and application technique. In Sat: "Anthropology - Pedagogy - Ergonomics", National scientific and practical conference with international participation, DIPKU "Dr. Petar Beron", Varna, July 2001.</p> <p><i>The expedient inclusion of educational and technical means in the classroom work and their maximum use, both in terms of understanding and assimilation of the information carried, and in view of the intellectual engagement and activity of the students are still unsolved problems. They are related to the clarification of a number of more specific questions of an educational-organizational and scientific- methodological nature. The skillful organization of the lesson with the application of audio-visual presentation (video films and video fragments) is related to the solution of three main problems: the acquisition of video material suitable for the educational content; processing and technical provision of the demonstration during the class; an adequate methodology for the application of audiovisual presentation in the lesson, consistent with the latest research and accumulated experience in this direction.</i></p> <p><i>Contributions: The analysis of the mentioned problems and the presentation of a methodological model for the variable application of the video film and video fragments in the teaching of biology provide guidelines for the specific work of the biology teacher.</i></p>
77.	<p>Hristova, Z., M. Panayotova-Stoyanova. (2001) Differentiation of the educational process with the application of symbolic-sign models when studying the section "Interaction between organisms and the environment", <i>Biology - 10th grade - Biology, ecology, biotechnology, 2001, No. 3 - 4, p. 26 – 32.</i></p> <p><i>The paper presents a study on the application of symbolic-sign models and the possibilities for differentiation in education. The theoretical highlights are considered: characteristics of the didactic categories - model and modeling.</i></p> <p><i>Contributions: The essence of symbolic-sign models and the stages of their construction have been clarified. An example development of a lesson with the application of symbol-sign models</i></p>

	<p><i>is presented. The overall problem is interpreted in the light of environmental education of students. The article reflects a stage of continuous research and experimental work on the problem.</i></p>
<p>78.</p>	<p>Vakleva, Z. (2000) Application of Benjamin Bloom's taxonomy in the conditions of the new state educational requirements. Sat. scientific reports "Man, nature, health", volume II, Pamporovo, pp. 58-61.</p> <p><i>The educational reform led to the change of curricula, educational content, development of standards for evaluating the achievements of students. State Educational Requirements - SER /standards/ were developed in accordance with Benjamin Bloom's cognitive taxonomy. Of particular importance for the application of the standards is the way they are formulated. Each standard begins with a verb and contains a clear description of what the student should have mastered as a result of their learning. When working with SER, a good knowledge of B. Bloom's taxonomy is necessary, for which there is a lack of sufficient development.</i></p> <p><i>Contributions: The article presents the specified taxonomy in expanded tabular form with its corresponding levels, sub-levels, learning objectives, behavioral verbs, questions and tasks for measuring achievements. A sample test is described and a table of the questions and the corresponding taxonomy levels they report is presented. Basic literature on the problem is indicated.</i></p>
<p>79.</p>	<p>Panayotova-Stoyanova, M., Z. Hristova. (2000) Innovations in teaching methods for students in the Biology Teaching Methodology course. Scientific works of the Union of Scientists in Bulgaria, Plovdiv, Series B, Natural and Human Sciences, volume 2, pp. 361 – 364.</p> <p><i>The professional training of biology teachers requires flexibility in the way of teaching. In search of practical solutions meeting the modern requirements for professional training of students majoring in "Biology and Chemistry" and "Biology", specialization - Biology Teacher, a didactic teaching technology using interactive teaching methods was applied. This technology is applied in the disciplines: Teaching Methodology in Biology, specialized lecture course "Health Education"; Teacher Practicum - exercises; Hospitalization - exercises. The technology is realized through a system of tasks and group work.</i></p> <p><i>Contributions: As a result of the research, a comprehensive methodological model and rules for its effective application in practice in accordance with the experimented technology are proposed.</i></p>
<p>80.</p>	<p>Vakleva, Z. (2000) Problems of ecological education in the preparation of students - biologists for professional activity. In collection: Scientific reports "Education and the challenges of the new millennium", Plovdiv, ISSN 954-33-6, pp. 190-194.</p> <p><i>The paper presents the question of the preparation of student teachers in Biology and Chemistry and their ability to organize the process of Environmental Education in their future practice. An essential part of the teaching methodology of teaching Biology are the "Teacher's Practicum" exercises. The main goal of any of these classes is the mastering by students of techniques for Environmental Education of students and the formation of skills for their application in practice. A methodological model of an exercise is described - a teacher's practicum in MOB. The model reflects the stages of work, the activities of the leader of the exercise and, accordingly, of the students. First stage – familiarization with the problems of environmental education and motivation for the upcoming exercise. Second stage – theoretical clarification of the essence of the considered techniques for environmental education. Third stage - practical activities on the</i></p>

	<p><i>studied technology: familiarization with didactic materials, analysis of the educational content with a view to their application, etc. Fourth stage – working out /staging/ of elements of the studied techniques for environmental education. Fifth stage – closing discussion, conclusions and summaries on the topic under consideration.</i></p> <p><i>Contributions: Didactic technology is substantiated and an algorithm for conducting</i></p>
81.	<p>Hristova, Z. (1996) From the experience of environmental education in Germany. Sat. scientific reports "Problems of educational work", Shumen, pp. 354-356.</p> <p><i>The formation of a future-oriented sense of environmental responsibility largely depends on schooling. School practice in the field of Environmental Education feels the need for fresh ideas, and strives to implement new educational models. The work examines the experience of a "new preparation" student group from the Wolfgang Radhe Goethe Institute, which explores the possibilities for environmental education of students through activities organized in the school gardens and the school yard. The so-called "open laboratory" created by R. Hedewig from the University of Castle has a similar educational and influencing role.</i></p> <p><i>"Education Through Projects" is the concept of F. Zulich as an opportunity for free action and implementation of innovation in school environmental education. These are all opportunities to overcome the contradictions between theoretical knowledge and the need for action. Shared experiences generate ideas for new pedagogical practices.</i></p> <p><i>Contributions: presented opportunities to overcome the contradictions between theoretical knowledge and the need for action. Pedagogical experience is shared that generates ideas for new school practices.</i></p>

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Composed:

(head assistant doctor Zlatka Vakleva)

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