

ACTA PEDAGOGICA NATURALIS

**Университетско издателство
„Епископ Константин Преславски“
2018 г.**

Basic information

Acta Pedagogica Naturalis is the official journal of the Konstantin Preslavsky University of Shumen. The main objective of Acta Pedagogica Naturalis is to publish original research findings in fields of education issues of Natural Sciences.

TOPICS INCLUDE:

- Childhood and Youth
- Comparative and International Education
- Education reform
- Schooling
- Teachers
- Textbooks
- Theory and Methodology of Natural Sciences
- The urban and rural school environment
- Women and gender issues in Education

The abbreviated title of the journal is **APNat**, which should be used in bibliographies, footnotes and bibliographical references and strips.

Copyright

Published each year. Annual subscription rates for the printed version of the Acta Pedagogica Naturalis are: Single issue: EUR 20.00. Prices include air mail-assisted postage and handling.

All subscriptions and changes of address should be sent to Konstantin Preslavsky University of Shumen, Copyright Center (address below).

115 Universitetska Street,

BG 9700 Shumen

BULGARIA

Tel: +359 54 830 495

Fax: +359 54 830 371

ISSN

© Konstantin Preslavsky University of Shumen, Faculty of Natural Sciences, 2018

© Copyright Center, Konstantin Preslavsky University of Shumen, University 2

Editorial board

Assoc. Prof. Rositsa Vladeva, PhD (Editor-in-Chief, Pedagogical/Geography Sciences, Konstantin Preslavsky University of Shumen, Bulgaria)

Assoc. Prof. Petinka Galcheva, PhD (Pedagogical/Chemical Sciences/ Konstantin Preslavsky University of Shumen, Bulgaria)

Assoc. Prof. Mariya Boicheva, PhD (Pedagogical/Biological Sciences, Konstantin Preslavsky University of Shumen, Bulgaria)

Assoc. Prof. Veselka Radeva, PhD (Pedagogical/Physical Sciences/ Konstantin Preslavsky University of Shumen, Bulgaria)

Assoc. Prof. Borislav Borisov, PhD (Pedagogical/Physical Sciences/ Konstantin Preslavsky University of Shumen, Bulgaria)

Assoc. Prof. Rositsa Davidova, PhD (Pedagogical/Biological Sciences, Konstantin Preslavsky University of Shumen, Bulgaria)

Prof. Natasha Tsanova, Dr. Sc. (Pedagogical/Biological Sciences, St. Kliment Ohridski University of Sofia, Bulgaria)

Assoc. Prof. Yordanka Dimova, PhD (Pedagogical/Chemical Sciences, Paisii Hilendarski University of Plovdiv, Bulgaria)

Assoc. Prof. Daniela Angelova-Gancheva, PhD (Pedagogical/Geography Sciences, St. Kliment Ohridski University of Sofia, DIUU, Bulgaria)

Prof. Gordana Apostolovska, PhD (Sst. Cyril and Methodius University of Skopje, Macedonia)

Prof. Eyüp Artvinli, PhD (Eskisehir Osmangazi University, Turkey)

Prof. Zsuzsa Csaszar, PhD (University of Pécs, Hungary)

Assoc. Prof. Oana-Ramona Ilovan, PhD (Babeş-Bolyai University, Cluj-Napoca, Romania)

Assoc. Prof. Jaroslav Vávra, PhD (Technical University of Liberec, Czech Republic)

Assoc. Prof. Aikaterini Klonari, PhD (University of the Aegean, Greece)

Editor Executive: Nina Archangelova

Book Cover Design: Eva Dobreva, "Sava Dobroplodni" School, 12"B" class

Editorial management and production: Iliana Nikolova

Instructions to authors

Acta Pedagogica Naturalis strongly encourages online submissions. Once you have prepared your manuscript according to the instructions below, please visit online submission Web site: www.shu.bg

Please read these instructions carefully and follow them strictly. In this way you will help ensure that the review and publication of your paper are as efficient and quick as possible.

The editors reserve the right to return manuscripts that are not in accordance with these instructions. Papers must be clearly and concisely written in English.

Aim and editorial policy

All submitted manuscripts should contain original research not previously published and not under consideration for publication elsewhere. The primary criterion for acceptance is scientific quality.

Papers should avoid excessive use of abbreviations or jargon, and should be intelligible to as wide an audience as possible. Particular attention should be paid to the Abstract, Introduction, and Discussion sections, which should clearly draw attention to the novelty and significance of the data reported.

Failure to do this may result in delays in publication or rejection of the paper.

Texts can be published as a review, a full paper (article) or as a short communication.

Types of papers

Reviews. Reviews are published by invitation only. However, a proposal for a Review may be submitted in the form of a brief letter to the Editor at any time. The letter should state the topics and authors of the proposed review, and should state why the topic is of particular interest to the field. **Articles.** Whenever possible the articles should be subdivided into the following parts:

1. Front Page;
2. Abstract (written on a separate page, 200 words or less, no abbreviations);
3. Introduction;
4. Materials and Methods;
5. Results;
6. Discussion;
7. Acknowledgments, if applicable;
8. References.

Articles from some areas should follow their usual format. In some cases it may be advisable to omit part (4) and to merge parts (5) and (6). Whenever applicable, the Materials and Methods section should indicate the Ethics Committee that evaluated the procedures for human studies or the norms followed for the maintenance and experimental treatments of animals. Short communications.

Short communications aim to report on research which has progressed to the stage when it is considered that results should be divulged rapidly to other workers in the field. A short communication should also have an Abstract (100 words or less) and should not exceed 1,500 words.

Tables and Figures may be included but the text length should be proportionally reduced. Manuscripts submitted as articles but found to fit these specifications will be published as short communications upon the author's agreement.

Preparation of manuscripts

All parts of the manuscript should be 1.0 line spacing. After acceptance, no changes will be made in the manuscript so that proofs require only correction of typographical errors.

The authors should send their manuscript in electronic version only.

Page format: Paper Size A4, portrait

Margins: Top – 2.2 cm, Bottom – 2.2 cm, Left – 2.2 cm, Right – 2.2 cm, Header – 0 cm, Footer – 1.7cm

Length of manuscript: 10 pages A4 format.

Tables and Illustrations

Tables must be integer in the text and must have captions - Times New Roman, Font Size 11pt, Centered, Paragraph spacing – Before 6pt, after 3pt.

Digitalized figures

1. Figures must be integer in the text and must have captions - Times New Roman, Font Size 11pt, Centered, Paragraph spacing – Before 3pt, after 6pt;
2. Chemical formulae must be integer in the text as ChemDraw or ChemWindow objects or as images.

Front page

Article Title: Times New Roman, Font Size 14pt, Bold, Centered, Paragraph spacing – After 6pt,

Authors: Times New Roman, Font Size 11pt, Bold, Centered, Paragraph spacing – After 6pt,

Affiliation: Times New Roman, Font Size 11pt, Italic (Email Regular), Centered,

Abstract: Times New Roman, Font Size 11pt, Bold & Italic, Justified, Paragraph spacing – Before 11pt, After 6pt,

Keywords: Times New Roman, Font Size 11pt, Bold & Italic, Justified, Paragraph spacing – Before 6pt, After 6pt.

Acknowledgements

These should be included at the end of the text. Personal acknowledgments should precede those of institutions or agencies. Footnotes should be avoided; when necessary they must be numbered.

Acknowledgments to grants and scholarships and of indebtedness to colleagues as well as mention of the origin of an article (e.g. thesis) should be added to the Acknowledgements section.

Abbreviations These should be defined at their first occurrence in the text, except for official, standard abbreviations. Units and their symbols should conform to those approved by the International System of Units http://www.bipm.org/en/si/si_brochure/general.html.

References

Authors are responsible for the accuracy of the References. The cited literature within the text must be marked with Arab digits in square brackets. The reference section must be arranged following the appearance in the text and in following order: authors, journal (italic), year of issue (bold), volume (italic), first and last pages, Times New Roman, Font Size 11pt, Justified.

Examples:

[1]. Ivanov, I. I., Petrov, P. P., Zonarene, *A Sesquiterpene from the Brown Seaweed Dictyopteris Zonarioides*, Tetrahedron Lett. **2008**, 50, 25-28

[2]. Andreev, P., Todorov, M. *Teaching methods and approaches*, Blagoevgrad, Neofit Rilski University Publ., **2003**, p. 94

[3]. Stella, L. In *Radicals in Organic Synthesis*; Renaud, P., Sibi, M. P., Eds.; Wiley-VCH: Weinheim, Germany, **2001**; Vol. 2, p 407

In the case of references on other than Latin alphabet, rules of transliteration must be applied!

Transliteration Rules

The transliteration from the Cyrillic script into the Latin alphabet is the process of character replacement as follows: А = A, Б = B, В = V, Г = G, Д = D, Е = E, Ж = ZH, З = Z, И = I, Ы = Y, К = K, Л = L, М = M, Н = N, О = O, П = P, Р = R, С = S, Т = T, У = U, Ф = F, Х = KH, Ц = TSH, Ч = CH, Ш = SH, Щ = SHT, Ъ = U, ЬО = YO, Ю = YU, Я = YA, Э = E, Ы = Y

Example

Georgiev, R., Baiev, B., Baleva, D., Gadancheva, V., Zonev, K., Ikonomov, V., Osteopoikilosis, Review and Contribution with Two Cases, *Rentgenologiya i Radiologiya* 2007, 46, 261-265

Sponsors



Established in 1962, Lavena company began its existence as a manufacturer of lavender essential oil and later expanded its operations with the production of cosmetics, food supplements and medical devices. Today, the company is one of the largest producers of lavender essential oil in the world and one of the leading cosmetic manufacturers in Bulgaria. Lavena offers quality and affordable cosmetic solutions for different needs at all ages. By building strong brands, the company has entered the homes and hearts of many people. For more than 20 years, the baby and children's cosmetics "BOCHKO" enjoy consumers with undeniable quality and wide assortment. Cosmetics for pregnant women and postnatal treatment "Maternea" quickly established themselves and just like many other products of the company have won love and have become a symbol many generations. The main objective of the company is to continue to create and promote beauty and health brands with invariable quality and customer care.

Carlsberg

Bulgaria

Carlsberg is a Danish company, one of the world's leading brewing companies, with a large portfolio of beer brands and other beverages. The company was founded in 1847 in Copenhagen by Jacob Jacobsen and was named after his elderly son Carl. The second part of the name consist of the factory location - at the foot of the highest hill in the vicinity ("Berge" Danish means "mountain"). Carlsberg is today No 4 in the world Beer sales and operates in more than 150 countries around the globe. It employs nearly 42 000 people - public employees brands "Carlsberg", "Baltika" and "Tuborg" are among the largest beer brands in Europe. In 2016 Carlsberg Group sold 117 million hectoliters of beer, which equals 35 billion beer bottles. Carlsberg history of Bulgaria started in 1882, when Shumen housed the Czech master brewer Franz Milde and who together with local entrepreneur marketed the beginning of one of the oldest breweries in Bulgaria - Shumensko pivo. After 2002, the Shumen beer became part of the big family of world developed Danish concern Carlsberg. In September 2004, the two marks - Shumen and beer Pirin beer - pooled resources and joint under the name of Carlsberg Bulgaria. Today Carlsberg Bulgaria is one of the largest beer producers and the fastest growing beer company in Bulgaria. Carlsberg Bulgaria employs nearly 500 employees, including all employees of the breweries in Shumen and Blagoevgrad and also our logistics centers, office administration team of Sofia and sales force throughout the country. The portfolio of the company includes a variety of prime quality beers - Shumen and Pirin national No1 brand on the Bulgarian market for 2016 and the first half of 2017. The international brands of Carlsberg and Tuborg, the Czech Budweiser Budvar, the German wheat beer Erdinger and the Belgian kraft beer Grimbergen. Carlsberg Bulgaria offers to our markets Somersby cider in five varieties - apple, pear, blackberry, blueberry and nar. For more, please visit www.carlsberggroup.com. For news from Carlsberg Group - www.carlsberggroup.com, subscribe or follow us @ CarlsbergGroup in Twitter.

Innovative Approach



www.biosystems.bg

- ◆ Instrument delivery
- ◆ Installation & service
- ◆ Reagents, consumables, IVD
- ◆ Molecular biology assays
- ◆ Bioprocessing

eppendorf

New Brunswick
an eppendorf company



Anatolia
genetics

Montania
488

48 sample capacity
3 filters
IVD CE marked
Real-Time PCR instrument.
[More >](#)



BMG LABTECH
The Microplate Reader Company



<http://progene.my.contact.bg>

- ◆ Forensics * DNA and drug analysis
- ◆ Applied projects
- ◆ Project management
- ◆ Training in molecular biology techniques



S T A R
L A B

Contacts: Bulgaria, Sofia 1517, 247 Botevgradsko Shosse, office bldg. 1, floor 1
office@biosystems.bg ◆ labprogene@mbox.contact.bg

CONTENTS

Basic information	2
Sponsors	7
CONTENTS	10
Methodological aspects of teaching Natural sciences at Shumen University	11
Situational analysis of a type plan (algorithm) in the training on „Geography of countries” in the Balkan Peninsula	18
Interactivity and interactive methods and techniques in Geography and Economics education under the topic of „Number, Density and Population movement“	27
Characteristics of the contemporary teacher	39
Analysis of the actual legal framework on the role of the training activities in geography and economics education in fifth grade	47
The game as an interactive method in teaching chemistry and environmental education in grade 7	51
An Opportunity to form skills supporting development with the help of out-of-class environment	58
Using Project Based Learning in the „Thermochemistry” Topic – example from education practice	64
Communicative-behavioral stiles of the modern teacher	71
The quality of geography education - vision and challenges	76

Acta Pedagogica Naturalis

Former Annual of Konstantin Preslavsky University

Journal homepage: <http://acta-pedagogica.shu.bg>

Received: 20.12.2017

Accepted: 09.03.2018

Methodological aspects of teaching Natural sciences at Shumen University

Rositsa Vladeva, Petinka Galcheva

Shumen University, Faculty of Natural Sciences, Shumen, 115 Universitetska Str. Shumen, Bulgaria

E-mail: r.vladeva@shu.bg, p.galcheva@shu.bg

Abstract: *This study aims to analyze teaching Natural sciences at the Faculty of Natural Sciences at Konstantin Preslavsky University of Shumen” in the three educational degrees – bachelor, master, and doctor. The emphasis is on the methodological aspects of teaching in the bachelor pedagogical programs of Chemistry and environment preservation, Geography, and Biology. A survey among the students graduating these programs has been conducted to identify the problems related to their training for acquiring a pedagogical license and to overcome those problems.*

Keywords: *training, Natural sciences, pedagogical majors*

Introduction

In recent years, the quality of education at Bulgarian universities has been a current and discussed topic. Due to the dynamic changes and accelerated globalization of Bulgarian society, the educational system is expected to form adequate knowledge of contemporary economic and social development and to prepare competent, adaptable, innovative and motivated personnel. However, the reality does not always coincide with the expectations. There is a decline of applicants and a lack of motivation to study in the pedagogical programs of all sciences, including the natural sciences.

At the same time, in the European educational realm and in Bulgaria, the emphasis is on providing training and stimulating the development of pedagogical staff in order to realize the objectives of the EU 2020 Strategy [5].

The contradictions given are part of the reasoning for this research, and the rest are related to seeking answers to the questions:

- Why is there no interest in the teaching profession, since the school infrastructure is relatively evenly distributed by settlements?
- Why does science education prove to be one of the most complex in higher education institutions?
- How to build up the existing traditions in the field of science education with the modern educational trends so as to preserve and further develop the national identity in this field?

Materials and Methods

To study the legislative basis comprising the strategies and regulations the following methods are used: content analysis and comparative analysis.

In order to establish the contemporary trends in the educational realm of science education in higher schools, an analysis of pedagogical, psychological and methodological literature is carried out.

In order to take into account, the expectations of the students from the pedagogical disciplines, a survey is carried out with 58 students of Bachelor's programs of year 3 and 4 in the majors Pedagogy of Teaching of Geography and Biology, Pedagogy of Teaching Chemistry and Environmental Preservation and Masters of Geography and Interactive Education and Methodology of Teaching Chemistry and Environmental Preservation from the Faculty of Natural Sciences at the Shumen University. It is accompanied by the application of statistical methods for processing the results.

Results and Discussion

Some of the answers to the questions are closely related and derive from the *current state of higher education in this country and the problems in it*.

One of them is the unrealized academic autonomy of individual higher education institutions (HEIs) due to the fact that the state develops and conducts the policy in the field of higher education, it regulates the admission of students and regulates the financing of the respective HEIs in accordance with the state plans. In this way, HEIs cannot develop an adaptive profile of majors that meet the regional needs and at the same time be attractive to young people and beneficial for higher education institutions. This causes a lowering of the criteria for admission and reduction of the requirements to the students during their training in order to retain them and thus the realization of a poor quality educational product.

Another problem that reflects on the quality of HEI education is the aging of the teaching staff and hence the weaker motivation to constantly update the academic knowledge, to apply innovative methods of teaching and to take into account the novelties in the real production environment.

At the same time, higher education, including science education reflects the problems of secondary education which, in combination with the demographic crisis, are the cause people with relatively poor scientific background, insufficient activity and low initiative to enrol in universities.

Another factor that causes problems for the students who apply for studying in pedagogical majors is related to the large number of higher education institutions (11), which educate students in majors from the three professional fields of the higher education field „Pedagogical sciences“ (1.1. Theory and management of education, 1.2 Pedagogy and 1.3 Pedagogy of teaching...) for acquiring the Bachelor's and Master's degrees.

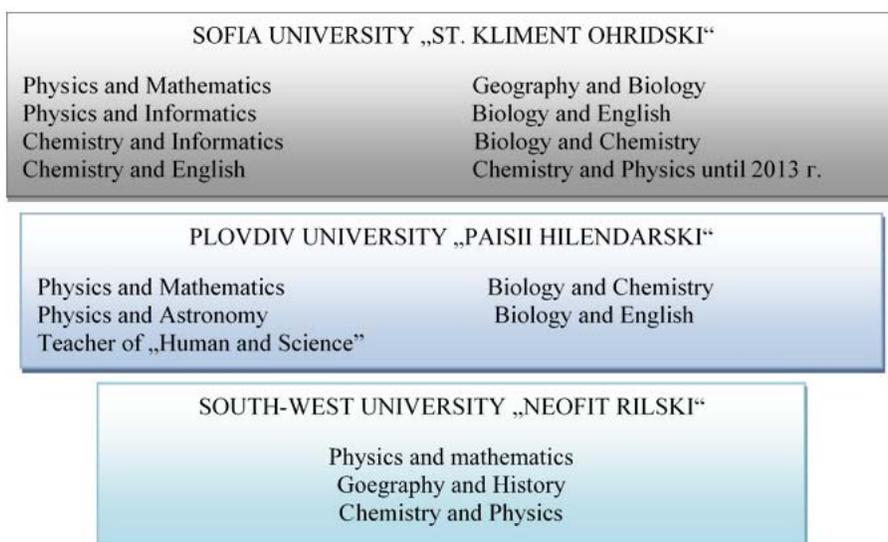


Figure 1. Universities and majors for pedagogical staff in natural sciences

In the field of higher education in natural sciences with a pedagogical profile, the competition is smaller and it is reduced to 4 HEIs with a spectrum of more than two specialties. These are Sofia University - 8 majors, Plovdiv University - 5 majors, Southwest University - 3 majors (Fig.1). In two more HEIs in Bulgaria there is a training of pedagogical staff in the field of natural sciences. Two specialties - history and geography and Bulgarian language and geography are taught in Veliko Tarnovo University, and in the Ruse University Branch in Silistra – one – physics and informatics.

In this territorial structure of universities, teaching pedagogical specialists in natural sciences, the Shumen University represented by the Faculty of Natural Sciences (FNS) occupies a suitable place. It is related to certain traditions, which are constantly built-up to provide such specialists for the north-eastern and eastern parts of the country.

The traditions are tied to the historical roots and mission of Shumen University and to the FNS. As a main structural unit for training, FNS is part of the Natural-Mathematical Faculty, established in 1971, of the Higher Pedagogical Institute in Shumen, which since 1964 has been a faculty branch of the Sofia University. Later in 1990, the scientific fields of the Faculty of Natural and Mathematical Sciences were transformed into independent faculties. Three of them – Physics, Chemistry, and Biology were united in the Faculty of Natural Sciences.

At present, students in the bachelor, master and doctoral degrees are trained in professional fields of the following higher education areas (Fig. 2). By the number of students, the faculty ranks second at the Shumen University. The total number of bachelor students in the faculty during the academic year of 2016-2017 is 756 and in the academic year 2017 – 2018 it is 652.

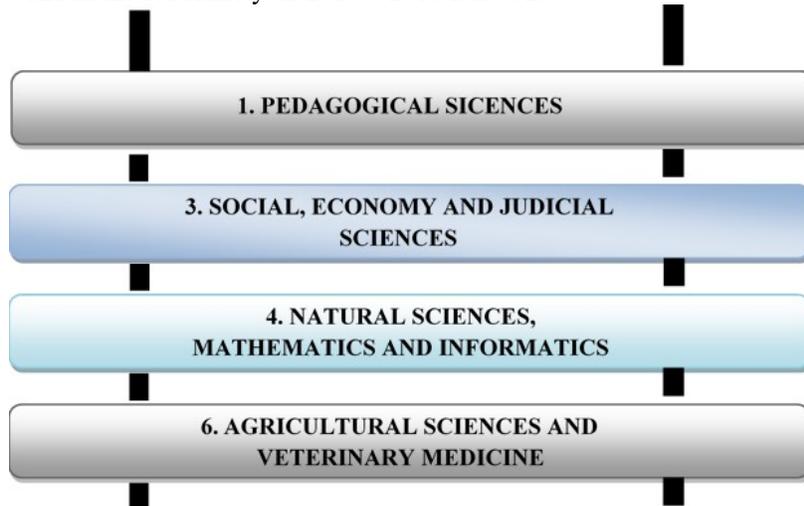


Figure 2. Training by fields of higher education at the FNS

Education in higher education field 3. Social, economic and legal sciences is realized in the professional field 3.9. Tourism for Bachelor’s degree in Tourism.

The most wide-ranging is the education in the field of higher education 4. Natural sciences, mathematics, and informatics. It is in the following professional fields:

- 4.1. Physical sciences;
- 4.2. Chemical Sciences;
- 4.3. Biological sciences;
- 4.4. Earth Sciences in the following majors and programs:

- in the Bachelor’s degree – in majors – Medical Physics and Radioecology, Astronomy and Meteorology; Medical Chemistry, Ecology and Environmental Protection, Geography and Regional Policy;

- Master’s degree – Master’s degree programs: Meteorology; Astrophysics; Medical Physics; Environmental biotechnology and food control; Chemical aspects of plant protection; Organic chemistry; Ecological Chemistry; Management and conservation of ecosystems; Ecology of microorganisms,

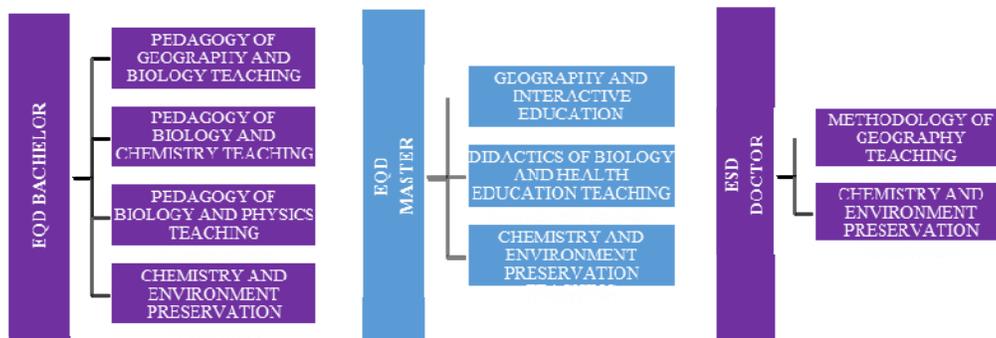
biotechnology, purification and control; Bioterrorism and food safety; Ecology of Medicinal Plants; Applied Geography and Geographic Information Systems;

- Doctor's degree – Doctoral Programs: Organic Chemistry, Astrophysics; Ecology and environmental protection.

Higher education field 6. Agricultural sciences and veterinary medicine is covered by professional field 6.2 Plant Protection at EQD „Bachelor“ in the majors „Plant Protection“ and „Master“ in the Master's program „Plant Protection“.

A decent place after the specialties in the FNS occupies the field of higher education Pedagogical Sciences. It provides training for bachelors, masters, and doctors (Tabl. 1).

Table 1. Profile of the majors in the field of higher education Pedagogical sciences, professional area Pedagogy of Teaching at the FNS



Today's students of pedagogy face the challenge of becoming teachers of a new generation. A generation, not only rich in information and digitally more recognizable, but also a generation with new motivation, new moral system, and civic conscience. In this way, the education of this new generation of students requires teachers to have appropriate pedagogical tools to manage and direct knowledge in a positive direction, to create a scientific space to effectively communicate and exchange information.

Teachers of the new generation should have developed social skills, which they can use to solve potential conflicts, situations of aggression or positive and a number of other pedagogical situations. It is relatively easy today to educate technically competent young people, but their transformation into future engaged citizens of our society requires the motivation, effort, and commitment of them to-be-teachers. This places one of the starting points for updating the competencies of future educators with concerning the improvement of their theoretical preparation for successful implementation of social competences in the learning process.

It the course of their preparation, the main directions of the modern educational reform in the world should be taken into account, that emphasizes the general tendency being the main goal of the school education in the natural sciences - the formation of natural science literacy [1, 2, 3]. It is interpreted as a combination of scientific competence in the field of natural sciences, knowledge of scientific methods and social scientific practices. Because of its importance at the present stage, science education must be directed towards its achievement [7].

This, however, is not easy - to design the training of pedagogical staff who can carry out science education in secondary school, with a focus on improving the public understanding of science as a whole. At the same time, its realization requires students to prepare the cognitive activity in a school, built on the analysis and understanding of the main scientific concepts and the related processes and phenomena, which underlie the rationalisation of the phenomena in the living and non-living nature and the scientific and technological developments; assessing their impact on the environment and people's lives, their importance and economic efficiency, and building skills to apply scientific knowledge and acquired competencies in real life situations.

These procedural aspects necessitate changes in the logic of the scientific platform, which is formed by the theoretical blocks of education of the respective twin specialties with pedagogical orientation, with a view to creating prerequisites for the realisation of interdisciplinary scientific synthesis and formation of complex themes that consolidate the specifics of instance of the relevant scientific fields studying nature -

geography, biology, chemistry and physics. It is necessary to pay more attention to the individual scientific courses in revealing the interrelationships between the different natural processes and phenomena and directing the cognitive activity to the formation of key competencies of practical importance.

At the same time, it is necessary *to update the main accents of training in the pedagogical blocks of the specialties*, in order to meet the state requirements for acquiring the professional qualification „Teacher“ [4]. For this purpose, from the 2017/2018 academic year, the curriculum of the students of pedagogy at the FNS complies with the requirement to determine the minimum number of compulsory courses and their minimum number of hours, including the following subjects: pedagogy, psychology, teaching methodology, inclusive education and information and communication technologies in teaching in a digital environment.

The prerequisites have been created to increase the optional courses divided into the following groups:

- first group – pedagogical, psychological and particular-didactic;
- second group – interdisciplinary and applied-experimental disciplines, oriented to key competences and related to the professional-pedagogical realization of the teachers.

Changes in the regulation of the organization and implementation of the basic stages of practical training of future teachers in the realisation of lesson observation, current pedagogical practice and internship practice are also positive. It is expected that students will have a stable theoretical scientific, pedagogical-psychological and methodological preparation upon completion of the training process of the given curricula, which will be strengthened in the practical training to form competencies for work in a real pedagogical environment.

We should not ignore the role the teacher has in society and what motivation the young people will have to acquire it. It is not by accident that internationally recognized requirements for good education indicate competent teachers and the commitment of the school system to educate children of all abilities [6]. This is the case in Finland, where the number of applicants for teachers is higher than that for doctors and the prestige of the teaching profession is really high, however, it is not in this country.

Involving suitable candidates for teachers requires certain economic incentives, such as the initial teacher's salary should not be lower than the average in other sectors of the economy. Conditions should be created in universities to purchase modern equipment every year with the opportunity to be used in the training process of future teachers, eliminating the imperfection of better technical equipment in most of the secondary schools compared to the higher institutions. More resources should be devoted to continuing education and training, which, when properly conducted, are a condition for reaching and maintaining a „good teacher“ level.

In order to confirm or reject these statements, as well as to establish the actual status and taking into account the expectations of the students in the pedagogical disciplines, a survey was carried out with 58 students of Bachelors of year 3 and 4 in the majors of Pedagogy of Geography and Biology Teaching , Pedagogy of Chemistry and Environmental Preservation Teaching and Masters in the programs Geography and Interactive Education and Methodology of Chemistry and Environmental Preservation Teaching from the Faculty of Natural Sciences at the Shumen University.

The questionnaire includes a total of six items that require an optional answer, the latter can be supplemented with a free answer. The outlined profile of the respondents is as follows:

- gender structure: 82% female, 18% male;
- educational structure: 73% EQD Master, 27% EQD Bachelor.

The first item examines students' attitudes towards the disciplines of the pedagogical profile. The results show that for 80% of them the attitude towards the analyzed disciplines is determined by the importance of the disciplines for their future realization. 10% of the respondents define the teacher's style as leading and 5% share the actuality of the curriculum and the specifics of the subjects (Fig. 3).

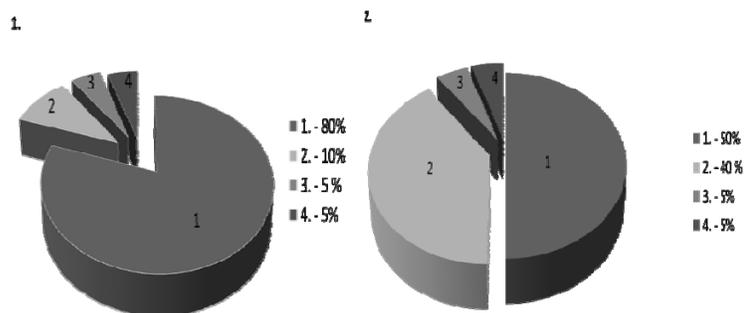


Figure 3. Results of items 1 and 2 answers

The answer to the second item detects the interest in the lectures on the relevant disciplines and the frequency of their visits. 90% of the students have attended 50 to 75% of the lecture course, which indicates their justified interest.

Figure 4 shows the results of items 3 and 4. The results of the third item explore the students' motivations for interest and visit the disciplines of the pedagogical profile. 47% of them determine as the main reason their importance for acquiring the necessary practical competencies concerning the execution of their future profession. Other motives relate to: building up the theoretical knowledge (23%), gaining professional self-esteem (17%) and a certain interest (13%). The fourth notion concerns the complex qualitative evaluation of the training in the disciplines of the pedagogical profile. For the majority of students, it is very good (50%) and good (30%).

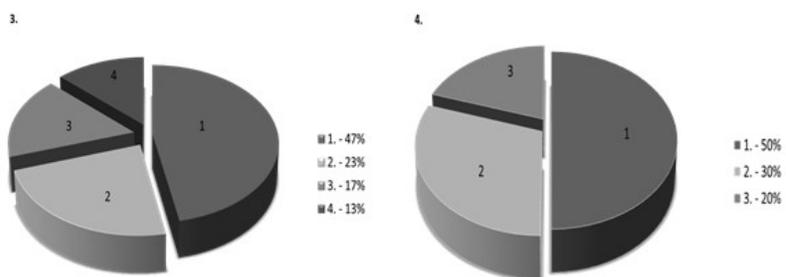


Figure 4. Results of items 3 and 4 answers

The next item examines the students' opinion regarding the presence of the disciplines from the pedagogical profile in the curricula of the studied pedagogical majors. For most of the students - 60% - they are sufficient and 25% identify them as insufficient in comparison with the other subjects. The remaining 15% cannot judge (Fig. 4).

The results of the sixth item are related to the difficulties encountered by the respondents in studying the disciplines from the pedagogical profile of the analyzed majors. Here the answers are the most varied. Students have pointed out the following difficulties - high teaching style (45%), lack of methodological literature (30%), mainly focusing on competence formation (20%) and use of specific terminology (5%).

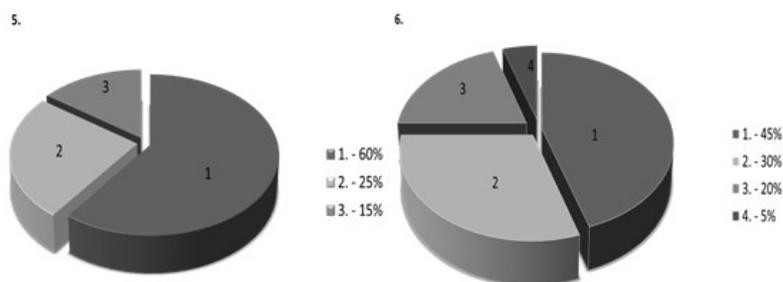


Figure 5. Results from items 5 and 6 answers

The mentioned didactic difficulties in studying the disciplines from the pedagogical block and the conduct of the pedagogical practice of the students objectively derive from their multifunctionality. The combination and successful realization of communicative, informational, training, educational, developmental, organizational and diagnostic function require from the to-be-teacher students not only in-depth theoretical knowledge but also certain personal qualities that will form the basis of their future professional competencies. The connection between the theoretical and practical training of all students is important, but students in pedagogical specialties acquire special importance. This also refers to the continuity between objectives, tasks, and content of the three stages of their pedagogical preparation.

The lack of faith in the students' own strengths and the concern about communicating with students are some of the most prominent motives that justify their pedagogical, psychological and methodical uncertainty in sampling lessons. Objective reasons for these findings may be the small number of hours of the disciplines of the pedagogical and psychological block, as well as the distance in the curriculum of the study of disciplines from the psychological-pedagogical cycle to the beginning of the pedagogical practice and mainly their theoretical orientation.

Conclusions

Some of these problems have been overcome in the new curriculum, where the expected results for the qualitative preparation of future teachers are greater. Other options are related to an increase in the number of optional subjects that directly correspond to the profile of student educators. In the process of their preparation, step-by-step activities can be successfully implemented to overcome the psychological difficulties of delivering the first lesson to eliminate the uncertainty of encountering an unfamiliar audience and others.

Acknowledgment

The present article is the result of the work on a project with the Scientific Research Fund, with the Konstantin Preslavsky University of Shumen, 2017.

References

- [1]. Dillon, J. On scientific literacy and curriculum reform. *Intern. J. Environ. & Sci. Educ.*, **2009**, 4, 201 – 213.
- [2]. Hodson, D. Why we should prioritize learning about science. *Canadian J. Sci. Math. & Techn. Educ.*, **2006**, 6, 293 – 311.
- [3]. Hurd, P. D. Science education for the 21st century. *School Science & Mathematics*, **2000**, 100, 282 – 288.
- [4]. Ordinance on the state requirements of acquiring the professional qualification “teacher”. *State Gazette*, 89, **2016**.
- [5]. National strategy for development of pedagogical staff 2014 – 2020. www.strategy.bg/FileHandler.ashx?fileId=462, **2014.**, 20.10.2017
- [6]. Savolainen, H. Responding to diversity and striving for excellence. *The case of Finland. Prospects*, **2009**, 39, 281 – 292.
- [7]. Tafrova-Grigorova, A. Scientific literacy – primary aim of the natural sciences teaching *Chemistry*, **2011**, 20, 490 – 495.

Acta Pedagogica Naturalis

Former Annual of Konstantin Preslavsky University

Journal homepage: <http://acta-pedagogica.shu.bg>

Received: 20.12.2017

Accepted: 09.03.2018

Situational analysis of a type plan (algorithm) in the training on „Geography of countries” in the Balkan Peninsula

Stella Dermendzhieva, Tamara Draganova

St. Cyril and St. Methodius University of Veliko Turnovo, Faculty of History, Department of Geography, Veliko Turnovo, 2 „T. Turnovski” Str.

E-mail: stela.dermendzhieva@mail.bg, tamara_draganova@mail.bg

Abstract: *The article presents a research of the country or region characterization rules - algorithm in Geography of the countries in 11 countries. The methodological features of the plan, algorithm and rules variants are explained and justified. The algorithm models of geography education of the countries are compared.*

The situational analysis of the education on Geography of countries by the algorithm includes the following countries – Albania, Bosnia and Herzegovina, Greece, Macedonia, Romania, Slovenia, Serbia, Turkey, Croatia, Montenegro. Simultaneously a parallel comparison to the geographic education was made in Bulgaria. The analysis covers only the obligatory training of geographical education during upper secondary level and a comparative characterization of up-to-date curricula to the new academic year was made.

Keywords: *Geography of countries, curriculum, situational analysis, models of the algorithm in training on Geography of countries*

Introduction

What is an algorithm? And why does it occupy such a specific place in the process of teaching geography, is our major didactic and methodical accent in this article. All branches of science need algorithms. Perceiving it as a process involving consecutive steps or actions towards certain type of knowledge or information with the aim of obtaining the required solution or result.

The word “algorithm” is associated with the name of one of the most eminent scientists of Central Asia - Muhammad ibn Musa al - Khwarizmi - a mathematician, astronomer and geographer. A translation into Latin of a book by him begins with the words: „Dixit Algorizmi” („This is what al - Khwarizmi says”). Gradually, the distorted word ‘algorizms’ became the ‘algorithm’, we are familiar with today.

The algorithm is an exact instruction on how to resolve a problem or a certain type of problems. It encompasses a finite string of instructions, which are executed one after another and are partially repeated in a certain sequence.

The geographical algorithm is a set of rules, which determine the sequence of studying geographical sites, processes and phenomena. School geography implements rules for various sites and processes: characterization of a country, settlement, continent, region, economy branch, determining a geographical location, reading climatograms and hydrograms, describing a natural area, zone, mountain, etc[1].

In the development of school geography, there are established algorithms, one of which is used in the characterization of a country. This ensures logical connectivity, compliance with a system of consecutive actions, which result in the presentation of the complex natural, social and economic picture of a given country. The rules, as individual steps and as a set of subtopics define the scope of this complex characteristics. The perception and structuring of the training information is also accomplished. The term “algorithm” in normative documentation, scientific and methodological literature has various options of terminological application, but is unidirectional in its essence: algorithm, rule, plan, standard plan, design (scheme).

Materials and Methods

The content-analysis of the rules for characterizing a region or a country was drawn up on the basis of the geography curricula (programmes of study) in the eleven countries, currently in use, as part of the compulsory training. For Bulgaria, the comparative directions (data) for the algorithms defined between the current 2017/2018 school year in geography and economics curricula, and the new curriculum, which will take effect in the new 2018/2019 school year, have been published. The models for the rules of characterization of a country are drawn up, based on the curricula, and include content for compulsory training in secondary school. The basic knowledge of the framework of a country or region characterization has been designed as models of an algorithm.

Results

The implementation of an algorithm for a country characterization has a number of benefits, and depends on the approach to its accomplishment, presents a real need for geography teaching and provides a consistent presentation of the knowledge learned. This is an established practice, which ensures a more profound rationalization of the social and economic processes and phenomena, of the political changes and reveal more fully revelations of causality. To draw up comparative characteristics of countries and regions, the discovery of the similarities and distinctions between the countries on the basis of certain indicators, means an advantage in the teaching/learning about the countries which have an efficient, productive educational process. The setbacks of implementing the algorithms of a country characterization are as follows: limiting creative activity; dosing information; intensifying factologism and using trite patterns; imbalance between the small number of classes and the large number of countries; using one and the same type of teaching techniques which results in demotivation and loss of interest among the pupils with regard to studying countries; non-compliance with the syllabus – algorithm – stereotype – nature of problems system of training [2].

The situational analysis of teaching Geography of countries based on the criterion – algorithm for a country characterization, includes the following countries: Albania, Bosnia and Herzegovina, Bulgaria, Greece, Macedonia, Romania, Slovenia, Serbia, Turkey, Croatia, Montenegro. The systematization of the options for an algorithm is based on countries’ curricula and includes geography teaching in the secondary school. The vertical interconnection and the mixed model of designing the study contents based on curricula, affects the place and the formulation of the steps, structure and the content framework of an algorithm for country characterization in the secondary school [3]. Knowing the place and the framework of the structure and content in geography teaching for each country, answers the questions about the place, essence, structure and approach to the implementation of the algorithms in teaching the geography of the countries in the secondary school (Table 1).

The algorithm - as an ontodidactic process - has its place in the curricula in the countries studied, presented in various forms and type, content and approach. Each country is characterized by a specific model of algorithm, and a determinate analytical and synthetical approach to a country and/or region characterization, logically grounded and collaterally subordinated.

Table 1. The place of the training on „Geography of countries” in secondary school education – compulsory preparation on curricula and countries

№	COUNTRY	CLASS						
		VI	VII	VIII	IX	X	XI	XII
1.	Albania				SE		GC	
2.	Bosnia and Herzegovina				SE		GC	
3.	Bulgaria		SE		GC			
4.	Greece	SE		GC				
5.	Macedonia				SE	GC		
6.	Romania			SE			GC	
7.	Slovenia				SE	GC	GC	
8.	Serbia			SE		GC		
9.	Turkey			SE	GC	GC		
10.	Croatia			SE			GC	
11.	Montenegro				SE		GC	

Note: *SE* - completion of primary education; *GC* - the training on „Geography of countries”

The algorithms’ logical structure and content, based on the curricula in each country, differ considerably, which gives us a reason to group the countries by this criterion. The similarities identified, reflect inherited models of rules and historically and traditionally determined concepts in school geography teaching.

In Albania, geography teaching of countries in the eleventh grade includes study of continents and countries in Europe, America, Africa, Asia, Australia and Oceania. There is a certain algorithm for each region, which can be summarized for the individual regions in four basic steps, excluding the problems facing the characterization of a particular region (Fig. 1). No algorithm for a country characterization has been proposed in the curriculum [7].

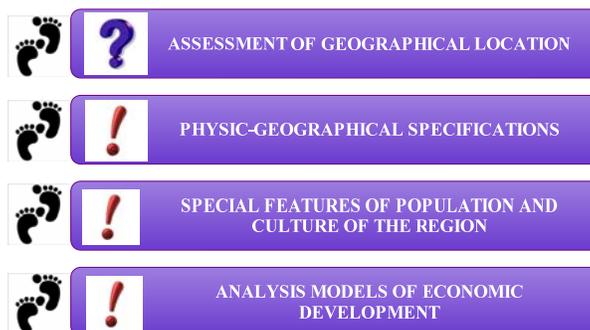


Figure 1. Algorithm model for characterization of a region by curriculum in Albania

There are additional steps in the curriculum for the European region regarding characterization such as: analysis of the specific regional natural and anthropogenic characteristics; evaluation of Europe’s historical and territorial development; identification of Europe’s key regions (Western, Central, Northern, Eastern, Mediterranean, Eastern Europe); interpretation of the context and characteristics of the formation, development and enlargement of the EU; identification of some of the present-day regional issues in Europe, and the prospects for their solution [7].

A distinctive feature is the problem-based learning approach that has been brought in for each region in a different place in the traditional logical structure of the rules. For example:

- ✍ *North America* - analyzing the problems of contemporary regional development on the North American continent, and their perspectives;
- ✍ *Central America* - peculiarities of vegetation in this region (geographical distribution, species, etc.); identify the process of blending the cultures;
- ✍ *South America* - arguments in defense of the thesis that this region is known as a region of contrasts; highlighting the spatial differentiation of local and European cultures;

- ✎ *Africa* - identifying the diversity of the plant and animal world, as well as the environmental and medical issues that accompany this region;
- ✎ *North Africa/Southwestern Asia* - assessing the geographical location and natural conditions, political complexity in the Middle East, Islam, oil resources and development of the region;
- ✎ *South Asia* - natural conditions and the highest peaks in the world;
- ✎ *East Asia* - analyzing models of economic development - Chinese and Japanese models;
- ✎ *Southeast Asia* - analyzing models of economic development and the „Asian Tigers” model [4].

Geography teaching in Bosnia and Herzegovina in the second year in the secondary school is not designed on an algorithmic basis. The study content involves the study of homeland geography in one grade in the secondary school, which results in the small number of classes, and a synthesized content about the countries. Teaching the countries is polarized in bringing out the geographical distinctive features of *physic-geographical* and *social-geographical characteristics* of selected countries [8].

Discussion

The geographical survey is based on regions and countries, typical representatives of the region through the systematic and typological approach. According to the curriculum, the problem-based learning approach does not dominate the teaching of the regions and countries. The topics in the curriculum are stereotyped and identical, with the name of the respective region being added.

In Bulgaria, there is a clear definition within the framework of Standard 2 and 4, and their corresponding topics, as well as the expected results regarding the curriculum and topics for the 2017/2018 school year (Fig. 2) [9]. The terminology of *the algorithm* has been categorically defined when characterizing a region or a country, uniting the expected effectiveness in the *nature – population - economy* system.

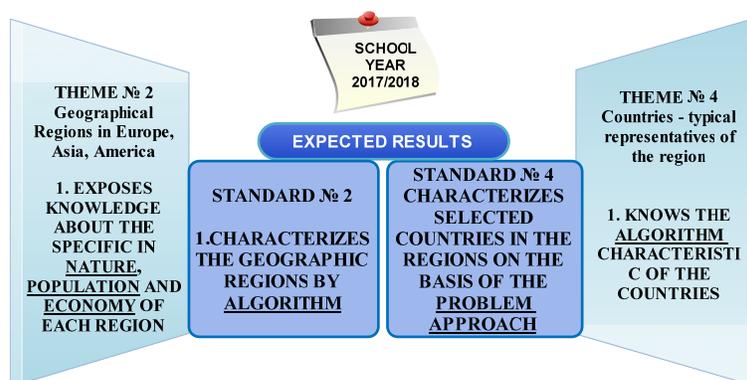


Figure 2. Place of the algorithm for region and country characterization by curriculum in Bulgaria

The curriculum brings out the problem-civilization approach as dominant when studying the countries based on an algorithm. The topical framework determines the identification of the individual countries in the global economy based on certain economic indicators; comparison between the countries, depending on the level of economic development by pointing out the general and specific features of each of them; outlining the economic specialization of the countries studied, an identification of their issues. [6]

For the 2018/2019 school year, a new curriculum will take effect, in which the term *algorithm* will be replaced by *rule*. Adopted as synonyms in the 9-th grade, geography teaching for the countries is included in topic 2, with a clearly defined action of the active verb *characterization* of a region and a country according to a rule [10]. The two representative rules differ in their final step, with the characterization of the specific issues of a region being required, and characterization of towns and cities being required for a country (Fig. 3).

There are basic geographical algorithms for the analysis of a region and a country which have a specific structure, spatial and logical organization in Bulgaria’s geography teaching at school. Over the years of the development of geography teaching, they have been put through various transformations with regard to structure and content. The contemporary model of a rule keeps the traditional presentation of a country, including the unity of the three components *nature – population - economy*.

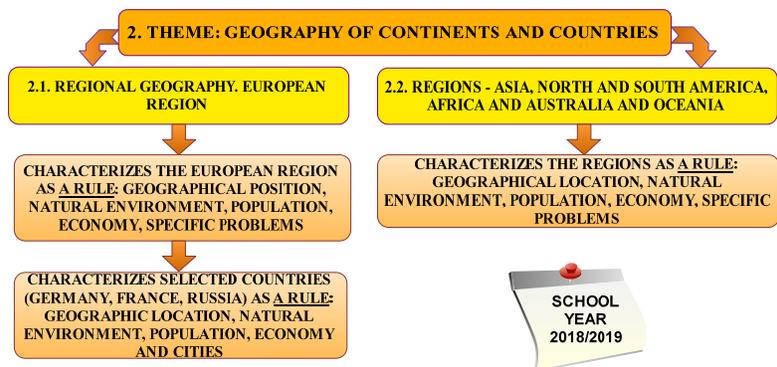


Figure 3. Rule for characterization of a region and a country in Bulgaria in force since school year 2018/2019

The traditional character of the algorithm-based study of a country is also included as an element of the content of the textbooks in geography and economics in the 9-th grade. In two of the four approved versions of textbooks for compulsory training, an algorithm for the characterization of a region has been presented (Fig. 4) [10]. The textbooks made by a team of authors - R. Penin et al (version 1) and N. Dimov et al (version 2) contain algorithms, which in their essence are identical, but dominated by a problem-based learning, comprehensiveness and thoroughness of content, as well as examples in the first version of a textbook (16 steps in the algorithm in all) [4, 5, 6]. The textbook whose authors are Penin et al, have presented a separate topic ‘Characterization of a geographical region’ (a lesson for practical work), in which through the two active verbs *defines* (2 times) and *characterize* (14 times), a detailed model for an algorithm for characteristics has been presented.

The algorithm’s sixteen steps can be referred to the six in version 2 of a textbook, and have been summarized in the formulation of the individual steps: 1, 2 – step 1; 3, 4, 5 – step 2; 6, 7, 8, 9 – step 3; 10, 11, 12, 13 – step 4; 14 – step 5; 15, 16 – step 6.

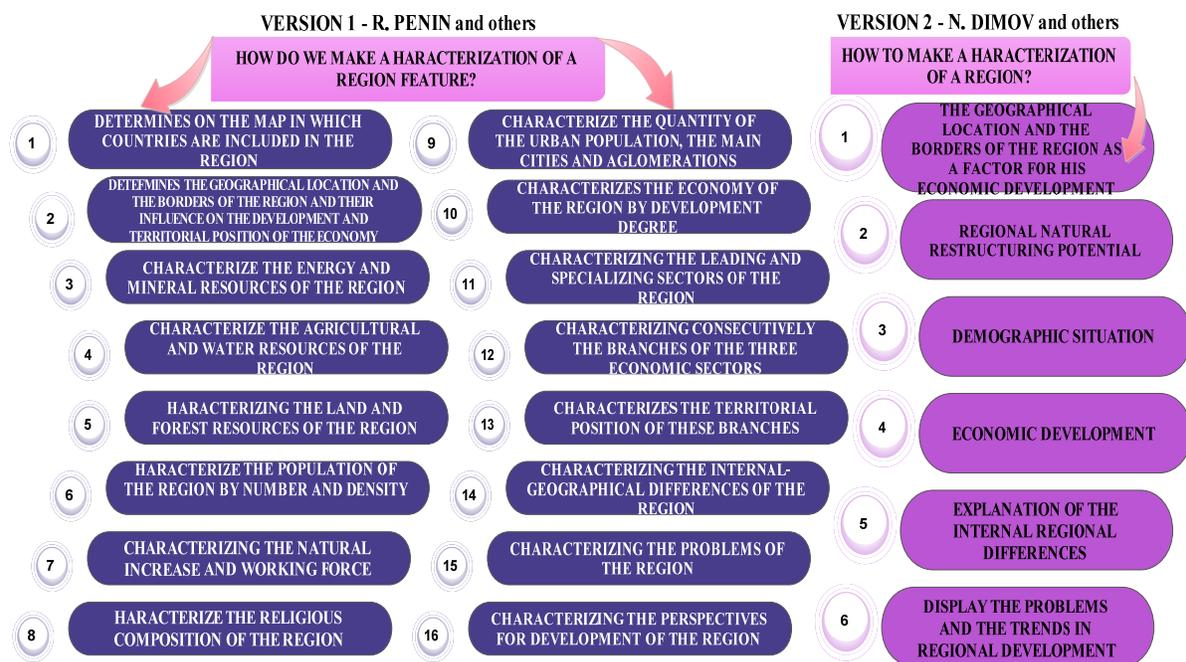


Figure 4. Models of algorithms for region characterization in *Geography and economics* textbooks for IX-th grade - compulsory preparation (Bulgaria)

Teaching the geography of the countries in Greece (in B – grade) is on the basis composed of modular model for the structure and content with the topics repeated and expanded from A – grade of the

secondary school. The curriculum contains no directions, and no algorithm has been proposed for the characterization of a country or a region. The content is developed in terms of expected results according to the curriculum, which in its essence is oriented towards bringing out the economic-geographical and geopolitical characteristics of the countries and regions (Fig. 5). The regions are an object of study not as a whole about the world, but only those facing considerable inequalities, divisions and conflicts. The teaching of regions and countries is based on the economic and problem - based learning approach.



Figure 5. Model of a plan for region and countries characterization in geography in Greece

The characterization of the regions and countries in Greece is organized in the curriculum by the active verbs – identifies, analyses, compares, evaluates, interprets, differentiates, discusses, etc. This fact provides the productivity of the teaching process [11].

In Macedonia, teaching *Geography of the countries* in the first year in the secondary school features a small number of classes (4 school hours), with a summarized main topic – „*Cultural-, political- and economic characteristics of the Earth*”, and with no give references an algorithm for the characteristics of the regions and countries which are contained in the curriculum. [12]. The reason for this is the fact that the basic knowledge in teaching *Geography of the countries* has been placed at the junior high school, where there is a clearly determined algorithm for characterization of a region and country, studied in a multiple number of classes.

Teaching *Geography of the countries* in Romania in the secondary schools is based on the criterion of an algorithm for characterization of a country from the basic knowledge in the VI-th grade. No algorithm for the characterization of a region or country has been determined in the curriculum for the XI-th grade [13]. In teaching *Geography of the countries*, the algorithm for characterization of a country from the junior high school appears to be the basic one: geographical location, borders, physical and geographical aspects, population and settlements, aspects of the economic development and potential for tourism [14].

The countries' presentation is based on data from encyclopedias, which results in reproductivity of the teaching/learning process when studying the countries.

Slovenia is the country which differs from all eleven countries studied, in terms of the scope of the course for teaching/learning the countries (Tabl. 1), the overall number of classes, and regarding the criterion of the algorithm, the problem-based learning approach has been implemented.

Teaching/learning the geography of the regions in the 10-th and 11-th grade differs by various sequence of the steps in an algorithm, but on the basis of the problem - based learning [15].

The curriculum of studying each region or a group of countries follows a different algorithm, complying with the natural, demographic and economic specific features of the region (Fig. 6). The stereotyping and equalization of the rule for characterization has been avoided, with the specific nature and the distinctive features of each region playing a leading role.



Figure 6. Model for characterization algorithm of the African region in Slovenia

In studying the countries, the conceptual model of the problem - based learning and revelation of the specific nature of each country has been preserved. Many of the countries have been presented on the principle of comparison between two countries or a group of countries, between a group of countries and a single country. The comparative macro-framework of content includes the specific character to teaching of the countries. It has a problematic formulation of the topic. Thus the specificity is visible and the application of the active productive verb at characterization is required (Fig. 7).



Figure 7. Model for comparative characterization algorithm of countries in Slovenia

Teaching *Geography of the countries* in Serbia, in the second grade, in the secondary school is structured in a concise plan, characterized by a small number of steps and content, which is not based on the problem - based learning approach (Fig. 8). The plan has an encyclopedic structure and has been conceptualized on the system: *political - geographic characteristics – population – economic - geographic characteristics* [16].

The version of the plan proposed does not stress the specific character of the region.

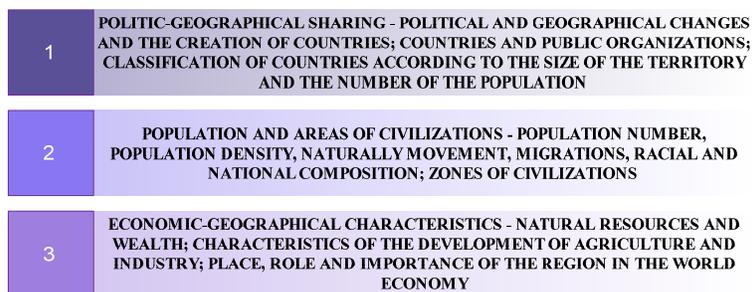


Figure 8. Model of region characterization algorithm in Serbia

The geography curriculum involves a plan for characterizing two countries which are typical representatives of a region: ‘major economic and geographical characteristics of the natural resources, characteristics of the development of agriculture and industry, place, role and significance in the global economy and politics’. [16] In studying the topic of China, the problem - based learning approach has been implemented – ‘major economic and geographical characteristics, and role in the global economy; economic boom of the Far East and its significance’ [16].

Turkey does not put forward plans for characterization of a country or a region in its curriculum. Geography teaching of the countries is done in modules in each school year in the secondary school, with the teaching process being based on the active verbs: groups, classifies, discusses, identifies, analyses, compares, distinguishes, interprets, evaluates, etc [17]. The country study has a productive structure of designing of the content.

Teaching *Geography of the countries* in Croatia is structured in the third year of secondary school, with the problem - based learning approach being implemented in studying the regions and countries. The topics formulated on the basis of the study programme have a problem - oriented presentation and provoke productivity. For example:

- ☞ *China* – geographical fundamentals and distinctive features of China’s development. Problems of the regional development. Industrial zones and peripheral regions;
- ☞ *Italy* – regional structure. Problems of the North and South;
- ☞ *United Kingdom* – prosperous and less prosperous regions. Conurbation. Mining industry regions. The Southeast and the Megapolis of London;
- ☞ *India and the new industrial countries in Asia* - Problems of the underdeveloped countries [18].

In Montenegro, teaching *Geography of the countries* is structured in the second grade of the secondary schools; it requires the implementation of a plan for a region characterization according to the curriculum (Fig. 9) [19]. A specific feature of the plan for characterization is its non-standard formulation of the various steps and richness of content. The characterization of the economic activities is determined by the relationship between *natural resources – economy*. We do not find the implementation of the problem - based learning approach when characterizing a region from the individual steps and their formulation in the plan.

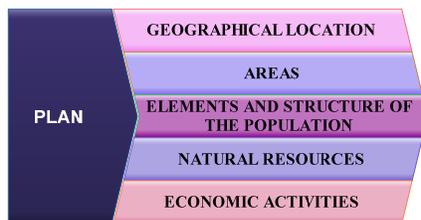


Figure 9. Model of region characterization plan in Montenegro

Conclusions

The presentation of the situational analysis of geography teaching of the countries, based on a criterion – algorithm for characterization of a region or a country, according to the curricula, identifies that each of the countries studied has a specific plan, algorithm and a rule for a region or a country

characterization. Most of the countries in the Balkan Peninsula implement an algorithm and a problem-based learning approach in studying the countries.

References

- [1]. Dermendzhieva, S. i dr. Geografiya i obrazovanie. Metodika na obuchenieto po geografiya, I chast. V. Tarnovo, Univ. izd. Sv. sv. Kiril i Metodiy, **2010**.
- [2]. Dermendzhieva, S. Metodika na izsledovatelskata deynost po regionalna geografiya. V. Tarnovo, Univ. izd. Sv. sv. Kiril i Metodiy, **2001**.
- [3]. Dermendzhieva, S., T. G. Draganova, Comparative analysis of the geography education in the Balkan countries, Porto, Portugal, **2016**.
- [4]. Dimov, N. i dr. Geografiya i ikonomika 9. klas, zadalzhitelna podgotovka, S., „Prosveta”, 2012.
- [5]. Draganova, T. Myasto i analiz na sistemata ot urotsi v razdel „Geografiya na stranite i regionite” – IX klas v balgarskoto sredno obrazovanie v razlichnite varianti na uchebnitsi – zadalzhitelna podgotovka. V. T., 2014, p. 85-94.
- [6]. Penin, R. i dr. Geografiya i ikonomika 9. klas, zadalzhitelna podgotovka, S., Bulvest 2000, 2012.
- [7]. Uchebna programa po Geografiya za 11 klas, **2009**, Albania.
- [8]. Uchebna programa po Geografiya/Zemleopisanie za vtori klas na obshtite gimnazii, **2016**, Bosna i Hercegovina.
- [9]. Uchebna programa po Geografiya i ikonomika IX klas, **2009**, Bulgaria.
- [10]. Uchebna programa po Geografiya i ikonomika za IX klas (obshtoobrazovatelna podgotovka po ramkovi uchebni planove), v sila ot uchebnata **2018/2019**, Bulgaria.
- [11]. Uchebna programa po Geografiya, **2007**, Greece.
- [12]. Uchebna programa po Geografiya, zadalzhitelna programa I sadarzhanie za I godina na gimnaziyata, **2001**, Macedonia.
- [13]. Uchebna programa po Geografiya – XI klas, **2006**, Romania.
- [14]. Uchebna programa po Geografiya za VI klas, **2006**, Romania.
- [15]. Uchebna programa po Geografiya za gimnazii, **2013**, Slovenia.
- [16]. Uchebna programa po Geografiya – 1, 2 i 3 gimnazialen klas, **2014**, Serbia.
- [17]. Uchebna programa po Geografiya za 9, 10, 11 i 12 klas, **2011**, Turkey.
- [18]. Uchebna programa po Zemleopisanie, **1994**, Croatia.
- [19]. Uchebna programa po Geografiya za gimnaziya, I i II klas, **2014**, Montenegro

Acta Pedagogica Naturalis

Former Annual of Konstantin Preslavsky University

Journal homepage: <http://acta-pedagogica.shu.bg>

Received: 20.12.2017

Accepted: 09.03.2018

Interactivity and interactive methods and techniques in Geography and Economics education under the topic of „Number, Density and Population movement“

¹Stela Dermendzhieva, ²Semra Nejdjet

¹St. Cyril and St. Methodius University of Veliko Turnovo, Department of Geography, Veliko Turnovo,

²„T. Turnovski” Str., Konstantin Preslavski University of Shumen

E-mail: stela.dermendzhieva@mail.bg, semra_nejdjet@abv.bg

Abstract: *The aim of the present study is to trace and analyze the geographic content of the world in the 9th grade and specifically the topic unit „Number, density and population movement” and to interpret some didactic aspects of the interactivity and application of some interactive methods and techniques. The analysis of the leading idea, concepts, categories and basic characteristics related to the population of the world, dynamics in the number of population, density and types of movement is dyedically targeted. Considering the emergence and development of ideas of the origin of man, the emergence of world races, the dynamics in the number, density and movement of the world's population and the importance of overcoming some of the global human problems, namely the demographic and the food, approaches to their solution. Geographic education in the 9th grade presupposes the acquisition of knowledge, the formation of skills and the compilation of patterns of behavior and value attitude, leading to an objective perception and assessment of reality in a global, regional and local aspect. The new realities, which are laid down in the Law on Pre-school and School Education are as basic principles and objectives: orientation to the interest and to the motivation of the child and the pupil, to the age and social changes in his life, To apply the acquired skills in practice; Innovation and effectiveness in pedagogical practices and in organizing the learning process based on scientific substantiation and forecasting of innovation outcomes; Acquiring competencies to implement sustainable development principles; Acquiring skills to understand global processes, trends and their interrelations; The formation of tolerance and respect for the ethnic, national, cultural, linguistic and religious identities of every citizen to whom education must respond adequately.*

Putting learners in the center of the learning process requires the development of effective methods and forms of teaching and learning such as interactive learning methods and techniques. How and how

they are reproduced in the study of Geography of the World is the subject of the research study in this report.

Keywords: *interactive methods, Geography and Economics*

Putting the learners in the center of the learning process requires developing effective methods and forms of teaching and learning such as interactive learning methods and techniques.

Modern technology of learning has its own theory, closely related to the achievements of both pedagogical and many other sciences. It aims scientifically building a learning process based on widespread use of technical means of training, advanced (audio - visual) teaching materials, activating teaching methods and teaching materials [1].

Constructivism as a methodology lies at the heart of productive educational technologies, some of which are related to the integration of information and communication technologies in education. In general, the enhanced interactivity unites these technologies.

Constructive cognitive psychology for interactive learning can be interpreted in a particular intermodal educational technology using interactive methods and techniques which can be applied in teaching geography and economy in line with the objectives set in the state educational requirements and expected knowledge, skills and attitudes in the „Population in the world“, and the thematic unit „number, density and movement of the population“[10].

In the course of cooperative activity, pupils perform a common educational goal, the achievement of which generates collective energy. The end result of the learning activity depends on the contribution of each member of the group [6].

At the same time, goals and outcomes are significant for both the group and each member. This type of learning promotes cooperative relationships rather than competitive ones. Educational technologies include:

- Learning through firsthand experiences – by changing the traditional roles of the teachers and the pupils;
- Problem-based learning – this is linked with solving cognitive problems through studying the educational material.

Communication is internally intertwined in the activity, a form of co-ordination of actors' behavioral acts, and as such it is a part of the interaction. Communication is also a social psychological category in which three interrelated aspects are perceived: perceptive (the mutual perception of communicators and the establishment of mutual understanding); communicative (process of exchange of information between the communicating parties); interactive (referring to the organization of interactions between communicating individuals), i.e. to exchange interactions. An individual pursues certain goals which go beyond his or her individual capabilities. In this activity, others are present on many lines – as support for the achievement of own goals, as elements of the situation, and as a subject of broad nomenclature, public ideas regulating the activity. The individual develops a system of expectation and orientation towards others. There is a need for mutual adjustment and a public need for organization [9].

The psychological foundations of interactive methods were developed in the mid -1950's and developed further in the 1960's and 1970's. Their most extensive application is related to foreign language learning, but they have a significant presence in other subjects (civil education, history, geography, etc.). It is especially important that the centerpiece of the theoretical formulations is attributed to the learner's personal, cultural and social experience, as it gives some meaning to their surroundings [6].

„Interaction “derives from the English-speaking verb „interact“, which means reciprocal action or influence.

It is important to underline, that the currently used terminology may differ from each other, e.g. besides the term “interaction”, widely used are also “interactive methods”; “active methods”, “activating techniques”, “group strategies” etc. (Atego and others [4]).

Interactive technologies (system of methods) and interactive techniques (system of tools and techniques) are necessary and applicable at every stage of the learning process.

The very process of interaction means exercising mutual influence and interaction and is more than mutual help and mutual stimulation. Interaction is the identification of patterns of behavior, norms, roles, organizational structures. The intent is to achieve an organized interaction.

Interactive training is training that provides both conditions (what?) For increased indoor activity as the teacher and the learner in their interaction and opportunity (what?) To their outer appearance through flexible and dynamic methods (how?) And process of learning (where?) with the skillful and competent application of modern learning tools by the teacher (who?) in an appropriate learning environment (where?) [10].

The present work is related to some of the problems that need to be addressed in the implementation of modern geographic education in the secondary schools. This coincides with the period of discussion and implementation of the new school documentation in the Bulgarian schools, the new state educational standards and curricula in geography and economics.

Geography education in the 9th grade presupposes the acquisition of knowledge, the formation of skills and the compilation of behavioral models for objective perception and assessment of reality in a global, regional and local aspect. The emerging consumer and individualistic culture, snowballing globalization more actively affects global problems of the humankind; particularly natural disasters, demographic problems and feeding the population, depletion of raw materials, population movements and the refugee problems form new realities which the education must respond adequately to.

Theory and methodology

The purpose of the present study is to trace and analyze the content of geography curricular of the world in the 9th grade and specifically the topic „Number, density and population movement“ and to interpret some didactic aspects of the interactivity and application of some interactive methods and techniques.

The objective consists in making analysis of the leading idea, concepts, categories and basic characteristics related to the population of the world, population dynamics, density and types of movement; considering the emergence and development of ideas about human origins, the emergence of the world races, fluctuations in the numbers, density and movement of the world's population and the importance of overcoming some of the global problems of mankind, namely demographic and food.

Putting students, the center of the learning process (student-centered approach) requires the development of effective interactive methods and techniques. This report aims to analyze how the above methods are reproduced in the studies related to the Geography of the World.

Objectives can be achieved by targeted analysis of the thematic unit, basic concepts and categories related to TTA opportunity to implement the interactive technologies (system of methods) and interactive techniques (a system of techniques and tools) applicable in the learning process.

It is particularly important to emphasize that the training methods are different modes of action undertaken by the teacher by which he or she is working or attracting students to self-study the material in order to achieve the learning outcomes determined by the educational requirements. The methods are divided into two groups according to the way of organizing the knowledge of the learners through which the teacher and the pupil interact in the learning process, such as below:

- 1) methods of exposition of the teaching material by the teacher: narrative, lecture, description, explanation;
- 2) methods by which to organize the activities of students handling of the material: interactive lecture, discussion, game, situational methods.

Such grouping of the methods allows the foreground of expressing their other basic features such as:

- the ways in which pupils and teachers work to acquire knowledge and skills;
- ways of organizing pupils' knowledge, the form of co-operation between the teacher and students.

Placing a second plan of „classical methods “is not an attempt to self-modernize the lessons. The new hierarchy of methods is a consequence of seeking consistency between the set objectives and the working technology for the purpose of the expected outcomes.

The above reasons result in increased interest in methods and technique such as games, interactive and situational methods etc.

It is therefore important to draw attention to the differences between the perceptions and the practice regarding the students' individual work and the forms of application of the interactive methods. In

both cases the learner is placed at the center of the learning process in a specific way. The organized activities allow individual or group participation and obtaining feedback. However, when the students work individually, the teacher always remains an „institution“ that guides and supports the activities of the students (scaffolding). The interactive methods largely focus on a wide range of communications and interactions, as well as on individual experiences.

In the process of applying the interactive methods, interactions take place between:

- the student and the teacher;
- the student and the group;
- between groups.

The goal in the first case is to mainly understand the roles on the achievement of specified standards and the responsibilities of students in this regard. And secondly, to enable the learner to divert the interaction independently in order to solve problems without relying primarily on the teacher as a counselor. The best outcome of these interactions is that the student deliberately takes responsibility for acquiring new knowledge and skills. The role of the teacher is to be an organizer, a consultant, to evaluate the achievement and to make a diagnosis.

Within the relationship between the individual student and the group key issue is the role that student gets within the group. However, equally important is the role of the teacher when working with several groups. It is also essential that the individual goals of the learners are leading to the same outcome as the objectives of the group as whole. Under these circumstances pupils come closer to real life situations, seeking and finding ways of collective problem solving. This is one of the essential merits of interactive methods. Achieving co-operation, in which students are perceived as a homogeneous team with common goals and with the ability to make decisions, makes the group a team. Typically, in class, this means selecting and collecting information on a particular issue, which also involves generating ideas, assessing situations, making decisions, choosing funds, resolving conflicts. The idea should be therefore accompanied by own and others' commentaries. The final decision is often based on fewer ideas which are usually followed by deeper discussions and suggestions.

In terms of synergies within the group and between different groups the main emphasis lies on differentiating learners' roles within the group, e.g. an intellectual leader, a unifier of the final opinions, the designer of the idea, the presenter etc. The above elements contribute to enhancing students' communication skills via exchanging ideas between pupils, mastering techniques for finding common ground between extremely different points of view.

Another specific aspect of the interactive methods is the fact, that they are based on actions with physical objects (cards, posters, maps); they include activities (grouping, systematization, mapping, etc.). These tools enable the students to acquire new, usually more complex knowledge (of interactions, dependencies and conditionality). They also develop learners' skills for making use of different sources of information and demonstrate their attitudes and preferences to certain values.

Interactive methods put the participants in a situation of constant discussion by giving them opportunity to express their own opinions, suggestions, feedback etc., which allows them to build different strategies of behavior.

“Interactive” learning can be defined as a process of learning which enables the students to be proactive both internally and externally [14].

The interactive training methods are classified as:

- Methods to create a favorable atmosphere, organization of communication;
- Methods of exchange of activities;
- Methods of provoking thinking;
- Methods for creating a final product, creativity;
- Methods of reflexive activity;
- Integrative methods / interactive games [6].

There is a range of varieties of interactive practices such as role play, situational method, discussion, and brainstorming. The main role of the teacher is to encourage the students to be proactive via communicating and engaging actively; to provide opportunities to identify problems; to provide conditions for both, active and autonomous participation.

Based on the above information, the interactive methods can be defined as methods of learning which enable the students to acquire new knowledge, relying on their cognitive experiences in terms of different interactions between them or between the teacher and themselves.

The document „Interactive teaching methods“ [12] examines the types of traditional and interactive learning. According to the author, the effectiveness of learning depends on many factors, one of which is the student's engagement in learning-related situations.

In theory, participatory and interactive (participatory, interactive) hands-on, learner-centered, outcome-based learning is encouraged, but these practices are not found often in real practices.

Table 1 (by Ivan Ivanov) [12]

Traditional Educational Model	Interactive Educational Model
Be able to pass the exam successfully based on acquired information.	Conscious need for information.
Be able to identify and solve problems in a structured and static environment.	Be able to identify and solve problems in an undefined and dynamic environment.
Be able to apply knowledge and skills to specific situations and circumstances.	Be able to adapt to information resources. Be able to process the information into a resource-friendly application.
Based on the "teacher-student" interaction.	It is based on the “peer-on-peer” interaction and teamwork.
The teacher makes individual assessments and attestations and provides feedback.	The teacher and pupils make join individual assessments and testimonials and provide feedback.

The “critical thinking” is also considered to belong to the modern educational technologies based on constructive concepts.

“Reading and Writing for Critical Thinking” [7] is a jointly developed program by experts in education from all around the world.

The aim of this collaboration is “to incorporate classrooms training methods that encourage the critical thinking of learners of all ages within different learning disciplines“. The students form 'ability to solve difficult problems to investigate the circumstances, critical to weigh the different opinions, to take serious and informed decisions“. In Bulgaria, this international program is popular and has its dissemination through the Bulgarian Reading Association and its body, called „Critical Thinking“.

The training under this project is based on an understanding of active learning that promotes research and discovery. This model includes three phases of work:

- Evocation;
- Realization of Meaning;
- Reflection.

The awakening of interest in the students motivates them to carry out an active cognitive activity, use their prior knowledge on the subject over which they will be working. This phase requires that „the participants in the lesson have to be asked to think about what they already know about the subject; be questioned about the topic, and set learning goals“.

Realization of the Meaning Understanding is conceptualizing the gained experience, its interiorizing in the minds of the students. Awareness of meaning is „a phase in the lesson when the participants explore and seek knowledge and as a result of this activity realize the meaning of the new information“.

Reflection helps students to analyze and digest the experienced cognitive process, to present the result of the learning process. Reflection is „phase in the lesson when the students analyze the ideas, that they have encountered, and the meanings they have understood; the learners then ask, interpret, apply, debate, challenge and extend this value to new areas of knowledge, comparing it with their experience [7].

Interactive methods have varying degrees of complexity and different possibilities for use in the practice of training exercises and their implementation covers mainly three methods requiring strict compliance with the rules and have high cognitive and motivational potential: brainstorming, discussion, game methods.

Varieties of interactive practices:

1. Discussion – based on the confrontation of different viewpoints. The discussion can be applied either as a primary or secondary method. Its application requires purposeful preconditioning of the selected sources, clearly defining and differentiating the argument and counter argument. Debaters are grouped by their common views and able to formulate their arguments and counterarguments through examples, authentic texts, research, and own issues, too. The teacher chooses his/her role during the discussion and only summarizes certain stages by directing the debate; he/she leads the discussion, ensuring compliance with free and equal expression and democratic values. But first and foremost – a significant commitment is the choice of the theme and the formulation of questions. Not only acceptable but also necessary in some situations. The students also learn to lead debates. This is significant as approach for the development of thinking and understanding of some aspects of the identity of the student.

2. Comment on the case. In essence this are descriptions of real life situations in relationships between individuals or groups. Featured are a light extraction of “hidden information” or on taking of decisions on the basis of complex set conditions. Therefore, media messages, scientific publications, and information from Internet are used as case studies in order to resolve existing conflicts and contradictions. They allow the students to make choices between different values. The specifics of the case are that they exclude the playing time. While the interpretation is done in small groups, preparing intellectual cards with pros and cons, the actual transition to discussion and decision making is usually done in large groups. The decisions are normally commented on and are either close/similar or alternative.

3. Game methods. The so called „shell “with didactic task presents a number of advantages of for learning in various subjects such as:

- to promote intellectual leaders and assignee roles in order to value the knowledge and skills;
- develop skills in teamwork and communication;
- students are united in a common goal and accustomed to observing certain rules [13].

Role-playing games and simulations are one of the main attributes of interactive methods. They are made up in accordance with the understanding that the learner interacts with the material, the teacher and the group. The goal is for the learners to be actively involved through their own thoughts, turning to the group or to the teacher. They are expected to apply and acquire new knowledge. In role-playing the student fits into the situation as if it is their own experience.

4. „Brainstorm“ – it is seeking a reasoned decision or assessment of the problem. However, the participants in the procedure have clarity about the nature of the problem and in this sense they act as if they are experts. There are a few methods used in the process. Each learner generates couple of ideas, at the same time they are not allowed to comment on them from the position of participants. In the standard version of using posters, the ideas are recorded anonymously. Next step is grouping them in nests related to the similarities of the ideas; followed by detailed analysis of strengths and weaknesses of each idea. The final step is the selection of an idea common for the majority of participants.

5. Conducting debate [3]. The purpose of the structured conducting the dispute is to encourage participants to a deeper knowledge of the problems and development of communication skills. During the conduct of dispute participants explore different perspectives of looking at the problem, enabling them to solve it constructively. The debate consists of three phases: preparation, implementation and evaluation. Usually participants are divided into two groups during the debate. One of the groups protects the confirming argument, and the other group protects the – opposite opinion or counter argument. During the actual debate it is important to consider the time for the dispute which is strictly regulated, and to take into account the roles of the participants. The most important elements are: appropriate argumentation, strategy development, the use of arguments and counter argumentative skills; defend; asking questions, showing respect towards the opposing party in the dispute. The debate is evaluated by judges, taking into consideration elements such as the content of the form of argumentation, as well as the presentation of arguments. The course of the debate is in the following order:

- The facilitator introduces the aim of the dispute, his/her own role, both of the teams taking part in the dispute, and principles of the dispute, such as: each team member is entitled to active participation, focusing the discussion around the main idea, taken all opinions into account while decision making;

- the teams then introduce each other and start exposing their theses; each team usually consists of three team members who are given a few minutes to talk about their these, after which the participants are asked related questions about their opinions;

- finally, the facilitator summarizes the course of the debate, and the judges give their verdict.

6. Interview [3]. The role of the interview as a technique, is to benefit each participant taking part in it. It consists of the following steps:

- explaining the purpose of the interview to the participants or identifying the purpose of it by the participants;
- proposing the possible interview questions either individually, within the whole group or in small groups;
- inviting and discussing the nature and procedures of the interview with people who will be subjected to the interview;
- discussing the appropriate behavior boundaries of interviewers;
- summarizing the information gathered during the interview (as a discussion or chart or as a debate around the main topics);
- finally assessing the process of the interview by the participants.

7. Development Project [3]. The project is a series of planned activities which consist of: a purpose, techniques, time limits to be implemented, resources, individual or most often in group work by the participants in order to implement their ideas, existing criteria for evaluating the success. Participants learn making group decisions, resolve conflicts, searching and finding compromise, performing different social roles, conduct, evaluation of group work etc. as part of their project work. Some stages of the project may include: 1. Identifying the topic and defining project objectives. 2. Searching and analyzing the information. 3. Public presentation of the project.

8. Resolving- Problem solving [3]. This is one of the most commonly used interactive methods and it consists of the following basic steps: 1. Defining the problem- short and precise description of the existing problem and determining the position, which should be achieved after resolving it. 2. Identification of potential causes of the problem and identifying the one which is mostly likely for its cause 3. Identifying possible solutions, followed by preparing a list of the ones which are most likely to be applied. 4. Selecting the best decisions after agreeing on the criteria according to which these solutions will be evaluated. 5. Developing an action plan which specifies the different steps which need to be taken, deadlines, costs etc. 6. Implementation of the plan and assessing the progress.

The attention of the teachers, using interactive learning methods is usually focused mainly on two aspects:

- Identifying specific interactive methods described in the literature- heuristic conversation, brainstorming, visualization, discussion, problem solving, interview, role playing, simulation games, situational games, drama, debate, discussion, project, case study, cooperative learning, solving moral dilemmas (of values clarification), independent work, synectics.

- Analysis of terms used in interactive methods such as debate, discussion, case, incident, various play methods etc.

The discussion is a conversation aimed at analyzing and clarifying a topic, without a pronounced clash of views.

The discussion is a conversation in which there is a confrontation of views for a thorough analysis of a problem. It might as well be restricted to the analysis of the problem and result in the formulation of a final opinion and decision.

The debate is a variety of the discussion, in which there is a confrontation of two main points in order to highlight the more grounded one.

The case is a coincidence that deserves to be analyzed by cognitive and practical terms. The case is also coincidental, which causes certain contradictions and imposes a decision. The essay is a method identical to problem solving.

The incident is a description of a situation which is connected with the violation of certain norms and requires adequate response. Unlike the case, information is insufficient and the decision should be taken in terms of lack of time.

Play methods of learning can be defined as such methods in which the absorption of knowledge takes place in a conditional situation, the main feature of which is entertaining with funny nature of the rules of action.

Role-play games (RPGs) [3] – this is a strategy that engages participants on a personal level. Feelings and experiences with the implementation of a role in helping them understand the problem or concept studies. RPG creates conditions for in-depth study of a question, solving problems by imitating roles in real-life situations.

Simulation games are a kind of model of public processes where significant feature is rivalry.

The main interactive techniques for organizing interactions in class can be viewed in a broader plan, namely:

1. Working (learning) in small groups and in pairs. This technique can be used in different situations in most of the mentioned interactive teaching methods. Working in small groups and in pairs facilitates: the introduction of the participants in the discussion; sharing experience of confidential nature; performing specific tasks that are part of the more general work (for example, the discussion of specific parts of a global topics and issues that are to be considered by all); project development; improvising at playing role-playing games; rationalization of teaching time, etc.;

2. Coming to an agreement on rules for collaboration. It is necessary to reach an agreement regarding the rules of work in the group at the beginning of each training/learning process (treaty, convention). The Lead can offer fun ways that promote the participation and inform all parties that there will not be exemptions of the discussed rules. It is also practical to have visuals of the rules, such as list displayed on the wall etc.

Some of the rules may include:

- „Listen to each other!“;
- „Respect everyone’s opinion!“;
- „Do not take offense and do not mock each other!“;
- „Everyone is entitled to their opinion!“;
- „Raise hand to express your opinion!“;
- „Everyone has the right to refuse to participate in any discussion whenever they want!“.

3. Circle of talks- for activities in which all work together, discussions, debates, role plays, etc., Participants and the facilitator need to be in a circle so that it is possible to maintain eye contact.

4. Working in „mobile groups“. This procedure combines the advantages of the group work and the discussion of all the participants. There are „True“, „False“ and „I do not know“ signs each fixed on different walls in the room. Each participants chooses to stand below the sign which reflects his/her opinion. This leads to forming temporary groups-those who accept the statement as true; those who think it is wrong and those who cannot judge. If a participant of a group changes its mind under the influence of the other group, he/she can join it and change his/her location [14].

5. Conducting a discussion/ debate with a ball of yarn. By setting the first question, the teacher holds the end of the thread and passes it to the student who wants to answer. This forms a connection between him and the teacher. The student then answers the question and unrolls the thread, then passes it to the next student who wants to participate in the discussion. [14].

6. Training Centers (working groups). Creating centers for learning is a method used in cooperative learning, which is a place in the classroom where participants can perform carefully selected tasks. The tasks can be performed either in short time, or over periods of weeks. The participants are divided into working groups. When ready, the appointed speakers represent group conclusions and achievements. The facilitator poses differentiated tasks to the members of the various groups, such as keeper of the rules, monitor, leader etc. Head [3].

7. Collaborative (joint) learning. The term is most general and includes all cases other than the individual and anterior forms of organizing learning. It is a group work in all its variations. This type of learning is carried out as learning in pairs and group learning. Learning pairs can be formed in two ways: learning partner, and training by tutors ("students learn how to learn"). Group learning is applied in 'checking bulky knowledge, criticize their own thoughts and ideas; selection of appropriate solutions; specifying a common approach; clarifying and structuring complex problems; stimulating a subject centered motivation [12].

8. Cooperative learning-social form of learning, connecting the acquisition of knowledge and skills by learning the forms of interpersonal relations. Form groups within the class (3 to 5-7 students) for joint learning that are independent and work on assigned tasks. The teacher is in the background and acts as moderator and consultant. In a later phase, results (decisions) are presented to all to be useful for the entire class [12].

Successful technique of group work and technology is „thinking with six hats“. This is a method developed by Edward de Bono, which enables us to comprehensively assess the given situation or problem. Each participant selects one of the given hats (i.e. a certain way to address the issue) and enter into his role. Discussing the problem this way takes into account different perspectives and is a winning approach in terms of depth.

- White Hat: Facts- participants with a white hat support researchers, those who seek facts and data or measuring different phenomena, and the ones checking their true nature.
- Red hat: emotion-participants with red hats express their feelings in this situation, share what they like and dislike.
- Black Hat: pessimism – those wearing black hats criticize, express cautious, attitude and open concerns; they usually look for weaknesses and failed targets.
- Yellow hat: optimism- those wearing yellow hats see the world through pink glasses. They note the strengths of a decision and its positive consequences.
- Green hat: options – the ones in green hats explore emerging opportunities. For example, what possibilities are in different situation and various circumstances? Green hat is the hat of creative thinking.
- Blue hat: process –analysis. This is the color of the sky- participants in blue hats monitor the process problem solving from above. They detect which of the other colours dominate in the discussion; check if all colours have expressed their opinions and decide which colour’s turn is [14].

The analysis of the leading idea, concepts, categories and key features associated with the world's population, dynamics in population, density and types of movements is didactically targeted. Considering the emergence and development of ideas about human origins, the emergence of the world races, fluctuations in the number, density and movement of the world's population and the importance of overcoming some of the global problems of mankind, namely demographic and food can be achieved thorough examination of the existing learning programs and DofE. Examining the possibility of applying interactive technology (system of methods) and interactive techniques (a system of techniques and tools) applicable in the learning process is monitored by the topic: „Number, density and population movements “in ninth grade.

The above topic is studied in Year 9 curriculum as:

Core 2: Geography of Population and Settlements

Standard 1: Explains geo-demographic characteristics of the population in The World

Theme 1: The population in The World

Standard 2: Expresses attitude towards the demographic problem and justifies the ways of its solution

Theme 2: Demography and Demographic Policy

Standard 3: Compares the demographic situation in various parts of The World

Theme 3: Demographic differences in The World

In the course of learning in ninth grade (second level) the topic for the number, density and movement of the population is studied in:

Core 2: Geography of Population and Settlements

Standard 1: identify the different types of reproduction and explains the migrations of population.

Theme 1: Basic types of population reproduction

Expected results: 1. reveals links between the types of reproduction and geographical, economic, cultural and psychological factors; 2. Tracks map types of the reproduction of the population; 3. Explain the causes of migration; 4. Formulate conclusions about the demographic situation in individual regions and countries within them.

Theme 2: Migration of population

Expected results: 1. Knows the development of migration processes; 2 explains the reasons for migration; 3. Tracks map migration of population; 4. Can rationalize the role of demographic policy of solving migration problems.

The present analytical report is based on textbooks and school kits that are used in the school system named Otto education for 2017/2018 school year, approved by Order № RD09-982 / 24.01.2017 of the Minister of Education and Science

There are various publishers approved in the compulsory and specialized program.

The topic of this analysis is also part of the Geography and Economy curriculum for Year 9 students, authors R. Penin and team ed. Bulvest 2000 (compulsory education). The theme is seen in „Social and economic geography “section and subsequently in „Population and settlements “subsection in three thematic units: number, density and movement of the population; types of structures; reading and analysis of gender-age pyramid.

This theme is also part of the textbook with authors St. Karastoyanov and colleagues, Anubis (compulsory education). It is seen in the third section, named „Geography of Population and Settlements in the World“in four thematic units monitored the dynamics of population, types of structures, migration and demographic problems and policies.

The topic is also discussed in the second section of the textbook written by R. Gaytandjieva and her colleagues, „Dr. Ivan Bogorov“ Ltd. (compulsory education) under „Geography of population and settlements on Earth. Political organization of society“. The number and distribution of population dynamics and structure is part of four thematic units.

The prime objectives of this analysis are gaining knowledge, acquiring skills, and modelling behavior patterns of objective perception and assessment of the reality in its global, regional and local aspect.

There are number of skills, formed throughout the whole process, e.g. intellectual and practical skills to work with different sources of information, working with maps; evaluating, comparing and conclusions; ways to overcome the global problems of mankind, particularly the demographic problem; enhancing the vocabulary related to geographic literacy; developing geographical culture and geographical competence as a leading component of the problems that must be solved in the implementation of modern geographic education in secondary school etc. [2].

This report also aims to share practical application and benefits of new educational technologies specifically probated and described in the conduct of thematic lesson under the topic of “Number density and population movements” (tutorial for new knowledge using interactive methods and techniques).

Objectives:

1. Knowledge:

1.1. To consolidate and summarize knowledge in order to characterize the world's population - number, natural movement, mechanical movement, demographic problems.

1.2. To achieve learning intentions regarding of the types of graphic images and their possible use.

2. Skills:

2.1. reading and analyzing graphic and picture images;

2.2. applying the acquired knowledge in order to characterize the population;

2.3. assessing the demographics;

2.4. formulating problems and offering solutions.

2.5. teamwork;

2.6. presenting multimedia presentations and posters;

2.7. interactive methods and techniques: playing method, brainstorming -graphic organizer „spray pattern“, „web“, case studies, interactive system for reading by marking - INSERT, the decision by the method of economization, design work - a multimedia presentation, survey and questionnaire.

3. Relations/ competencies:

3.1. To realize the relationship between the degree of economic development and characterization demographics;

3.2. To form competencies for teamwork in the implementation of educational and cognitive tasks, responsibility for their role in the team, positive competition against others;

3.3. To continue the formation of tolerant acceptance of differences in race, ethnicity and religious affiliation of the population;

3.4. To capitalize on the opportunity to use the knowledge and skills of students in need to take and justify solutions to practical application activity.

The activities that were developed in the lesson are described in the Appendix to this report.

In conclusion can be drawn and key moments in the application of relevant interactive methods and techniques in teaching geography and economics.

The advantages of interactive techniques are:

- Higher efficiency of education;
- Be reported somewhat cognitive activity of certain groups of students;
- Ability to differentiated approach to aid in control;
- They develop qualities such as conscientiousness, mutual assistance and mutual control;
- Ability to high involvement of students in groups;
- Mindset activity-learning and teamwork, which increases interest in learning;
- Develop communication skills and interpersonal skills;
- Teaches the tolerance is;
- Ability to exchange ideas and expand knowledge of the trainees;
- Establishment of autonomy and personal responsibility.

Deficiencies in interactive techniques are mostly related to that individual pupils can remain passive, taking advantage of the results obtained by the group. It is necessary to comply tolerant relationships. Nothing in the group should not be at the expense of the feelings and experiences of one of the participants, because it may lead to the development of a sense of misjudgment and neglect.

The training, which is based on learning through experience, requires the use of methods that lead to increased cognitive, social and emotional activity to students. Generally, these are training methods that are based on the game (teaching and role play, drama), dialogue (consultation, discussion, brainstorming), research (observation, experiment, work on the research topic and project) and practical activities (exercises, situational methods-case analysis of situations, work on social projects).

In modern Bulgarian school there are teachers who implement interactive strategies, although it found serious obstacle of non-interactive environment at school and "narrow" perspective that outlines academic documents (plans, programs and textbooks) in this regard.

Not infrequently efforts of teachers aimed at overcoming the usual for today's school organizational and technical obstacles at the expense of efforts that would put in consideration of good ideas for the realization of interactive learning.

References

- [1]. Velikova M. Technological education and educational technology. In information technology in education, Shumen, **1997**.
- [2]. Vladeva, R. Modern aspects of the „Education Geography“, University Press „Bishop Konstantin Preslavski“, Shumen, **2016**.
- [3]. Valchev, R. Education for Democratic Citizenship / upper / Part. Teacher. S. Center „Open Education“, **2000**, s.23-40.
- [4]. Gaytandjieva, R. Using interactive techniques in the strategy of skilled training teachers Geography.- *Education and Training*, **2000**, № 3.
- [5]. Gyurova, V. Interactivity in the learning process. S., **2006**.
- [6]. Daskalova, S. Ability to work ekip.-v. „Alphabet“, **2000**, № 6.
- [7]. Dermendzhieva S. RWCT International program (Developing critical thinking through reading and writing). -In: *Teaching Geography*, № 4, **1999**, p. 14-20.
- [8]. Dermendzhieva, C. et al. Geography and interactive educational environment. (C. Dermendzhieva, P. Sabeva B. Dimitrova). - The Jubilee International Conference: 50 years University „St. St. Kiril I Metodiy, Section „Geography“, Coll. Reports, **2015**, p. 239-251.
- [9]. Dermendzhieva, S., R. Vladeva. Application of the method of projects at studying the population and settlements. - In: Coll. Fourth International Conference on the Balkans - language, history, culture, ed. „IVIS“, Veliko Tarnovo, **2015**, p. 448-457.

- [10]. Dermendzhieva, S., Educational potential of interactive learning in geography and economics. Fourth International Conference „Geographical Sciences and Education“, **2015**, Shumen, with. 280-290.
- [11]. English-Bulgarian Dictionary, **1987**.
- [12]. Ivanov, I. Interactive training methods, Shumen, **2009**.
- [13]. Kostova, Z. Interactive and Innovative Methods of Teaching South-West University „Neofit Rilski“, Blagoevgrad, **2003**.
- [14]. Rizov, I., Interactive models for the development of personal and social skills in primary school age. Varna. **2004**.

Acta Pedagogica Naturalis

Former Annual of Konstantin Preslavsky University

Journal homepage: <http://acta-pedagogica.shu.bg>

Received: 20.12.2017

Accepted: 09.03.2018

Characteristics of the contemporary teacher

Neli St. Dimitrova

Konstantin Preslavski University of Shumen

Department for Information Qualification and Lifelong Learning, Sciences for education,

E-mail: n.dimitrova@shu.bg

Abstract: *The profession of teacher is one of the most complex and dynamic professions. It is based on the laws, principles, methods, forms and means of conducting the educational process; on combining the theory and practice of pedagogical activity, on the mastery of the teaching and the teaching technology and technology and, last but not least, on the qualities of the perpetrator of this profession. In this article are viewed determine the nature of the teaching profession, labor conditions, professional functions and profesiogram of teaching profession.*

Keywords: *contemporary teacher teaching profession, profesiogram of teacher.*

Introduction

The teaching profession is one of the most dynamic and fast-adapting professions to today's lifestyle. These living conditions also require changes in the content of education. Over the last 10-12 years, new educational standards that it have been introduced in the teaching profession. The status and name of school subjects only, schooling, but also the organization of the learning process change. These innovations necessitate breaking the traditional style of work of the teacher and lead to a change in his professional - personality qualities.

„Teacher profession builds on the system of pedagogical sciences, on the set of laws, principles, methods, forms and means for conducting the educational process, on combining the theory and the practice of pedagogical activity, on the mastery of the didactic technique and the technology of the didactic and educational work, but not least the qualities of the perpetrator of this profession” [6, p.10].

Teacher's work with all its scope and versatility, with all its complexity and dialectics, obeys and regulates the laws of human development.

The main trait of the teaching profession is its forming effect on the overall development of the child, the student, the personality - in professional, intellectual, moral, aesthetic, etc. This is one of the oldest and most massive professions, but it is also the basis for everyone else, because without it we cannot imagine the mastery of any other profession or specialty.

Based on this cases is structured *the purpose of this article*, namely to describe the specifics of the modern teaching profession, taking out its main functions and making the teacher's profессиogram as a general one.

Material and methods

The following indicators determine the nature of the teaching profession [2, 8, 9, 10]:

1. The purpose of teacher education is the first basic indicator, which is determine by the requirements and needs of social development. It is comprehensive, complex and not only associated with the formation of knowledge, skills and attitudes. Also with the formation of the student's personality as an autonomous, self-thinking, capable of self-identifying and forming an own position that can assert, capable of orienting himself in the contradictions of modern reality, of solving emerging problems, of finding his place in the social community.

The goal is relate to the upbringing of universal values and virtues, civic duty, awake conscience, dignity, high sense of responsibility in the student. Mastering knowledge becomes not a goal, but a means of intellectual, moral, aesthetic development of personality.

2. The subject of pedagogical work is the child, the disciple. It is complex, dynamic and intensely alters its feature. It is important to emphasize that the student is not only an object, but also a subject of his / her own development and personal creation, has his / her individual and age characteristics, which the teacher must know in full and in detail, to comply with them.

3. The subject of the teaching profession is the educational process in school, understood as a deeply humanized and democratized process.

It must be so plan, organized and realized by the teacher that it makes possible the formation of social feelings, responsibility towards oneself and other, full development of all aspects of the personality of the student.

4. The means by which the teacher is employed in his or her professional activity are subordinate to the ultimate goal and expected results.

In theory and in pedagogical practice, in the foreground, as the guiding tool, the learning content is mention. Secondly, among the means is place the personalities of the teacher because it includes heuristic elements and elements of mean situate [8, p.41]. Students' activity also goes into the means of pedagogical work. The teacher should be able to activate and motivate the students for the different types of activities, as well as to be able to manage, regulate, judge and control it.

Labor conditions are also an indicator of the nature of the teaching profession. These are a set of material-technical, health-hygienic, socio-psychological conditions, which must be in optimal availability and favor the successful outcome of the pedagogical activity.

Another specific feature that illustrates the peculiarity of the teaching profession is its social essence. All its elements have social content - object, means, tasks, mechanisms, end goal. It fulfills the social order of society - the education and upbringing of the growing generation. It is realize in a certain type social relationships, absorbs all social influences.

Nowadays its social essence acquires new dimensions determined by the reforms that take place in society.

It is complex and integrative in scope and volume because it requires a wide range of knowledge in different areas. It brings together the achievements of many sciences and majors.

Another feature is her dynamism. It is determine by the dynamics that changes the object (ie the student) from changes in all of its individual characteristics. The teacher has to be very observant and impressive, to seek and use the latest in science and technical progress, to transform and apply them in his work.

The main feature of the profession is that it is creative, which is condition by the complex, variable, internally contradictory nature of its subject. The creative process here is continuous. The teacher has to make a quick analysis of each pedagogical situation, make a decision and act quickly and adequately, by selecting the appropriate methods, approaches and approaches. It is the teacher, who creates a problematic situation, reveals internal contradictions, speculates, discusses, proves their truth, or disproves them with the help of experiment and demonstration. He has to make the students accomplices in the search, to promote the development of their logical thought.

All this requires original and combinational thought, autonomy, wits and intuition. Another feature of the teacher's work is the use of pedagogical improvisation, which is the ability to find an outlet in unexpected conditions and circumstances that change the content and realization of the preliminary plan.

Creativity also manifests in the style of the teacher's work, in his desire to seek and introduce innovative methods and forms of training, advanced technologies that support and develop a more efficient learning and cognitive and practical activity of the students.

From what has been say so far, it is clear that the teaching profession is a complex, specific, multifaceted profession requiring creative personality, intellect, erudition, responsible and productive thinking.

„Pedagogical culture is a synthesis of high professionalism, abilities and qualities of the personality, knowledge of pedagogical skills and the availability of creative abilities. It is also a sign of a highly developed consciousness, creative potential, and the mastered cultural and historical experience of mankind” [8, p. 163].

In addition to the characteristics of the teaching profession, the specificity of its functional system and its structure is important for the disclosure of its nature and scope. „The individual components of the profession are formulated as its structural functional components, or, to a lesser extent, functions [11, p. 10]. They are generalized, global and cover the typical, typical professional tasks, actions, skills, abilities. Although relatively independent, they are unite by the general purpose of the ultimate goal, the common resources and the working conditions of the entity's integrity. The professional functions that make up the functional structure of the teaching profession are communicative, constructive (including projecting), organizational and cognitive [2, 3, 9].

1. *The communicative function* characterizes the communicative nature of the teaching profession, professional-pedagogical communication, speech communication (verbal); the “language” of the body - mimics, gestures, grimaces, movements (non-verbal).

Contemporary teachers should be able to communicate with students and to organize their communicative behaviour, to construct and implement in their pedagogical practice an optimal model of pedagogical communication. In order for the teacher to be able to organize communicative situations fully and creatively to realize the cooperative act, it needs to have skills and abilities related to orientation in communication, planning and realization of communicative activity.

„It is necessary for the teacher to form an individual style of communication, democratic and humane, adequate to the specific features of both the personality of the teacher and the peculiarities of the pupils, requiring: mastering and realizing the basics of professional pedagogical communication, technology, as well as the acquisition and formation of relevant communicative, interactive and perceptual skills and abilities to realize the communication in the pedagogical process with the students and to achieve the expected achievements our results” [8, p. 203].

The communicative function is sum up as „learning objectives are achieved through interaction” [5]. This feature addresses issues related to teacher-student relationships. There is development of communicative skills, educational skills, and skills to build a human relationship. The skills to build human relationships between the teacher and the students must be based on unity of respect and rigor. Respect can only be build up through trust, fairness and tolerance in teacher-student relationships.

Piousness means formulating such expectations for the student, as he is able to accomplish. It is relate to the condition of certain rules, known as discipline. The rules, norms, standards, traditions to be respect need to have proven constructive value and to outline an effective way to achieve success. The indicators that can be judged about the level and type of relationship between the teacher and the students are:

- Respect and benevolence.
- Clarity in requirements.
- Freedom of choice in certain situations.
- Responsibility for the performance of both the teacher and the student.
- Individualization of relations.

2. *Constructive function* - This is a feature of „bright creative nature” [9, p. 19]. It is relate to the programming, forecasting, anticipation, and design of the teacher's work (lecture, extra-curricular, extracurricular). In general, and above all, the pupils’ future is program, which is a leading element in the

content and realization of this function. This requires an excellent knowledge on the part of the teacher, the interests, abilities, talents, age and other specific characteristics of the pupil, as well as the presence of the creative potential of the teacher.

According some authors [7] **designing** is as an independent function because of its importance and peculiarities. The design function is associated primarily with the ability to design and specify the desired results, design new forms of the educational process, design of lessons, circles, observations, excursions; designing personal development and building the pupil as a whole or in individual countries; also design related to the class, with its formation and stabilization; designing the teacher's own activity, interacting with students, and other social groups.

From the point of view of educational management, today the design takes on a very important role in the activity of the teacher - manager. The teacher must be familiar with designing as an activity, having the autonomy to produce interesting, diverse projects for the classroom as well as outside. With the centralization of education, where everything is now regulated by normative documents, curricula, curricula, there will be opportunities and conditions for creating a specific vision of individual schools, and the individual projects, the individual projects under which they work, can be extremely varied and contribute to their specific appearance [4]. After programming and design, another significant and complex field of application of the constructive function is predicting personal development of the student. It is consider the highest body in the complex of design skills of the teacher. Predicting the course of the results of professional work is relate to:

- prediction any difficulties students or the teacher in the course of the project;
- prediction of student initiatives;
- prediction g the effect of your own initiative (in the direction of students, parents, colleagues);
- prediction of student reactions or reactions from other backgrounds (new ideas, tasks, formulated decisions, different conditions, etc.).

The essence of the constructive function is sum up with the phrase „how do we achieve learning objectives“. In its context, the issue of teaching content, forms, methods and principles of learning is solve: skills for activation, closely related to the ability to motivation of students, access to teaching skills, individualization and differentiation of learning, which is associated with diagnostic skills, ability to systematize learning content. The principles, in turn, integrate the content, the forms and the methods of learning, knowing and implementing the principles means learning, it contributes to its effective realization.

3. *Organizational function.* It is relate to all the activities of the teacher in and outside the school, which are of an organizational nature. The system of organizational actions outlines [9]:

- Orientation actions - provide teacher orientation in the different pedagogical situations, orientation in the situation and the problems of the students;
- Mobilization actions related to engaging students for active activity, attracting and retaining their attention, developing their interests, their wilful persistence.
- The mobilization actions are also associated with the pedagogical initiative of the teacher.
- Guiding organizational actions - they are the largest and most important part of the organizational function. Leading among them are action-based leadership activities that are subject to certain pedagogical requirements: to be realize in a certain sequence, to differentiate (to relate to the inner peculiarities of school age, with interests, needs, opportunities).
- Other management organizational actions are relate to the management of the student team.

The essence of the organizational function in the cited source is summarize by the phrase: „the learning objectives are achieved by the optimal combination of factors time, space, materials, resources, participants“. In the context of the function, the time and tasks are allocated; the resources and materials chosen by the participants are selected. Here are organizational skills, which include **orientation, mobilization, leadership, regulatory skills.**

4. *Gnostic function* - this is a cognitive function related to the accumulation of new knowledge, the extraction from its own activity, the learning and scientific information. Internally, this function differentiates into several spheres of expression [10]:

With respect to the subject of the teacher's work - the students. It is related to the ways and means of discovering and understanding the constantly changing characteristics of the students.

The complexity and difficulties here come from the richness of childhood individuality.

The other important sphere is science and its fields, which are directly related to the work of the teacher. These are the science of pedagogical systems, the psychological problems of human relationships, the special areas from which the learning content is formed.

Pedagogical experience is the third sphere of Gnostic function related to the study of generational accumulation or new pedagogical experience. In this experience, the teacher discovers problems and difficulties, possibilities for solving them, discovers the unique, specific, or commonality, similar to the conditions and situations of his own work.

The teacher's own personality, labour and results are the fourth sphere of Gnostic function. This is related to the formation of the pedagogical reflection of the teacher, which is a way of understanding the achieved level of the professional-pedagogical development through self-knowledge, self-analysis, self-regulation, self-control and self-assessment of his / her activity.

Gnostic function is summed up with the phrase: „Learning goals are achieved through knowledge.“. The teacher realizes his or her own knowledge as well as that of the students in the field of pedagogical theory and practice, the subject matter and the corresponding sciences. Here are identified control-assessment skills that relate to diagnostic skills, self-education skills and reflex skills.

All the abilities listed above derive from the functions of the teacher, according to the cited source, have been analysed and merged in terms of meaning and as a result, the following are the most important ones:

- Skills to motivate students.
- Skill to individualize and differentiate learning.
- Skills to build a human relationship.
- Control-assessment skills.
- Prenatal skills.
- Objective skills.
- Skills for accessible teaching.
- Ability to systematize the learning material.

The pedagogical skills thus defined can be considered as nuclei in the development of the teacher's professional competence and are essential criteria and indicators for assessing his / her professional activity.

Teacher's professional functions can not be achieved successfully without a system of pedagogical skills that he / she must possess, which is why they are essential for his / her professional realization.

In dictionary vocabulary, skills are generally defined as „integrated in a system of processes and properties of the personality that not only allow it to successfully perform certain tasks and achieve certain achievements, but also develops further in the performance of an activity“.

Skills are transformed into the behaviour, knowledge and qualities of the person, they are its functional characteristic.

Numerous and diverse skills, according to their sphere of operation, can be classified as follows [6]:

Social skills that realize the individual's desire to integrate into the structures of society through information exchange, adequate interpersonal perception and interaction, this type of skill is manifested in all spheres of social relationships;

Wide professional skills - they provide successful implementation of a wide range of professions. These are: organizational, analytical, prognostic and self-learning skills.

Specific pedagogical skills - they are formed and developed in the context of the pedagogical profession and derive from its peculiarities. These are integrated into a complete system of intellectual and practical actions of the teacher, ensuring the success of his professional activity.

The pedagogical skills are differentiated and realized in the professional functions underlying the functional structure of the teaching profession, namely: constructive (including designing - according to N. Kolishev [5]) it is considered as a separate communicative, organizational and gnostic.

The essence of the design function in the cited source is summed up with the phrase „what do we want to achieve“; what is the teacher's idea of the result of the activity. In the context of this function, the issue of the learning objectives is addressed. The main pedagogical skills here are design skills, targeting skills, prognostic skills. The goal-setting skills are related to the realization and perception of the goal by

the teacher, it organizes and clarifies ideas about the forthcoming activity, directs its course, determines the choice of resources and the organization of the work, motivates the efforts of the students, creates a benchmark for the achievement. This also specifies the specificity of the curriculum and the way it is used.

The main indicators of the targeting skill are:

- Clear and accurate placement of the goal.
- Adequacy of the pupil's age-specific target.
- The optimal combination of the content and behavioural aspect of the learning objective (the content aspect includes the knowledge, skills, competencies and attitudes students need to learn, and behaviours - the activities that pupils should be able to do after completion of the learning act).
- Justification of purpose.
- Matching the aim of the main and additional didactic tasks - passing on new knowledge, consolidating knowledge, forming skills, systematization and summarizing, controlling and evaluating knowledge.

The already described professional functions and their characteristics become part of the basis of the structure of a theoretical model of profессиogram of the Bulgarian teachers [10].

Professiogram of the teacher

The profессиogram is the method (way) for modelling professional activity and its structure.

„Solving this extremely important problem is related to building a systemic model of the teaching profession in which to reveal the most typical subsystems explaining the typing and the relations between the teacher and the pupils deployed in the external and the internal (direct professional) environment. It is only on this path that a teacher's profession can be created because the systematic approach allows to establish the „core of the profession and separate the primary relationships and relationships from the secondary, the supporting ones” [10, p. 17].

To build a model of the system in general and of the teaching profession as a system, in particular, it is necessary to define the many elements, signals, states and operators over them that determine its functioning and define it as a system.

The „teacher profession” system has as its basis the characteristics mentioned in the basics of the Profессиogram – the social, complex, integrative, dynamic and creative nature of the profession, as well as the previously described functional structure containing communicative, constructive, organizational and gnostic functions.

The latter relate to the professionally significant qualities of the teacher. They relate to all spheres of personality, as it has already been stated that the personality of the teacher becomes a kind of „instrument of influence” and means of work.

The projected system is dynamic, constantly evolving over time, because its respective characteristics are seen as functions of concrete historical development over time.

The system is also complex and complex. Based on the view that the examination and learning of the teacher without the students is meaningless, because without this interaction the teacher's profession would not exist, it is appropriate that the main one leading among the four subsystems be a „teacher-pupils”.

The „internal environment” is the one in which the teacher-pupils subsystem is emerging and evolving. And the „external environment”, as a subsystem interacts with the central one and is important in the functioning of the unified complex system of „teaching profession”.

The system studied has a hierarchical structure. This determines the existence of another subsystem – „superior (governing) instances”. Normative documents are issued and monitored for their effective implementation. Thus, the fourth subsystem is related to the central one and has its own place in the functioning of the single complex system of „teacher profession”.

In fact, this generalized system model is the starting point for the preparation of the profессиogram. However, in order to reach the final objective, it is necessary to detail in detail the main subsystem „teacher-pupils” (internal structure, subsystem connections, elements, structure and characteristics of the subsystem elements) and the other three subsystems, again with the links in by identifying the most significant ones. Then to systematize the requirements for the teacher and the environment in which he works.

Results and Discussions

The present article is dedicated to the teacher and his noble, profoundly humane and responsible profession, which is complex in content, intellectual and creative. Today, this profession is placed under conditions of substantial and dynamic change. It becomes richer in content and more open to the changing environment, with new dominants and priorities, with enriched professional tools, changed orientations. The purpose of methodological research in the development is to study in theory and practice the content and main characteristics of the profession „teacher“, to identify some of its contemporary aspects, as well as to focus specifically on the teacher of technological training. The tasks through which the goal is realized are to examine the manifestation of the professional and personal qualities of the teacher in his specific pedagogical activity and to study their importance for an effective and fulfilling educational process. Through the use of various research methods and the tools developed to them, a rich empirical material was collected during the study, which was carefully studied and thoroughly analysed. The main conclusions of this analysis are:

In the four distinct professional functions of the teacher (communicative, constructive, organizational, gnostic) new content is introduced and new accents of different activities are justified. They are generalized and global because they encompass the unity of the teaching work done in the lesson, out-of-school and out-of-school activities. Their integrated examination, their mutual penetration in pedagogical practice, their subordination is an important feature of the professional identification of the profession of „teacher“.

The functions of the teacher, as well as all the activities they involve, cannot be accomplished without the existence of certain professional-personality qualities. They are required and imposed by the teaching staff themselves and ensure that they succeed. The main ones are pedagogical sociability, pedagogical creativity, pedagogical observation, and the emotional sustainability of the teacher. They outline a relatively complete characteristic of the teacher's personality in pedagogical direction. These qualities are very dynamic and bear changes, along with the changes in the teaching profession and the time it takes.

The differentiation and classification of the teacher's many professional roles stems from the variety of relationships and relationships he carries out in his profession as well as from his social, integrative, dynamic and creative character. For a full-time professional realization, the teacher needs to know the diversity of these roles well, to identify with them, to show greater role in their activity.

Conclusion

The attitude of the teacher towards the profession is a basic personal parameter determining the quality of his work. Today, there is still the opinion that the teaching profession has lost its prestige because it is also traditional due to the general intellectualization of labor and the associated higher educational level of the population.

Requirements to the teacher change with the challenges of the new times we live in. In this respect, Stanev's statement is quite reasonable that „the teacher is in a new social and school environment, he faces the challenges of the time that put new demands on his personality“ [7].

References:

- [1]. Dimitrova, G., Pedagogicheski osnovi na obshtuvaneto pri vaspitanieto, *Bulvest 2000*, S., **1994**
- [2]. Dimitrova, N., Analysis of the terms "acme in the teaching profession" and "professionalism of teacher". *International Scientific Online Journal – ISSN 2367-5721 ISSUE 27, November, 2016* pp. 32 – 38 www.sociobrain.com
- [3]. Dimitrova, N., Professional and personal characteristics of the technology education teacher /study/. *International Scientific Online Journal – ISSN 2367-5721 ISSUE 28, December, 2016* pp 22 – 42 www.sociobrain.com
- [4]. Georgieva, V., S. Nikolaeva, Obrazovatelyn menidzhmant. *Askoni-izdat*, S., **2001**
- [5]. Kolishev, N., Sashtestveni pedagogicheski umeniya na uchitelite, sp. *“Pedagogika”*, 3/2003
- [6]. Mihailov, M., Profesiayata “uchitel” *TZIUU*, S., **1996**
- [7]. Stanev, S., Uchitelyat I uchenikat I predizvikatelstvata na novoto vreme. Sp. *“Starategii na obrazovatelynata politika”*, № 1, **1997**

- [8]. Zhekova, St., i dr., Profesiograma na bylgarskiya uchitel., *TZIUU*, S., **1981**
- [9]. Zhekova, St., i dr., Profesionalno-lichnostni kachestva na uchitelya. *TZIUU*, S., **1983**
- [10]. Zhekova, St., Psihologia na u`chitelya. *Narodna prosveta*, S., **1984**
- [11]. Zhekova, St., Psihologiya na pedagogicheskoto maystorstvo. *TZIUU*, S., **1984**

Acta Pedagogica Naturalis

Former Annual of Konstantin Preslavsky University

Journal homepage: <http://acta-pedagogica.shu.bg>

Received: 20.12.2017

Accepted: 09.03.2018

Analysis of the actual legal framework on the role of the training activities in geography and economics education in fifth grade

Kristiana Dobрева-Stankova

*St. Cyril and St. Methodius University of Veliko Turnovo, Faculty of History, Department of Geography, Veliko Turnovo, 2 „T. Turnovski” Str.
e-mail: kristiana.stankova@gmail.com*

Abstract: *The purpose of the study is to analyze and outline the conceptual frameworks of geography and economics as a school subject in fifth grade, broken down through lessons for activities as means of learning geography, competence formation, building skills and values, and developing cognitive abilities in connection with the formation of the foundations of geographic culture of students as a main goal of teaching of geography in school.*

Keywords: *geography and economics, knowledge, key competences, skills, relation, cognitive abilities, geographic culture, teaching of geography.*

Introduction

The complex nature of geography science and in particular the Geography and economics subject definitely contributes to the formation of knowledge for the students, skills and relationships for the world in its diversity and the place of man in it as part of the whole and at the same time as a connection between its individual components. The International Charter for Geographical Education outlines the importance of the subject as „necessary for the development of responsible and active citizens of the present and the future world“ and states that „... Geography is an informative, skill-challenging, interesting discipline at all levels of education and learners need a global understanding of the world in order to co-operate globally in the fields of economics, politics, cultural and environmental issues“.

Results

The geography education in Bulgarian schools is closely related to the educational policy of the state and is determined by the Law of Pre-school and School Education [3], Ordinance No. 4 from 30th November 2015 for the curriculum [4], Ordinance № 5 from 30th November 2015 for the general education training [5], which regulates the state educational standard for general education and curricula for the different school subjects.

It clearly states that „The State Educational Standard for General Education is a set of requirements for the learning outcomes of each general educational subject and determines the competencies - knowledge, skills and attitude that are expected as learning outcomes of the subject at the end of each stage of the respective level of education“ (Article 6) and „Training for acquiring general education in each of the subjects according to art. 3, paragraph 1 shall be carried out under curricula in which, on the basis of the relevant requirements under Article 6, paragraph 1 specifies the competencies of the students as expected results of the class training“ (Article 7) [5].

In other words, „Curriculum are an important state document that focuses on the scope and structure of the learning content of a particular subject. They actually place an institutional contract, assign the mission to fulfill the specific discipline“ [2, p. 7]. In practice, they represent the framework that specifies the requirements for the curriculum and determines the place of geography training in the general system of school education. The curricula themselves represent the public procurement and public expectations for geographic training in the Bulgarian school, but they do not impose restrictions for teachers, just the contrary. Following their professional training – scientific and pedagogical, taking into account the specific characteristics of the particular school environment and the individual and age specifics of the students, they have the opportunity to plan the methods, the teaching technologies, to define the accents and to motivate the cognitive activity of the students to achieve the goals and the tasks set out in the specific curricula.

At first we mentioned the complex nature of geography science, which also reflects on the subject of geography and economics in the Bulgarian school. It is for this reason that, in order to achieve its goals, geography uses inner-subject and inter-subject relations; it is based on the accumulated students' knowledge of the subjects of man and society, man and nature, history and civilizations, biology and health education, chemistry and environmental protection, physics and astronomy, Bulgarian language and literature, mathematics and information technologies; it is the basis for the formation of civic competences and the consolidation of a national identity in the context of the globally developing world.

The significance of the 5th grade geography and economy course is determined by its fundamental nature. „Education in Geography and Economics in the 5th grade is directed towards mastering basic knowledge, skills and acquisition of key competencies related to the formation of geographic culture backgrounds for the surrounding area on a global and regional level as part of their common culture“ [1]. In practice, this is the first self-determined geography and economics course that sets the stage for geographic education at school. On the other hand, it is a natural continuation of the knowledge acquired by the students in the Primary school on the subjects man and nature and man and society and precisely through the basic knowledge, skills and competences that it forms and the key concepts it introduces correspond with the other educational courses at the primary and high school stages. All of this gives us reason to define this course as a foundation for the geographic culture and education of students in the Bulgarian school.

In content terms, based on the curriculum, the geography and economy course for the 5th class includes the following core themes: geographic information, Earth as a part of the solar system; the natural appearance of the planet, population, settlements, political map; economy and the continents Africa and Antarctica. From the content of the course it is evident that it differs, apart from its fundamental also general and regional nature, and corresponds categorically with the modern concept of geographic education, based on the trinity nature - society – economy.

General and singular concepts are derived from the content of the course. They are legally specified in the curriculum of geography and economics for the 5th grade, approved by the Minister of Education and Science. As a consequence of the content range, the course is conceptually loaded, with general concepts prevailing. The singular concepts have more explanatory nature, they specify the common ones and predominate mainly in the educational content referring to the continents of Africa and Antarctica which, on the other hand, create a clear idea for the students about the contrasting nature of the planet, respectively geography science and consciousness of the latitude zone (Africa) as a leading geographic regularity.

In this document we also find a recommended percentage of compulsory school lessons, namely: 59% for new knowledge, 19% for exercises, 6% for revision, 6% for summary, and 10% for control, it

means that from the total number of lessons (51) 29 are for new knowledge, 10 are allocated for exercises, 3 for revision, 3 for summary and 5 for control.

Thus, the framework clearly demonstrates that learning activities in geography and economics education in the fifth grade take up a significant part of the curriculum, even more that so far the lessons for exercises that mostly form skills were not explicitly stated and took a very modest part in the geographic training of Bulgarian pupils.

The curriculum itself as a normative act over the years varies depending on the educational policy of the state, the scientific achievements of the geography science, the expectations and the requirements of society for the results of the learning process and its feasibility in real life. In terms of geography and economics training, there is a strive to increase the share of cognitive learning by students in which the teacher cooperates and assists the student in forming theoretical knowledge, skills, key competencies and attitudes to meet the expected results of training to achieve general education at the end of the class. It is interesting to note that the „Additional specifications for the particular subject of geography and economics“ of the curriculum states the following:

„A necessary condition for achieving the objectives of geography and economics education in the 5th grade is the organising of educational trips. During the excursions students should be given the opportunity to observe natural objects, processes and phenomena; to navigate by map and compass; to make measurements; to demonstrate skills for prudent behavior in nature; to protect nature“ [1].

All of this unambiguously emphasizes the importance of learning activities for geography and economics education in the 5th grade as a means of forming „competencies (knowledge, skills and attitudes) that include both specific geographic skills and learning skills, social and civic responsibility, initiative, evaluation and self-assessment“ [2, p. 36].

In the „Geography and Economics Curriculum for the 5th grade“ (general education), learning activities in education are clearly defined by the following verbs: characterizes, gives examples, explains, describes, identifies, names, knows, recognizes, orientates, reads, uses, calculates, differentiates, produces, identifies, compares, differs, compiles, tracks, groups, responds. They are extended throughout the curriculum and represent the skeleton on which the learning content is built. This inevitably shows the emphasis on students' independent scientific knowledge in order to complete the scientific and theoretical knowledge with skills, competences and attitudes and their application in a real life situation, or to solve cases and situations that have a geographic expression, explanation or motivation

It is important to note that the verb „know“ is used not only in the context of the purely scientific, factual or empirical knowledge, but also in terms of rules, algorithms and prescriptions for performing certain actions, which underlines again the importance of scientific -cognitive activities in the educational process in geography and economics in the 5th grade, even more that, as already mentioned, this is a fundamental course relevant to all other educational geography courses in Bulgarian secondary school.

The importance of science-learning activities for the geographic education in the 5th grade is also evident from the specific methods and forms for evaluating of students' achievements in the formation of a term assessment, as legally stated in the „Geography and Economics Curriculum for the 5th grade“ (General Education Preparation), namely:

- ✓ Current assessments (oral, written, practical) – 40%;
- ✓ Assessments from control work – 30%;
- ✓ Assessments from different participation (work in class, homework, group work, etc.) – 30%.

This percentage reveals in practice that not only not the knowledge and reproduction of facts have been assessed, but also the skills, competences and attitudes shown by the pupils in the application of the same, to the extent that the control works themselves are a creative solution of the teacher and could also respond to certain scientific-cognitive activities. Of course, they need to be designed in a way to meet the knowledge, skills, competences and attitudes demanded at the end of the training course as a result of geography training.

The geography and economy curriculum for the 5th grade (general education) determines the organization and conduct of lessons for activities as a particularly responsible task for geography and economics teachers, whether they are a personal decision which shows to a great extent their scientific, methodical and methodological preparation, personal qualities and experience, adjusted and compliant to

the age-specific features of pupils' psyche. Moreover, in purely psychological terms, the 5th graders are characterized by strong emotional memory, „high curiosity, high interest in the new and unknown, motivation, permanent impulse for activity in terms of the learning process, highly developed figurative thinking“ [4, p. 78].

On the other hand, they are just beginning to acquire skills for teamwork and leadership – activities that correspond to civic education and are important for shaping the learners' personality. The approach set out so far fully corresponds to the main purpose of this type of lesson, namely: „the formation and development of certain skills - practical and intellectual, competences and patterns of behavior and their improvement“ [4, p. 67]; they definitely support the achievements of competences described in the curriculum as the expected learning outcomes of the educational process. In other words, lessons for activities are a compulsory element of the system of lessons of geography not only in the fifth grade, but also in the overall geographic education in Bulgarian secondary school and combine a variety of scientific-cognitive activity - working with different geographic sources and documents, scientific and scientific popular literature, compilation of geographic texts, preparation of scientific reports, essays, references, study prognoses, reading and elaboration of graphic images, diagrams, schemes, etc. This type of lessons contribute to the development and improvement of the intellectual skills of the learners, related to thinking operations, analysis, synthesis, summary, systematization, etc.

From the stated above can be concluded that the organization of the learning activities in geography and economics education in the 5th grade is defined by the current regulatory framework and in this respect it is necessary to meet the expected learning outcomes to achieve general education at the end of the class, implemented in the „Geography and Economics Curriculum for the 5th grade (General Education Preparation)“ approved by the Ministry of Education and Science. On the other hand, the teacher has the freedom to decide exactly how to respond to these expectations, taking into account the specifics of the school and the classes that he works with, the age characteristics of the pupils on a psychological level, based particularly on his scientific and methodical preparation and based on his professional experience and creative decisions. In this connection, it is necessary to conclude about the great significance of the learning activities in geography and economics education in the 5th grade for the reflection of the educational content in its scientific context and the conceptual apparatus as a whole and in its interrelation.

On the other hand, the learning activities enable the organization of different class activities - individual, group, class-specific depending on the objectives of the particular unit of study. Through learning-cognitive activities, learners have the opportunity to develop and improve their emotional intelligence. And the emotional intelligence from its side has influence on the emotional memory that has a leading part, according to psychological studies at that age. And last but not least, it is necessary to point out that learning activities allow „the assessment of geographic knowledge in real life situations and as an element of the professional competencies of different specialists“[2, p. 37].

Conclusions

In conclusion, it can be summarized that learning activities are the key competencies to form the foundations of the geographic culture of learners which is the main goal of geographic education in Bulgarian school.

References

- [1]. Annex 18 to item 18, Geography and Economics Curriculum for the 5th grade (General education), **2015**.
- [2]. Dermendzhieva, S., Sabeva, P., Dimitrova, B., The Geography Lesson, UP "St. St. Cyril and Methodius" Veliko Tarnovo, **2012**.
- [3]. Law of pre-school and school education, **2016**.
- [4]. Ordinance No 4 from 30th November **2015** for the curriculum
- [5]. Ordinance No 5 from 30th November **2015** for general education
- [6]. Sabeva, P., Dermendzhieva, S., Nikolova, N., Stoyanov, P., Peikova, Ts., Teacher's book in Geography and Economics for the 5th grade", Prosveta AD, Sofia, **2016**.

Acta Pedagogica Naturalis

Former Annual of Konstantin Preslavsky University

Journal homepage: <http://acta-pedagogica.shu.bg>

Received: 20.12.2017

Accepted: 09.03.2018

The game as an interactive method in teaching chemistry and environmental education in grade 7

P. Galcheva, I. Traykov

*¹Konstantin Preslavsky University of Shumen, Faculty of Natural Sciences, 9712 Shumen, 115
Universitetska str.,*

E-mail: p.galcheva@shu.bg

Abstract: *Creating a lasting interest in learning and overcoming the negative attitude towards the subjects of the natural cycle, is an important task for the modern teacher. A very good opportunity to solve it is provided by the gaming training methods. Involving students in the learning process stimulates self-reflection, creative imagination, decision-making skills, and communication tolerance. The use of gaming methods increases the cognitive interest of the students.*

The goal of this paper is to present the results of a research related to development and application of didactic games system in the process of chemistry and environmental education in the 7th grade classroom. These games allow effective and enterprising absorption of chemical knowledge and contribute to maintaining students' interest in chemistry.

Keywords: *game methods, cognitive interest, motivation*

Introduction

The problem of the effectiveness of the training is closely related to the interest of the students in the relevant science and the subject matter, with their willingness to actively participate in the process of acquiring new knowledge and skills. In recent years there has been an alarming decrease in the interest in chemistry and the motivation for its study. This is due to both the increasing amount of information in school textbooks and the decreasing number of hours spent studying it, as well as the negative attitude towards chemical industries considered as major environmental pollutants. In order for students to become active participants in the learning process, they should be organized to stimulate their cognitive interest.

Cognitive interest is created when the lesson demonstrates not only the content of the subject matter but also provides the conditions for independent creative work – an opportunity that is provided by the interactive learning methods. They take into account the modern needs, the shift of priorities – from the acquisition of ready-made knowledge in the course of the lesson, to the independent, active cognitive

activity of each student, taking higher abilities into account. Most often, these methods take the form of group work, and through the interaction between the participants in the group, a favorable environment is created that helps learners socialize, tolerate communication, which stimulates their creative thinking and new ideas.

Gaming methods, as part of the interactive method, provide very good opportunities for creating and developing cognitive interest. The use of games in the learning process helps to stimulate student activity, develops initiative, observation, attention, creative imagination. The game reduces fatigue because it makes the learning process entertaining and exciting. In the course of the game, learners acquire new knowledge, skills and competences, and expand their worldview.

The need to create a lasting interest in learning and to overcome the negative attitude towards the subject of chemistry and environmental protection determined the aim of this study: development and implementation of a didactic game system in the process of chemistry and environmental education in the 7th grade, in order to enable effective and fun learning of chemical knowledge and to keep students' interest in chemistry. This paper presents the results of the research.

A theoretical statement

The idea of fun learning that provokes the interest of students and stimulates their cognitive activity dates back to centuries ago. Even the ancient Greek philosopher Plato in the 4th century BC makes the following recommendation in his *State of the State*: „Train the boys of science not violently, but as if they play ...“ [7, p. 354]. The Roman rhetorical teacher Quintilian us advises: „Let the learning be a game ...“. The game, he says, can be not only a means of relaxation between serious classes but also a method of learning. It proposes the inclusion of a competition among pupils as a game task that stimulates their cognitive activity [2, p. 47].

The term „game“ in the Bulgarian vocabulary also means „entertainment“; a set of entertainment activities subject to certain rules [1].

DM Elconin defines game as „... such an activity in which social relationships between people are recreated as unconditional, immediate secondary activity“ [4].

In the learning process the game gains a wider sense. In scientific-methodological literature, it is associated with activity as a „joint expression of the subjective experience of the teacher and the learner, self-defining themselves as participants in various models of the game space“ [5].

According to I. Ivanov, „the game is a type of simulation requiring active participation with application of the acquired knowledge. As a learning method, it is an imitation of reality in one or another artificially created situation. It diversifies frequently asked exercises, does not bother the participants and is fun and attractive“ [6].

The question of activating the students' cognitive skills is one of the most significant and up-to-date in the theory and practice of modern training. An important prerequisite for keeping the learners' attention and the main motivation for learning is students' interest. In pedagogical-psychological literature, it is considered „... as a complex attitude of the pupil towards the objects and phenomena, in which he/she expresses his/her desire for serious and in-depth study and acquaintance with their essential properties“ [3].

Cognitive interest occurs only after the environment is organized to meet the need, that is, it is diverse, new, interesting, emotional, etc.

The didactic game activates psychic processes, makes the learning content attractive, produces positive emotions in the play, facilitates the process of learning, and thus stimulates the cognitive interest.

Results and discussion

The content of the 7th grade HEI is grouped into several global themes: Substances and processes, Chemical symbolism and valence, Metals - sodium and its compounds, Non-metals – Chlorine and its compounds, Periodic law and periodic system, Chemical processes in nature, everyday life and production.

In order to raise interest and support learning during the research, we used a system of didactic games. Their application is appropriate in every stage of the macrostructure of the lesson in accordance with the goals the teacher has set.

The study was conducted with the students of the 7th grade of the Sofia University „John Bulgarian Exarch“, who learn the subject with the help of the book of Prosveta publishing house, 2009. Part of the games were included in the training process during the pre-graduate practice. The experiment continues this year and will be held with students from the 7th class of MG "Dr. P. Beron" Varna.

Our observations and past research have shown that one of the most difficult topics to learn is the topic of Chemical Symbolism and Valency. In this topic, students learn about the most abstract and difficult to learn component of the chemical language - chemical symbolism, which includes chemical symbols, chemical formulas and chemical equations. Parallel to the introduction of the chemical symbols in the subject is the knowledge of chemical element names and rules for compiling the names of binary compounds and chemical formulas by a given valence. The introduced character system is further enriched with the algorithm for writing and equalizing chemical equations, and is transformed into the more complex symbolism of the following theoretical levels. By studying the Alkaline and Halogen groups and the Periodic System knowledge is specified, supplemented and enriched with new chemical symbols and the corresponding names of the elements and substances. The use of this specific information makes it difficult for students to learn, and many of them lose confidence and interest in learning.

The lessons learned have led us to develop didactic games to diversify the learning content, support learning and stimulate students to participate actively in chemistry and environmental education.

In the lesson „**Chemical Signs**“, we've featured the „**Find Chemical Mark**“ and „**What We Know About Chemical Signs**“ games.

The didactic goals of the games are focused at acquiring knowledge about identifying the chemical signs of the chemical elements and the skills to associate them with the corresponding names; for information that carries the signs of chemical elements; for the meaning of coefficients against chemical signs and indices in the signs of the ions. At the same time, attention is intensified, imagination, intuition, and pupils' observation is developed.

Games can be used to reinforce new knowledge as well as by the update in the next classes or in lesson exercises.

We present the content of the games.

„**Find the Chemical Mark**“

The class is divided into two teams. Maps with names of chemical elements have been prepared. Participants from both teams download one card. There are maps with the chemical signs of the elements in the container. Each participant must find the sign of his chemical element in the court. The winner is the team which gathers the most correct answers (chemical signs).

„**What do we know about chemical signs**“

On the cards, the chemical sign of the element on one side and its name on the other side are recorded. Students ask questions in pairs. A winner is chosen from each pair. The winners ask each other questions in pairs, but the cards already have signs of ions of chemical elements and characters that have been recorded coefficients. Winners draw cards with questions related to the detection of chemical signs and the names of chemical elements, the information that chemical symbols carry, the location and role of the coefficients. The winner is the pupil who answered the most questions, in a full and comprehensive way.

H	O
hydrogen	oxygen

In the units of study related to the study of chemical formulas and the names of the substances, a qualitative and quantitative analysis of the chemical formulas is made, their first classification is proposed, the rules for the formation of formulas by given valence are introduced. The teaching in each lesson indicates the substances that are labeled with them. Although hours of exercises and acquirement of new knowledge is provided, students have difficulty in understanding the content of chemical formulas, not

establishing exactly how they relate to the specific substances they designate because the substances themselves are not studied. To make it easier to understand and make sense of the ways in which chemical formulas are formulated and how they relate to substance names, we have developed the „**What's the Matter**“ and the „**Berzelius Labyrinth**“ games.

The game „**What is the substance**“ is conducted according to the rules of the game „Find the chemical sign“. It is applicable at the stage of consolidation of new knowledge in the subject Substance names.

The Berzelius Maze game was created in the exercise Formulating chemical formulas. We offer two versions of the game.

Version 1

Students once again are divided into teams. Each team receives a card from the teacher with different chemical symbols. Students are expected to compile and record all possible chemical formulas that are obtained in the right combination of these and name the corresponding chemical compounds. The winner is the team that has properly formulated the chemical formulas and named a large number of chemical compounds for a set time.

For example: for a team - P, Cl, O, S, Na, Fe, H

Option 2

On an interactive board, a multimedia projector or cards, parts of chemical formulas are recorded (fig.1). Students should find the missing part and compose the possible chemical formulas.

For example: Na₂, Cl, H, O₅, H₂, S, P₂, O, Br, Ca, Cl₂

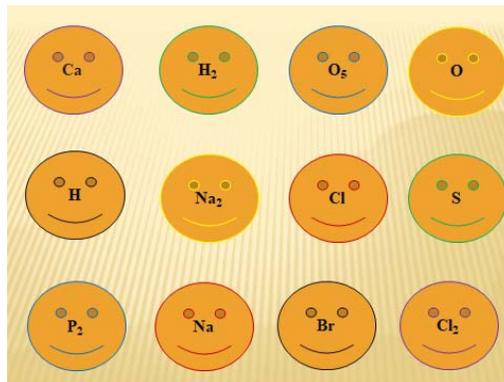


Figure 1. Elements of the didactic game „Berzelius’s Maze”

The compilation and equalization of chemical equations also hinders students. To consolidate the algorithm of writing a chemical equation and forming equations to equalize chemical equations in the exercise lesson, we used both versions of the game „**Ignore the Chemical Element**“.

Students are divided into groups again.

Version 1

Each student in the group receives one chemical equation in a mixed form in the form of cards. The goal of the game is to make sure that each group correctly aligns their chemical equations. The winner is this group that first tackled the task and correctly formulated and equalized the chemical equations.

Option 2

Each group receives an envelope with cartons, in which components of 10 chemical equations are written (chemical symbols, chemical formulas, coefficients and binding characters) which must be arranged for a certain time. The group that has correctly sorted the largest number of chemical equations is the winner.

During the general lessons where the learning content is already solidified and summarized, students usually lose interest. To diversify the work in these lessons, gaming competitions are particularly suitable. They awaken the participants' activity and competing spirit, they are emotional, and there is long term memory.

The Alkaline group compounds of the alkali and halogen group. We played a didactic game to consolidate and summarize the knowledge of the basic terms and concepts related to the diffusion of the elements, their physical and chemical properties; building skills to express chemical properties with chemical equations, and stimulating student interest and motivation for learning. We used an interactive board as a didactic tool.

The game prepares 15 questions on an alkaline/halide group that are designed using the interactive board. The class is divided into three groups. Each group has the right to answer 5 questions. When the most correct answers are gathered, the group wins. One student from a group that has been more active goes out in front of the class. The teacher asks three additional questions. The group whose representative answers most of the questions wins.

The game **Simple Substances and Compounds**, conducted within the framework of the relevant lessons, allows the knowledge of the main classes of inorganic substances and of the chemical symbols to be identified. It stimulates the cognitive activity and the interest of the students, and helps in the development of their thinking through the formation of skills for the transfer of acquired knowledge in a new situation. It is appropriate for that activity to take place at the end of the second lesson in order for the students to gain more knowledge or at the beginning of the next lesson when their knowledge is being tested. An interactive board or multimedia is used as a didactic tool (fig.2). It can be held as a group or individual competition.

Tasks are designed on an interactive board or multimedia, and students are pre-handed with lists with question numbers and tables, in which they make a note of the correct answers.

The group or students who has given the most correct answers for the set time wins the competition.

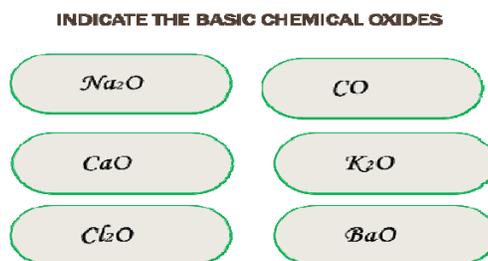


Figure 2. Slide from the game „Types of simple substances and chemical compounds”

To strengthen the knowledge on chemical signs and the place of the elements in the Periodic Table in the Lesson Exercise "Significance of Periodic Law and Periodic System" students can be offered game "Supplement Periodic System". The task of the students is to fill the empty spaces in the chemical signs (fig.3).

ПЕРИОДИЧНА СИСТЕМА НА ХИМИЧНИТЕ ЕЛЕМЕНТИ																											
I	II										III	IV	V	VI	VII	VIII		IX									
1 (H)											Li	Be	B	C	N	O	F	Ne									
2											Na	Mg	Al	Si	P	S	Cl	Ar									
3											K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni							
4											Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd							
5											Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt							
6											Fr	Ra	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr
* ЛАНТАНИДИ																											
* АКТИНИДИ																											

Figure 3. Game „Complete the Periodic table”

The class is divided into groups by rows. Each row deals with a single PS in which there are no signs of chemical elements that are known to the students. Each student has the right to record only one chemical sign. The group that quickly completed its PS wins.

For the same unit we developed the didactic game-competition chemical signs and famous scientists. Didactic tool – interactive board or multimedia.

Slogans are recorded with chemical signs of the chemical elements (fig 4). The task of the students is to find the names of the chemical elements in the periodic table. The first letters of the name form the name of a known chemist. The student or group who discovered the name of the scientist first wins. A brief biographical report is designed, then we head to the next slide and then to the end. The student or group who have found the most names of chemists wins.

Li Ar H Os Al Au Ir Eu

ЛАВОАЗИЕ

Антоан Лоран Лавоазие (1743-1794)

Френски химик, член на Парижката академия на науките (1772) и нейн председател (1785), един от създателите на съвременната химия. Той е установил: ролята на кислорода при горенето и дишането (1780), независимо от Джоузеф Пристли и Карл Шееле; Лавоазие е създател на химическата номенклатура (1786 – 1787), чиито основни принципи са запазени и до днес. Доказал е, че т.нар. „земи“ (окисите на калция, бария, магнезия) не са прости вещества, както се е смятало дотогава, а кислородни съединения на съответните елементи. Лавоазие е един от основателите на термохимията; въвел е принципите на физико-химичното изследване и в областта на биологията.



Figure 4. Slide from the game „Chemical elements and famous scientists”

In the topics **Substances and chemical reactions in nature and the practice of man and The role of man in the environmental protection** which will be developed during the entire course of study, namely that the studied substances and processes will be viewed in the light of their importance to man and the environment. In order to draw the students' attention to these issues and make the topic interesting and memorable, we used the game “**A minute too late**”.

To complete the game, students are divided into teams. Each team receives a puzzle that includes terms from the two lessons associated with the goal we have set. The task of the teams is to find terms in the table related to nature, substances, chemical reactions and environmental problems and to write at least one characteristic for each of them for a certain time.

For example:

1.	Б	А	П	И	Х	И	Д	Н	Е	Ф	Т	Е	Р	А
2.	Р	А	К	И	С	Л	О	Р	О	Д	С	О	К	М
3.	А	П	Е	С	Т	И	Ц	И	Д	И	Ф	С	И	Н
4.	Л	О	Р	С	Е	Ж	И	В	О	Д	О	Р	О	Д
5.	Р	Е	К	О	Л	О	Г	И	Я	Х	Е	А	М	И
6.	Б	А	П	И	Х	И	Д	Р	О	С	Ф	Е	Р	А
7.	Г	П	А	Р	Н	И	К	О	В	Е	Ф	Е	К	Т
8.	И	В	О	Д	П	А	Р	И	Е	Р	А	В	И	К
9.	П	С	Е	Р	Е	Н	Д	И	О	К	С	И	Д	А
10.	Б	И	Р	Т	О	Р	О	В	Е	Ч	В	И	Е	Л

In the course of the experiment, other interactive methods and forms were used along with the didactic games – brainstorming, case studies, debate, method of associations, group work, etc. They were included in separate methodological units or in separate lesson fragments.

Students' attitudes towards the subject and interactive learning were diagnosed using a survey. Given the theme of the development we will only present the results related to the game methods.

To the question: Which learning objects are you studying with desire and interest? Arrange them in the table in the order of your preferences. Against your chosen subject, note the reasons why it is desired and interesting for you, 60% of students put chemistry and environmental protection among the subjects they are interested in and 26% of them put it first. When the reasons why the subject is desired and interesting, 50% of the students indicated that they liked the way they collaborated during the lessons, while 34% said that the teacher taught the lessons in an interesting way. 38% of the respondents answered that they were active during the lesson if the material they studied was interesting and 45% - if the teacher used games, case studies, discussions, etc. during the lesson.

The survey showed that students want to use non-traditional methods and forms in their training because they can express their personal opinion (17%), they can communicate with their friends (26%), they can play (39%) and they can make presentations, drawings, collages, posters (18%).

To the question: „Which of the methods and forms used motivate you to be passionate about the work?“. All the students surveyed indicated more than one answer. Responses are distributed as follows: 91% for gaming and group work; 56% for solving puzzles and crossword puzzles, 50% for solving case studies and computer work.

Conclusions

Students' observation in the game-making process and the conducted survey convincingly confirm the expedience of the study. The results show that the use of games in learning increases the cognitive interest and activity of learners, stimulates the process of searching for new knowledge and provides conditions and opportunities for expression. In addition to interest in the subject, participation in game activities teaches students to overcome difficulties, make quick decisions, develop creative thinking, attention, speech and memory, and it helps them master the chemical language and chemical concepts.

Acknowledgment

This article comes as a result of the work on the project № ПД-08-098/2017 of the Faculty of Natural Sciences at Shumen University.

References

- [1]. Bulgarski tulkoven rechnik, Hermes, **2004**
- [2]. Vitanova, N., Didacticheska animatsiya, Shumen, **2008**
- [3]. Desev L., Rechnik po psihologiya, Bulgarika, **1993**
- [4]. Elkonin D.B., Psihologiya naigrata, NP, S., **1984**
- [5]. Ivanova, G., Pedagogicheski tehnologii v igrata, Plovdiv, **2004**
- [6]. Ivanov I., Diferentsialna pedagogika, Yuniक्सpres, Shumen, **2002**
- [7]. Platon, Republic, S., **1975**

Acta Pedagogica Naturalis

Former Annual of Konstantin Preslavsky University

Journal homepage: <http://acta-pedagogica.shu.bg>

Received: 20.12.2017

Accepted: 09.03.2018

An Opportunity to form skills supporting development with the help of out-of-class environment

¹Petinka Galcheva, ¹Rositsa Vladeva, ²Penka Ruseva, ²Elisaveta Dimova

¹Konstantin Preslavsky University of Shumen, Faculty of Natural Sciences,
9700 Shumen, 115 Universitetska street,

²“Sava Dobroplodni” Secondary School,

E-mail: p.galcheva@shu.bg, r.vladeva@shu.bg, penka_ruseva@mail.bg, evd_vali@abv.bg

Abstract: *Forming skills supporting development has the character of continual amend process as a natural part of the education. These skills called at times “environmental competency” give the student a chance to find a place in the surrounding world, to find out the value of nature, their own and other people’s health, and also a way to make decisions for managing the risk. Creating a positive motivation to learn about the environment is the first step towards realizing environmental education, gaining environmental culture and supportive development skills. Except obligatory, out-of-class activities give very good opportunities to achieve such results.*

The aim of this presentation is to give an opportunity for permanent development in the process of Man & Science and Geography Education through out-of-class activities devoted to the Earth’s Day.

Keywords: *skins in permanent development, out-of-class activities Earth’s Day, script*

Introduction

The problem of increasing the quality of education has become more and more important recently and its solving has been connected to the competence approach. The results and achievement are rather connected with learning key competence, necessary for personal development and social realization than gaining knowledge, skills and habits.

School subjects, dealing with living and non-living nature, reveal reasons for environmental problems and consequence of people’s influence on nature. Understanding of environmental situation and taking part in its solving show ecological culture and personal orientation. Environmental knowledge has become a basic educational practice, a way to for skills supporting development – a key competence in primary and secondary school education law. These skills called at times „environmental competency” give the student a chance to find a place in the surrounding world, to find out the value of nature, their own and other people’s health, and also a way to make decisions for managing the risk. It helps to realize the connection between development and cooperation of all environmental systems, to predict the possible contradiction and problems in the nature-man relationship and to plan effective solution. Thus these skills have universal, multi-subject, integral and social-cultural character forming of which is one of the main

educational purposes. It is necessary the complex character of ecological problems to be revealed by using and interacting all subjects which deal with different aspects of environment and its influence on all living creatures.

It is also important for students to be personally involved and interested in solving these problems.

Out-of-class activities offer very good opportunities for this. Recently these types of activities have become an important component in the process of education. They balance the lack of time, as during the lesson it is impossible to satisfy all students' curiosity and questions. Taking part in out-of-class activities can expand students' knowledge and practice, as well as develop virtues like tolerance, planning, creativity confidence and self-confidence and team-work abilities.

Out-of-class activities have several advantages than those in class. They often have entertaining character which interest students to take part in desired activity. This helps using different methods and forms of education which reveals each student's abilities. Volunteering teaches responsibility, develops creativity, imagination and tolerance.

Students are not limited by strict rules. On the contrary, they are encouraged and supported to release their best qualities and virtues. They are also encouraged to make decisions and become initiative. As a result, the quality of decisions and responsibility to given aims are increased.

One of the most popular out-of-class activities is theme evening classes about a scientist or event. They have great known edge value, as the preparation and presenting can solve different educational and pedagogical problems and form important key competences. Themes and ways of organizing are extremely various, but our experience shows that the greatest students' interest is in holding competitions.

Results and Discussion

These out-of-class opportunities and the actual problem of forming responsible attitude towards nature and skills supporting development of students encouraged us to make up an Earth Day Class Script. We have chosen the title „The Earth – a Cosy but Insecure Home”. This is a script which was realized on 22nd April, 2017 at Konstantin Preslavsky University of Shumen, with the participation of students from „Sava Dobroplodni” Secondary School, Shumen.

Evening Devoted To the Earth Day (script)

It is a competition between 2 teams of 6th grade classes. Each team has chosen a name and symbol. Judges are lecturers from the University.

Suitable chemical experiments are shown in between the parts of competition as well as a quiz for the guests. The Interactive board has the motto of the evening (Fig. 1).



Figure 1. Motto of the evening

Announcer 1: "What place would you advise me to visit now?" he asked. "The planet Earth," replied the geographer. "It has a good reputation." These words from „The Little Prince” by Exupery will enlighten our evening. It is devoted to planet Earth, its nature and our attitude towards it. Which is the reason?

Announcer 2: Our planet is aching!!! The following film will convince you. „Environmental challenges of 21st century” follows (Fig. 2).



Figure 2. Video „Environmental challenges of 21st century” follows

Announcer 1: In order to think about Earth and its protection, 22nd April is pronounced as an international Earth Day – a day of responsibility to our planet and people who live on it, to our nature of which we are part. Do you know the story of this day?

Announcer 2: It was pronounced in the beginning of 19th century by the minister of Agriculture of Nebraska, John Morton. The reason? Those days few existing trees and plants were cut down for building and heating purposes. Morton offered re-planting, announcing „A Tree day” and set up a reward for the man who will plan the largest number of trees on that day. On the first „Tree Day” – 10th April, 1842, Nebraska people planted about a million trees! Later the „Tree Day” became an official fest celebrated on 22th April – Morton’s birthday.

Announcer 1: The Earth Day gains importance during 1970, when more than 20 million people worldwide took part in different environmental actions. During 1990 the day was pronounced as an international one, and Bulgaria takes part in it in 1993, one of the first counties to recognize it.

Announcer 2: The „Earth Day” has its symbols. There is an Earth banner, which is not official because there isn’t a common government or country yet. The banner is dark blue with the image of the Earth on it. It is a picture taken by the astronauts of “Apollo-17” in 1972 from a distance of 29 000 km. The photo is known as „The Blue Marble”. The other symbol is the Greek letter Θ theta, it is green on a white background.

The Earth’s Day is celebrated in many different ways. But one tradition is connected with the Peace Bell and is equally presented. The Bell’s ringing appeals people on Earth to unite and care of planet’s health and beauty. Its first ring sounded in UN Headquarters in New York. It was molded from coins, collected by children around the world in the name of Peace on Earth. There is a saying on the Bell: „Long Live Peace In The Whole World”. Similar bell was situated in Vienna in 1996 and later in other cities in Germany, Japan, Canada, Brazil etc. [6].

Each symbol is projected on the interactive board as announced.

Then comes presenting of the teams, jury and competition rules. Then the competition begins.

First Round: Two envelopes containing a question each for recognizing and describing types of ores taught in „Geography and Economics” and „Man and Nature” classes. The question is: „You are explorers – geologists, geographers, chemists. You take part in a science expedition and come to a laboratory full of collections of various ores. You have to find out iron/copper ore and explain its qualities and influences over man’s health and environment.

As teams work, a quiz is held with the guests. It is in the field of geography and natural places as in the example:

The biggest river basin on Earth is ...

The biggest waterfalls on Earth is ...

The largest equatorial forest on Earth is situated in ...

The longest cave on Earth is ... etc.

Second Round: Both teams solve one and the same test including knowledge from „Man and Nature” School subject.

1. Fresh air is a gas mixture. Of biggest quantity is:

- oxygen;
- nitrogen;
- CO₂;
- helium.

2. Burning coal, petrol and other fuel exhaust sulfur and nitrogen oxides. These are dangerous fumes which lead to:
 - a) greenhouse effect;
 - b) acid rains;
 - c) damaging the ozon layer;
 - d) colder climate.
3. Which feature justifies best the oxygen's romantic name „life element“?
 - a) not poisonous;
 - b) a little soluble;
 - c) maintains burning and takes part in breathing;
 - d) doesn't burn.
4. Which collaboration is connected to acid rain forming? Define types of substances which take part in chemical processes!
 - a) Sulphur Dioxide + Water \rightarrow Sulphur Acid
 - b) Carbon + Oxygen \rightarrow CO₂
 - c) Calcium Oxide + Sulphur Dioxide \rightarrow CaSO₄
 - d) CO + Oxygen \rightarrow CO₂
5. Which of the following man's activity leads to increasing of the air pollution?
 - a) using water, sun and wind as energy resources;
 - b) increasing the production of vehicles;
 - c) creating of little-waste or non-waste produce;
 - d) increasing forest areas through planting/
6. People's activity is threatening the environment as constantly changing the ozone layer which protects Earth from Sun's ultraviolet radiation. This leads to many species' extinction. Especially on the Antarctic. That's why Bulgarian explorers together with their international Colleagues on Livingston Island constantly exam in life on the icy continent. The conditions are harsh, that is why members of the expeditions must know well the quality and virtues of the available substances. You can help them by solving this problem:
 - 6.1. There was a break-down at the camp and some hydrogen is necessary for a balloon to be raised in order to signal for help from the nearest camp. Can you help?
 - a) What substances you need to produce hydrogen (suggest methods);
 - b) Explain the processes that are going on;
 - c) Do you need any precautions using hydrogen?
 - 6.2. In the camp you need some oxygen to maintain life of an injured person from the nearest base. In the first – aid kit there is oxygen water, potassium, alcohol, Flavin and other medicines.
 - a) Which substances can you use to produce oxygen easily?
 - b) Explain the processes that are going on;
 - c) Do you need any precautions using oxygen?
 - 6.3. The expedition camp has run out of salt. Can you help participants to produce salt in the present conditions?
 - a) How can you produce salt most easily?
 - b) Which processes are you going to use to get pure salt?
 - c) Is salt healthy or harmful for people?

While the jury is checking the results, effective chemistry demonstrations of natural phenomena are being held.

Third Round: Working with Earth map, Competitors have to name and visualize on it three of the world records from the following.

1st team:

- The driest desert on Earth – the Atacama desert
- The widest river – the Amazon
- The highest mountain lake – Titicaca 3 812 m

- The highest tides of the world’s Ocean – Care Fundi 18 m
 - The longest border between two countries – USA/Canada 6 416 m
- 2ndteam:
- The longest mountain chain in the world – Andi-around 9 000 km
 - The driest place on Earth – the Atacama desert
 - The biggest river on Earth – the Amazon
 - The biggest island made by river drifts – Marajo in the Amazon mouth
 - The biggest canyon on Earth: Grand Canyon, 446 km long, between 8 – 29 km wide, 1,8 km deep.

While the teams are working the announcer is asking them questions as the following:

1. Chemical compound called scale or limestone It forms stalagmites and stalactites.
2. People use this substance for decreasing friction. It is suitable for warming and cooling. It is called “life juice of the Earth”. Adult organism contains 65% of it.

Forth Round: The teams have to solve one and the same crossword including questions about the atmosphere’s content and environmental problems which threaten the Earth Correctly solved it shows a changing part of the air, which big quantity loads lead to Global Warning (Fig. 3).

After solving correctly, answers are projected on the interactive board.

1. Gas mixture – Earth’s atmosphere
2. Oxygen in the air maintains the process ...
3. A big part of exhausted fumes comes from the resources of ...
4. The layer of ... is the filter, which reduces the harmful sun.
5. Accumulation of CO₂ leads to a green-house ...
6. Acid ... harm both living and non-living nature.
7. Broadly used ... damage the ozone layer.
8. A permanent part of the air is the gas ...
9. Oxygen in the air is absolutely necessary in the process ...

While teams are working, suitable chemical experiments are being held.

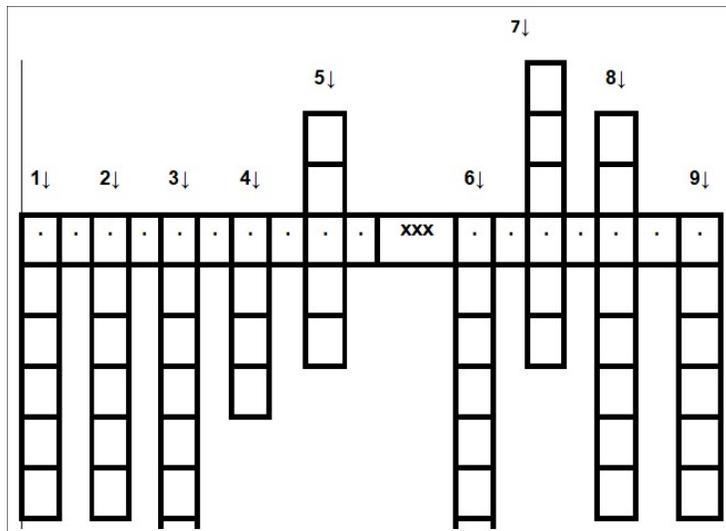


Figure 3. Crossword

After finishing the competition, the announcer says:

On the eve of 22nd April we appeal to you: Protect the Earth! It isn’t given by your parents! You have rented it from your children!

On the interactive board:

Because we want our sky to be flawless, blue and spacy!

We want to have transparent, clean, living waters!

For birds, trees, flowers and bees to live!
Our Earth to be gorgeous forever!
People, Be Careful! Be human! Protect our Planet clean!

This evening is a strong emotional influence both on students and on their parents. It helped not only for increasing students' knowledge but also for developing their team skills, work tolerance responsibility and forming important key competence like support in permanent development and healthy way of life and sport.

The survey of students and their parents' opinion was convinced as well– organized out-of-class activities make the School a preferable territory again.

Acknowledgement

The present article is the result of the work on a project with the Scientific Research Fund, with the Konstantin Preslavsky University of Shumen, 2017.

References

- [1]. Gagarin A. B. Ekologicheskaya kompetentnost lichnosti: psihologo-akmeologicheskoe issledovanie, M., **2011**.
- [2]. Ekzyuperi A., Malkiyat printsh, Siela, S., **2015**.
- [3]. Zakon za preduchilishtnoto i uchilishtnoto obrazovanie, MON, **2016**.
- [4]. Manev S., Tomova S., Tafrova A., Gaidarova M., Tyutyulkov K., Jotovska K., Petkova R. Zadachi i uprazhneniya za 5-8 klas po prirodnite nauki, Azbuki-Prosveta, S., **2011**.
- [5]. Khutorskoy A. V., Klyuchevye kompetencii kak component lichnostno-orientirovannogo obrazovaniya, Narodnoe obrazovanie, 2, **2003**, p. 58-64
- [6]. <https://bg.nencom.com/spravochnik/ekologiya/den-na-zemyata>

Acta Pedagogica Naturalis

Former Annual of Konstantin Preslavsky University

Journal homepage: <http://acta-pedagogica.shu.bg>

Received: 20.12.2017

Accepted: 09.03.2018

Using Project Based Learning in the „Thermochemistry” Topic – example from education practice

Antoaneta Hineva, Petinka Galcheva

¹ „Dr. P. Beron” Secondary School of Mathematics, Akademik Nikola Obreshkov Alley, Varna, Bulgaria,
² Konstantin Preslavsky University of Shumen, Faculty of Natural Sciences, Universitetska Street 115,
9712 Shumen, Bulgaria

E-mail: anthineva@gmail.com, p.galcheva@shu.bg

Abstract: *The selection of suitable approaches, methods and technologies in education is of crucial importance for achieving the goals of the educational process. The introduction in pedagogical technologies of elements from research activity enables the teacher not only, and not so much, to educate but mostly to help the student to learn, to direct his or her cognitive activity. One of the most widely spread contemporary types of research activities of students is project activity, which is implemented in the course of project learning.*

The aim of the present report is to present our experience for the implementation of project based learning with 11 grade students at the „Dr. P. Beron” Secondary School of Mathematics in the studying of the „Thermochemistry” topic. The students use the student's book published by Regalia, with educational content for 10 grade.

Keywords: *project based learning, thermochemistry*

Introduction

If we try to imagine how the ideal owner of a secondary school graduation diploma looks like, then the following profile would emerge: responsible, quick-witted, consistent and critical, thinking, knowing how to study, to work well with the others, communicative, able to solve problems, to manage his or her time, and able to lead things to the end. How can we fit natural sciences and more specifically chemistry into the forming of the profile of the ideal graduating student? We are all well aware of the situation: in Bulgarian school's natural sciences are becoming less and less popular, and the opinion prevails that the state education requirements and educational curricula overload young people in terms of information and repel them from science. The findings of international studies in the field of natural sciences and mathematics are not more hopeful.

Similar difficulties in natural sciences education are mentioned by a number of authors. Gilbert points out three increasingly deepening problems in school education in natural sciences. He relates the

first problem to the increasing intellectual isolation of natural sciences, compared to other school subjects. They are frequently taught as a combination of predetermined truths, and there is no possibility for discussion on them. As a result, students do not feel them as their own ideas. The second problem is the problem of how to adapt natural sciences learning to the preparation of students for being future citizens, since it is traditionally aimed at preparing future specialists – scientists and engineers. There is an essential difference between the two cases, mostly in what is taught, how it is taught, and why it is taught. Gilbert sees the third problem in the increasing discrepancy between the set of problems of contemporary science and the content of natural sciences learning. The educational content is becoming more and more dated, and it is diverging from contemporary scientific problems. According to him, „whereas natural sciences shape the face of the contemporary world, learning in natural sciences seems to be engaged in the challenges of yesterday“ [5].

At the same time, the principles to which school education is subjected, according to the Pre-School and School Education Act, are directed towards the interest of students, towards the quality of education and the innovative nature in pedagogical practices [10]. The Law also stipulates the key competences that have to be formed in students in the course of education in the respective degree.

The generalized conclusions from the polls conducted by us indicate the wish of students for more dialogues and more active participation of them in all stages of the process of learning. Our experience shows that this can be obtained by using active or interactive methods of learning. One of these methods is the project method, implemented in the practice of project based learning. In the last few years, that learning has been turning into an inseparable part of school practice in all school subjects, including chemistry and preservation of the environment.

The aim of the present report is to present our attempt to implement project based learning with the students of 11 grade at the „Dr. P. Beron“ Secondary School of Mathematics in Varna, in the studying of the „Thermochemistry“ topic. The students are taught on the basis of the student's book published by Regalia, with educational content for 10 grade.

Theoretical substantiation

The projects method was proposed for the first time by J. Dewey and was developed by W. Kilpatrick. His main idea was "learning through action". J. Dewey determines the project in pedagogy as a "method of thinking experience". "The basis of a particular project is always live participation in the live reality, and in the course of that, with common efforts, one or several solutions are obtained regarding a particular problem, and they finally merge into one product, into a specific result" [4, 6].

According to V. Dimitrova and S. Manev, a students' project can be determined as a relatively independent elaboration by students, as a consequence of which results are obtained and conclusions are formulated" [2].

The nature of projects is determined by the specifics of educational content, the age peculiarities of students, and the scope of its themes. In projects, in a fair manner, teachers and students work on a real problem. In the method of projects, the process of education provides conditions for students to create products on their own and to gain experience in creative research activities.

The contemporary model of project based learning was developed by the Buck Education Institute, USA, in the end of the 90s of the 20th century, in response to the efforts for school reforms. Project based learning is defined as "an instructive method which presents students with complicated tasks based on challenging questions or problems, which include problem solving, decision taking, research abilities, as well as self reflexion, which include facilitation by the teacher, but not provision of direction [7, 9]. Project based learning is one of the most effective ways of obtaining the goals of contemporary education. Placing the student in an active, creative position, it enables the enhancement of motivation and the mastering of lasting knowledge, skills and competences.

Results

The school curriculum in chemistry and preservation of the environment for 10th grade includes compulsory educational content related to the studying of chemical processes. One of the directions of discussing them are heat effects of chemical reactions included in the „Thermochemistry“ topic. The topic presents ample opportunities for project based learning. Proceeding from that, in the preliminary distribution four school lessons are allotted for the studying [3].

In the frames of the first lesson, the building of an intellectual map of the notion starts. The map illustrates the areas with which student's associate thermochemistry, and determines the directions in which they will have to implement a deeper study, namely: foods, fuels, chemical relations, luminescent organisms in nature, animals with specific behavior due to thermochemical processes. Students get acquainted with the topic and the aim of the project, and they are divided into groups in a natural way: they select to work in the area they are interested in. The deadline for the study is appointed, the necessary instructions are given, as well as the requirements for the generalization and presentation of the materials. In that manner, the first (starting) phase of the project is implemented [1].

In the course of the study and the processing of the information, the teacher provides consultations and guides the groups, after which the ready product is uploaded into virtual space – google classroom. In that manner, each student from the class has access to the entire information collected. After the different areas have been studied, the need emerges for the updating of the intellectual map. That is carried out during the second lesson, in which, by the method of ideas generation, brainstorming, the most suitable topic for the generalizing lesson entitled „Energy: known and unknown” is determined. The students are provided with a key code by means of which they gain access to the information uploaded into the google classroom. The second phase of the project is implemented.

The third phase, the culmination, is implemented in the course of the third lesson. It is held in the presence of two teachers, the chemistry teacher and the biology teacher. The work during the lesson is again organized in groups, but the groups are formed at the start of the lesson. The classroom is equipped with furniture that enables the modular arrangement in a circle, and the space is organized in five sectors. Each student draws a card on which there is a symbol determining his belonging to one of the groups, and goes to his or her place. Each of the individual sectors is marked by a symbol showing the topic on which the group is going to work, there is a folder with material on the topic, and a card with a key code for unlocking the data base containing information collected during the second stage of the project activity.

Group One works on the „Foods” topic. The task is the following: In your folder you will find two materials: a link <https://zdravoslovno.maxamuss.com> which will provide you with access to a site dedicated to a project, „The Bulgarian nation is sick”, and a data base entitled „Calories content of foods“. Both products have been developed by your classmates. Get acquainted with the capabilities of the site. Study the information located on the site and in the data base. Search for additional information on the categories into which people are divided, according to their daily need for calories. Using the information collected, and the materials about the calorific content of foods located in the data base, determine with the aid of the calculator the daily need for calories of two of your classmates, differing in sex and in physical activity. Prepare a daily menu for them.

Offer a form of popularizing the menu prepared by you among the students from the school!

Group Two works on the „Fuels” topic. The task given to them is the following: We are on the threshold of the new heating season. The publishing is forthcoming of a public order for the choice of fuel for the winter period. The school principal is turning to the chairman of the social council with a request for the conduct of a preliminary study and the invitation of companies which will present their offers. If you are a representative of a company carrying out deliveries of a specific type of fuel, which arguments would you use to convince the school principal that the fuel you are offering is the most suitable one for the forthcoming heating season?

Group Three works on the „Light Energy” topic. The participants get the task for work in the form of a worksheet with the following content:

WORKSHEET

Light Energy

Name.....No..... Grade.....

TASK 1. Read the text and answer the questions following it:

„One night I was travelling by train from Florence to Rome. Suddenly my attention was attracted by sparks flying past the carriage. At first one would think these sparks came from the engine funnel. When I looked through the window, I saw that our train was speeding through a light, transparent cloud consisting of tiny golden-blue flames. They were sparkling all over. They rotated, they cut through the air as rainbows

of light, in different directions, crossed each other, sank and emerged again in the night mist, sprinkling the ground as if with a rain of fire. That fantastic spectacle lasted for five minutes, and maybe more. Then we came out of the cloud of the lighted particles, and left them far behind.” From the notes of Prof. V. Lunkevich

- 1/ What did the professor observe?.....
- 2/ Describe what the reason for the lighting was?
- 3/ Express the mechanism of lighting by means of a chemical equation
- 4/ Search for information for other sources of “live light” in nature.....

TASK 2. Describe the model from nature that scientists used to create LED lighting.

TASK 3. Study artificial sources of light. Clarify the principle of operation, advantages and disadvantages of each of them. What lighting fixtures would you prefer to use in your homes?

The tasks for Group Four are also given with the aid of a worksheet.

WORKSHEET

Bombardier Beetle

Name.....No.....Grade.....

Your task is to work with a text. Enter the google classroom, using the password or In the „Bombardier” folder you will find the complete text of the information on one of the strangest creatures in nature. Get acquainted with the information on the bombardier beetle, and proceed to the implementation of the tasks given.

1. Present the chemical processes during which the gas mixture of the bombardier beetle is formed, by means of thermochemical equations.
2. Calculate the heat effect of the chemical processes going on in the reactor of the bombardier beetle.
3. Having in mind that 1cal= 4,18 J, and 1 kcal= 1000 cal, present the result of $m.2$ in joules.
4. What is the heat effect of the process?.....
5. Calculate the heat effect for 1mol hydroquinone.
6. What is the amount of the hydrogen peroxide that reacted, and what amount which did not react remained?
7. Using Figure 1, note:
 - a. the parts of the arrangement of the bombardier beetle's chemical weapon;
 - b. where the hydrogen peroxide and hydroquinone which are secreted by the acini form gland are stored.
8. Point out the role of the *catalase* enzyme and the biochemical nature of processes of the bombardier beetle.....
9. Explain the possibility for a biochemical reaction at 100° degrees in the bombardier beetle.....
10. How do the skin spots burned by nitric acid look?

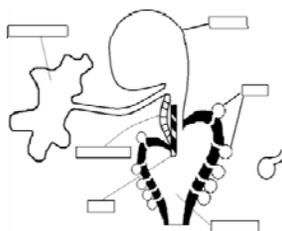


Figure 1.Arrangement of a bombardier beetle

The worksheet for Group Five includes an experimental task and tasks related to the calculation of heat effects.

WORKSHEET

Experimental and logical tasks

Name..... No..... Grade.....

Task 1. Measure the heat effect of the solution of hard sodium hydroxide in water.**Preliminary preparation and conditions assumed:**

The flask is used both as a reactor and as a calorie meter for measuring the amount of heat absorbed or emitted. It is assumed that the heat effect is manifested only in the change of temperature of the water solution and the glass of the vessel. The loss of energy into the environment is neglected. The increase in temperature by 1°C is related to the absorption or the emission of 1 calorie of heat (cal). 1 cal = 4,18 J of heat.

Necessary aids, materials and chemicals: crystals of **NaOH**, water, erlenmeyer flask with a capacity of 250 ml, thermometer, glass stick, plastic spoon, electronic scale, magnetic stirrer, filter paper.

Safety rules: When working with a solution of sodium hydroxide, protective gloves have to be used.

Method of work:

Dissolve 2 g **NaOH** in 200 ml of water and measure the temperature, before and after the dissolution of **NaOH**.

Sequence of the operations performed:

1. Weigh 2 g **NaOH**;
2. Weigh the erlenmeyer flask.....;
3. Pour 200ml of water into the flask;
4. Measure the temperature of the water. Stir the water in the flask continuously, until a constant temperature is reached;
5. Mark the temperature measured in figure 1, flask 1;
6. Add the 2g of solid **NaOH**;
7. Stir using a magnetic stirrer, until all the crystals have become dissolved;
8. Measure the temperature again (fig. 2);
9. Mark the temperature measured in fig. 2, flask 2;



Attention! Never dispose of waste chemicals into the sewer drain! Transfer the waste solutions into the becher cup prepared for the purpose. Wash the vessels under running water. Clean your workspace.

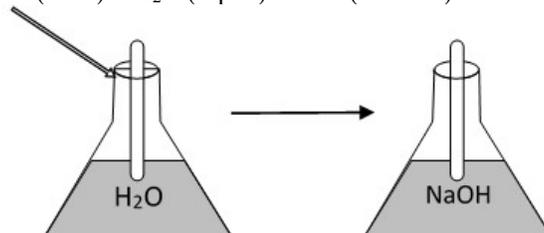
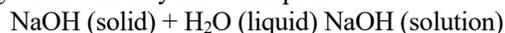


Figure2. Measure the heat of dissolution of sodium hydroxide

10. Perform the calculations:

a) calculate the change in temperature:

$$\Delta t^\circ = t_2^\circ - t_1^\circ$$

t_1° – temperature of **H₂O** prior to the test;

t_2° – temperature of the solution of **NaOH**.

b) calculate the amount of heat released, **Q_x**, in **cal**, if you know that the change in temperature by

1°C requires 1.0 cal for water and 0.2 cal for glass with a mass of 100 g.

$$\Delta t^\circ \cdot 1.0 \text{ cal} \cdot 200 \text{ g} = Q_1$$

$$\Delta t^\circ \cdot 0,2 \text{ cal} \cdot 100 \text{ g} = Q_2$$

$$Q_x = Q_1 + Q_2$$

c) calculate the number of mols of **NaOH** by the formula:

d) calculate **Q** for dissolving 1 mol of **NaOH**:

e) convert cal into kJ, if you know that $1 \text{ cal} = 4.18 \text{ J}$.

11. Represent graphically the heat effect of the process.

Task 2. Using the information from the log available in the google classroom regarding the tracing of composting implemented in the secondary school's yard in the years 2015 and 2016, plot a graphic reflecting the change in temperature for the first eight consecutive measurements in 2015 and 2016. Determine the heat effect of the process.

Task 3. In their strife for inventing a perpetual motion machine: „perpetuum mobile”, experimenters with scant scientific and general knowledge have proposed a variant of such a machine. In virtual space, google classroom, the four stages of operation of a perpetual motion machine are represented. Transport yourself into the past and describe the operation of the machine.

What are the inventors' mistakes? Does a perpetual motion machine exist?

The work on the tasks continues throughout the lesson and finishes with the development of the final variant of the product. In the course of the joint activities in the groups, students develop tolerance, independence, creativity, proactivity, as well as skills of working in a team.

The final stage of the project activity, the presentation and discussion of the results, is carried out in the last lesson. One representative of each group presents the results of the group activity before their classmates. The entire group participates in the discussion. The aim is to acquaint all the students with the information obtained and with the solutions of the tasks posed.

At the end of the lesson, reflection on the activity performed is carried out. The participants in each group have to answer the following questions: What did you expect to learn in the course of the work on this project? Why did you choose this way of solving the task posed? What posed difficulties in the course of the work? What omissions in your knowledge did you discover? Are you satisfied with the results obtained? What did you learn about yourself in the course of the work?

Replying to the questions, students learn to analyze their own achievements in learning, to adequately assess their actions, to freely express their opinion.

Conclusion

Project learning is one of the opportunities by means of which we can turn the school into a territory attractive for students. The participation in projects expands the knowledge of the students taught in the specific project topic, and furthermore, it develops important key competences on which the successful professional development of the individual person is based. A prerequisite for that is team work, in the course of which students learn to express their arguments, to substantiate their position, and also to be tolerant, cooperative, creative, communicative. And also perhaps get closer to the profile of the ideal holder of a secondary school graduation diploma.

Acknowledgment

This article is a result of work on project № ПД-08-098/ 2017 from the Scientific Research Fund of the Konstantin Preslavsky University of Shumen.

References

- [1]. Andreev, M., Tsvetanova-Churukova, L., Todorina, D. *Didactics*, Blagoevgrad, Neofit Rilski University Publ., **2000**, p.139
- [2]. Dimitrova, V., Manev, *Contemporary education in chemistry and preservation of the environment*, Blagoevgrad, Neofit Rilski University Publ., **2005**, p. 77
- [3]. Shubanova, A., T. Apostolov, P. Vasileva, *Chemistry and preservation of the environment, 10 grade*, Regalia, S., **2002**
- [4]. Dewey, J., *Democracy and education, The middle works of John Dewey*, Carbondale: Southern Illinois University Press, **1916**, Vol. 9
- [5]. Gilbert, J.K., Preface (pp. v-vii). In: Phillips, L.M., Norris, S.P. & Macnab, J.S. (Eds.). *Visualization in mathematics, reading and science education*. Dordrecht: Springer, **2010**
- [6]. Kilpatrick, W. H., *The project method*, Teachers College Record, **1918**, 319-335

- [7]. Totseva, Y., Project-based learning – technology and capabilities for use in Bulgarian schools, *Reports Awarded with „Best Paper“ Crystal Prize, 2016*, s.303
- [8]. <https://zdravoslovno.maxamuss.com/>
- [9]. <http://www.bie.org>
- [10]. www.mon.bg/?h=downloadFile&fileId=8245

Acta Pedagogica Naturalis

Former Annual of Konstantin Preslavsky University

Journal homepage: <http://acta-pedagogica.shu.bg>

Received: 20.12.2017

Accepted: 09.03.2018

Communicative-behavioral stiles of the modern teacher

Ivelina Ivanova

„Sava Dobroplodni” Secondary School, Shumen,

E-mail: ivelina_s.ivanova@abv.bg

Abstract: *The enrichment and research of the phenomenon communication in a pedagogical aspect is a problem that is especially pressing and important for the efficiency of the educational process. The teachers are required to direct their efforts towards meaningful pedagogical interrelation with the students and creating of the necessary conditions for their actual realization. Communication is a basic mechanism of the personal stimulation and development and it is a priority in teaching. The communicative styles of Bulgarian teachers at present are influenced by the renewed communication. The competency of the teacher for optimum pedagogical communication is essentially important for the realization of qualitative and efficient learning process. It is liable to constant updating and accomplishment.*

Keywords: *teacher, pedagogical communication, interrelation*

The changes that take place in our society lead to the necessity of reconsidering of the interrelation between the participants in the educational process. The intercourse is vital for all the human activities but it has an exceptionally important role in some more specific professions as the teaching. As early as the origin of the human society, the necessary knowledge, skills and experience were handed over through the immediate communication connected with the process of labour. The communication in the educational process develops and improves with the development of the social formations.

The handing over of the social experience is a special function of the society. The degree of the development of the contemporary society more and more imposes the necessity of the building of entire theory of the communication as well as a theory of the communication in school.

The enrichment and the research of the phenomenon communication in a pedagogical aspect is a problem that is exceptionally pressing and important for the efficiency of the educational process. Thus teachers are required to direct their efforts towards pedagogical interrelation of full value with the students and creating of the necessary conditions for their actual realization as original partners in this process. Hence the necessity for every teacher to have social skills for purposeful and effective interrelation with the students.

There is no other social group for which upbringing, education and teaching are direct professional obligation. The new realities dictate more and more difficult pedagogical tasks. Hence the teacher is

required to be well trained. Besides, the personal qualities of the teacher attain professional function. The teacher's profession is a typical example for non-coincidence of the notions „profession” and „specialty”.

Not until recently people began talking about the fact that the specific scientific training (the specialty) is not enough for the fulfillment of the social function of the teacher. In order to use his/her special scientific training for the aims of the upbringing and teaching, the teacher also needs his/her professional-pedagogical training. The first type of training is judged on its merits but, unfortunately, the second is underestimated with all the resulting consequences for the pedagogical activities in school.

Communication is a main mechanism of the personal stimulation and development which is the aim of teaching. Hence, communication turns out to be its main mechanism. The personality of the teacher has its special role in his/her profession. Through it, he/she can stimulate positive qualities in social and individual plan or, quite the opposite, to have negative influence. In that sense, the teacher needs fast, operational and true orientation; he/she should find the adequate communicative means.

The present moment of quick changes in the social relationships imposes the necessity of new behavioral models which have to express a higher degree of social integrating of the teacher. This is connected with the finding of new professional styles, the inlaying of new behavioral elements. It is imposing to reconsider the regularities of the interpersonal communication with colleagues, students, parents, directors.

The exceptionally hard, but especially valuable for the profession, skill to express feelings, on one hand, and to control personal experiences, on the other, deserves special attention.

The complete pedagogical communication in its three dimensions – communication, interrelation and social-personal perception – combines two levels that are mutually connected but different in essence. The one is outward, behavioral, operational-technical and the other – inward. It concerns the personal-notional formations and has a determinant role as regards the outward, the behavioral.

The skill for emotional communication means achieving of an adequate estimation of one's own strong and weak points. The teacher constantly compares his actions with the expectations of students, colleagues, parents and directors and considers their opinion, requirements, assessment and feelings. Non-formal self-estimation is practically unavoidable. On the other hand, the disparaging of the social status and the prestige of the teacher's profession leads to the establishment of a permanent unsatisfied personal self-confidence, to mental stress in certain situations and to constant specific tension. All this can lead to uncertainty if there is a personal disposition. In this sense, the uncertainty has a relation to the irrational behavior.

Every renewing of the social communication supposes and premises a renewing of the pedagogical communication. At this stage, the communicative styles of Bulgarian teachers are under the influence of the renewed communication. It is not only a result but also a specific precondition for the fast changes which take place in society.

Taking the role of the teacher, a person changes a variety of special features of his/her behavior. This is unavoidable consequence of the public opinion about the teacher's behavior as well of the constant realization of the typical teacher's position in school. On one hand, society imposes a variety of stereotypes and, on the other, the position in relation to the students is constant in the important moments. The various movements towards and inside the teacher's profession have an effect on the behavioral style of the teacher. For good teachers are considered those teachers who speak as it is appropriate in the right moment, who have good mediatory skills, have the ability to accept the individual differences, to direct the attention towards creating of possibilities for choice and not towards the differences and the hindrances in communication.

Communication is an exchange of information about the different sides of reality, about processes, phenomena, facts, an exchange of knowledge. The communicative aspect of communication leads to stimulation and development mostly of the cognitive abilities of the students, of the intellectual sphere of their personality. The teacher has an important role in the stimulation.

The professional activities of the teacher are a sequence of solving of pedagogical tasks that differ in character and content, of collision with various and non-standard problematic situations which, most often, have their manifestation in the strenuous emotional atmosphere. In the completeness of the whole pedagogical process, the emotional element is viewed in an inseparable relation with the rational (conscious) element. It is hard to imagine all the consequences of the negative emotional presence of the

teacher in teaching and non-teaching activities, of his/her irrational behavior despite all „good” reasons for that.

The tendency for the teacher to declare himself/herself for a bearer of infinite number of values is wrong. Having in mind the difficult and extremely dynamic human interrelations and the relativity of all norms and criteria, the concentrating of maximum number of positive qualities in a teacher is a dogma and does not sound serious.

The complex process of juxtaposition of „old” and „new” moral, professional and other schemes finds its expression in experiencing hesitation, uncertainty, doubt and lack of self-confidence as concerning outward factors – institutions and personalities that have been indisputable authorities until now – as well as in someone’s own strengths and abilities. This is strengthened by the underestimation of the teacher’s profession that is magnified with the years and contradicts to the appraisal in words.

The original „coding” of the personality in the profession leads to the necessity of constant self-analysis and self-control, ascertainments as concerning behavior and communication and even the appearance of the teacher. Under certain conditions, this can become an extremity and lead to irrational behavior.

Another factor which can result in a similar reaction is the enormous volume of teaching material (especially for the teachers who teach two and more subjects). This is mostly valid about the teachers who teach in village schools. In order to have a norm of lessons, they have to teach subjects that are not their specialty. Besides the overload, there is also the anxiety that they cannot keep track of the scientific achievements in the fields they teach.

With the help of his/her personal qualities, the teacher creates, pushes forward, modifies and improves but he/she also can also hold back and even cause degradation because the emotional instability, the loss of balance and the irrational behavior are not his/her inevitable companion. The above mentioned characteristics can be found in those who accidentally have become teachers and have not adapted to the profession.

The emotional stability of the teacher is in direct relation to his/her rational behavior. It favors the communication in the educational-upbringing process. The optimistic disposition of the teacher predetermines the success of this process.

An important characteristic of the individual communicative style of every teacher is his/her mood. It is defined as a background of the communication; emotional state which adds a certain coloring to the personal behavior. It turns into an important factor in the communication with the students: a factor which, in certain conditions, stimulates and, in others, hinders the educational-upbringing process.

The ability of the teacher to choose the most appropriate behavior and way to address the students is exceptionally important for the effective communication. Often, the whims, rudeness and neglect of duties are not personal qualities of a certain student but a specific reaction to wrong style of behavior and communication with him.

Communicative styles can be divided into two groups: positive and negative.

Democratic style can be characterized as positive. Communicating in a democratic way, the teacher does not show creativity but is equally attentive to all students of the class. He gives them the opportunity to voice their opinion. In that kind of communication, all participants show their striving for positive disposition. Stereotypes in behavior are not characteristic for the democratic style. The teacher acts according to a certain situation and chooses adequate means for a spontaneous interrelation.

The integrative style also can be defined as positive. In most cases, the teachers for whom that style is characteristic initiate the communication. Considering the interests of the students, they help them and support their initiative in deciding the problem. The integrative style helps the student to realize as an original partner in the communication in accordance with the characteristics and the abilities of his/her age. The frequency of communication depends in a considerable degree on the extent it (through the knowledge and the experience, including emotional, that participants get) satisfies the expectations and the needs of both the student and teacher. In that sense, the integrative style is uniting. The positive styles of communication create preconditions for the development of the student’s talents and, at the same time, his dignity is respected and he is given the possibility of free choice. However, we have direct our attention to the problems which are connected to the well-being of the child when the child has his/her right to be heard but does not have the right of choice.

If these problems are neglected and their specific is not considered, the border between the democratic style and the misplaced liberalism can be crossed. The second is a main characteristic of the liberal style of communication. It is a negative style. In the liberal communication, students cannot realize their social role and do not master permanent positive models of behavior and human values. Concomitant scenes in the liberal communication are the useless appeals of the teacher for active participation in the lesson, for keeping an order, for non-violence of the established school rules, etc.

Therefore, love, attention and empathy in communication should be combined with organization, efficiency and exigency.

Negative styles in communication can have different forms – from liberal to authoritarian. They are rendered to restricted and formal communication; the student is not viewed as a partner and the pedagogical results are under the expected level. The teachers for whom the authoritarian style is characteristic are guided by their own views, desires and assessments; they impose their positions. Monologues are characteristic for that style. The individual approach is not applied and, concerning the student, the teacher is guided by his/her own subjective expectations. The specifics of the concrete situation are not taken into consideration and one and the same stereotypes of behavior and assessment are applied. In certain cases, when the irrational behavior is dominant, the authoritarian style can turn into dictatorial. The dictatorial style is characterized with suppressing of every attempt for independence and initiative of the student.

The remote style of communication is rare but, nevertheless, existing. The teacher reduces his/her contact with the students only to giving the information without establishing any interrelation with them.

The question about the distance between teacher and student arises. The violation of the necessary measure in both directions (excessive distance or its lack) leads to negative results for both teacher and student. The isolation of the students, the distancing from them leads to the false hope that it helps to build an authority. In their striving to be closer to the students, other teachers endeavor to erase the distance which leads to insignificant results concerning their professional realization.

That is why an important task for every teacher is to create his/her own optimum style of communication which has to be adequate to the personality of the teacher and, also, to the personalities of the students. The mechanical importing of different examples of interrelation which do not respond to the individual qualities of the participants in the educational-upbringing process does not lead to achieving the desired results, i.e. the communicative style is individual and depends on the professional, pedagogical and personal qualities of the teacher.

The professional work of the teacher, done in a certain way and under certain conditions (including social ones), reflects on the personality of the teacher and bears the influence of the teacher's personality; certain personal features are formed.

The recent changes in society influence every person, his/her emotional dispositions and the abilities and possibilities to communicate which inevitably leads to changes in the communicative styles. They adapt to the changing conditions and requirements, medium and tasks. The need of frequent redirecting and reconstructing of the communication makes it complex and creative. The complexity also comes from the rich individual originality of the students and the dynamic of it, on one hand, and, on the other hand, from the individuality of the teacher and the way he/she combines the individuality in question with the group of people he/she communicates with.

In conclusion, we can say that the competency of the teacher for optimum pedagogical communication has significant importance (it is an important factor) for the accomplishment of qualitative and effective studying process. It is liable to incessant enrichment and improvement. This must be a priority and striving of every teacher who has self-respect, respects his/her profession and strives to answer to the dynamics of modern society.

References

- [1.] Zhekova, S., Psychology of Pedagogical Mastery, S., **1984.**
- [2.] Leonetov A., Pedagogical communication, M., **1996.**
- [3.] Lisina M., I. Dimitrov., Communication and self-knowledge, S., **1982.**
- [4.] Velichkova A., Personality and inner motivation. Psychology of Personal Control, **1989**
- [5.] Savova G., Pedagogical Communicative in Education, S., **1989.**

- [6.] Petrov, P., Communication in the Modern Educational Process. *Pedagogy*. **1991**, No. 1
- [7.] Ivanov, St. Basics of professional-pedagogical communication. Shumen: Ed. Axios, **2004**

Acta Pedagogica Naturalis

Former Annual of Konstantin Preslavsky University

Journal homepage: <http://acta-pedagogica.shu.bg>

Received: 20.12.2017

Accepted: 09.03.2018

The quality of geography education - vision and challenges

Irena Radeva

PhD student „St. Cyril and St. Methodius“ University of Veliko Tarnovo, Department of Geography,
Bulgaria

E-mail: irene_geo@abv.bg

Abstract: *The new concept of education, which defines new educational goals and policies, necessitates change, and the issue of a new quality of education has yet again become the issue of the day.*

Quality is inherent in each of the key features of the education system - resources, functioning, results. It is measurable in the aspects and levels in which it can be operationalized, and inseparable from the management processes.

The purpose of this article is to present a model for quality management in geography education at school level, taking into account the dynamic nature and the different approaches to the „quality“ category.

Keywords: *geography education, education system, quality of education*

Introduction

The issue of quality is not a new one, but the overall theory of its measurement, control and management is associated with the names of William Deming, Joseph Juran, Kaoru Ishikawa, etc. Working in the period of „system approach“ to ensure quality management, they become the founders of the Total Quality Management (TQM) philosophy [9].

As a philosophical category, quality expresses a substantial definition of objects – „it is in the beginning of the doctrine of existence“, according to Hegel [8].

As a social category, it represents the level of development of society, the quality of life and the standard of living.

We are talking about the quality of products, services and processes, and in this sense it is an economic category.

Quality is also defined as a creative category, reflecting the way of thinking, awareness, the state of the spirit.

Realizing the meaning of the existence of the state through the level of the services of the institutions, it is also an administrative category.

According to the interpretive vocabulary, quality is a property, a sign that separates one essence from another.

ISO Standards treat it as an aggregate of properties and features of products or services that satisfy existing or supposed user needs or as an aggregate of attributes that meet established requirements [9].

In this study, I accept the concept of quality as a complex concept that characterizes the efficiency and effectiveness of all parties in a process, as a result and a way to achieve it.

In this study I accept and basically adhere to the concept of quality in terms of system approach and the theory of quality management. In studying the quality of geography teaching, I accept for leading the factor-process-results.

The appearance of the science for measuring the quality indices (qualimetry) gives the possibility to give quantitative estimates of the qualitative characteristics of products. On the basis of a large number of properties, which can be grouped by their degree of importance for the specific conditions and can be expressed in digital form, qualitative characteristics are achieved. This makes quality measurable also in areas such as education and training. These methods give the possibility to take account of the non-conformity of the product with the requirements set, and the non-conformity to be expressed by any permanent unit of measure.

There is no general theory of quality in education, but the term "quality" can refer to the education system, as well as to the school, teaching, working with students, etc [6].

The Institute of Market Economics is making a research of the status and trends of school education in Bulgaria, examining a number of quantitative and qualitative indicators. The qualitative indicators in this study are identified as more important for the actual performance and effectiveness of the education system, as well as for revealing the real „added value“ of education [10].

The understanding of quality in education is undergoing its evolution - from the quality of the educational product, through the quality of education processes to the quality of management of the education process.

For quality in education I accept:

- the degree of compliance of the provided public education services with the statutory requirements – the Preschool and School Education Act, the State Educational Standards (SED), the National Qualifications Framework and other legal acts;
- satisfaction and realization of the expectations of citizens and users – students, parents, employers;
- the expectations of other interested parties – other schools, universities, the public sector, business and NGOs.

Quality education is an investment in the future and a sure prerequisite for public prosperity, which makes it a priority in the state policy at the moment. By formulating the principles and objectives of pre-school and school education, the law sets out these priorities - equal access to quality education and enhancing the quality of education.

The regulatory framework focuses on quality through the State Educational Standard for Quality Management in the Institutions - Ordinance No. 16/ 08.12.2016 and the objectives set out therein:

- Improving the quality of the education provided;
- Improving individual progress in educational results;
- Organizational development of the educational institution.

Achieving these goals is possible by application of a process approach to the quality management, covering all school activities as a whole (the Total Quality Management – TQM concept) or linked to a specific activity direction – e.g. quality management of geography education.

Teachers have a quality management instrument, adopting it in its dynamic nature, as a continuous process of organizational development, based on analysis of the achievements, planning the next stage, performance of the planned activities, evaluation of the results, and introducing improvements to the work.

The concept of overall quality management puts the needs and expectations (the satisfaction of the user with an educational service) in the highlight. It can be adapted and applied by teachers in geography teaching process on class or student level. It gives the possibility to achieve enhanced efficiency and effectiveness of the educational process. Applying the full cycle in the geography training process

„**planning, performance, verification, action**“ will allow teachers to manage the quality and achieve constant improvement. The teacher, in the role of a natural leader in the education process, should adhere to the principles of maximum coverage of the goals set, but also to provoke cooperation and teamwork, which are the basis for achieving quality performance.

„The vision of the geography education quality is in fact a vision for the development of geography, structured in university and secondary school education. Adequate understanding and functional „schemes“ for its management presuppose the synchronization of educational realities with the sustainable development of the educational system according to needs“ [4].

The ways and means of adapting the science of geography at various levels – in scientific discipline, school discipline and subject of the curriculum – is the foundation for shaping the understanding the geography education process quality.

The following factors are determining the vision of school geography education quality:

- The new educational paradigm;
- The State educational standards for the curriculum, general education and specialized education;
- The developed curricula, textbooks and teaching aids;
- The combination of traditions and the current state of geography education;
- Integration of information and communication technologies in the geographic education;
- The geo-spatial context of geographic education [2];
- The teachers in geography and economics with their professional profile and personal qualities;
- The expectations of users of educational services and the requirements they place.

Under the new educational paradigm, the processes of decentralization are intensified. The educational institutions acquire greater autonomy and more responsibilities regarding the requirements of all interested parties. The geography teachers in educational institutions have a key role in achieving the goals of geography education. They balance between norms, virtues and the constant changes and expectations in society [1].

Geography teachers face many challenges:

- The reduced number of hours in the curriculum - insufficient • The imposed „catching up“ of the teaching material for grades VII and VIII within one school year, due to the completion of primary education after the 7th grade in the Pre-school and School Education Act..
- Convincing the schoolmaster, the pedagogical council, the public council to the importance of geographic knowledge and the integrative role of the subject
- The lack of a comprehensive innovation process even in schools, approved for innovation. The existing disproportion between school digitization and teachers' competencies.
- Determination of the substantive parameters of evaluation and achievement of unity regarding the class/graduation level criteria.

The applied quality assessment approaches based on user satisfaction or state standardized evaluations are external to the system. They present a picture at the entrance and exit of educational stages or grades, without taking into account the processes that take place inside the system. The internal approach assesses the classroom processes, ongoing interaction, and teacher-student communication. The application of such an assessment approach is an extremely difficult task, „highly dependent on the individual roles of the actors“ and a great challenge for the teachers [6].

The modern education faces the challenge to change the traditional concept of quality – from the idea of those who provide service in a quality such as it is perceived by the user. A user-centric vision is needed, satisfying the citizens and other interested parties.

The concept of overall quality management implies a process of continuous improvement by application of the „**planning, performance, verification, action**“ cycle that can be transformed and applied to geography education at school level by each teacher.

The first phase of planning (design) is provided by the geographic and economics curricula. They feature areas of competency as an expected result of the training to achieve general education at the end of

the class and competencies as expected results on subjects of the curriculum. Teachers should plan and set their goals at the teaching content level - themes in line with the expected results, but also with the specificity peculiarities of the users. Proper planning should be based on analyses and conclusions of the achievements.

The second phase of performance is related to the qualities of the pedagogue's research activity - internal (innovation, intellect) and external (career development, motivation, satisfaction) [7]. The performance is related to the teacher's ability to update the curriculum, to apply a variety of methods, to manage the education process, to achieve change in attitudes, relations, etc. This phase depends to a large extent on the basic training of the geography and economics teachers, as well as on their personal qualities and competencies.

The phase of verification and evaluation of geographic learning results ensures sustainability – comparability of the results with those of controls during teaching. Here, in order to identify the quality, clear and precise criteria must be selected. „Evaluation as an activity is at the core of the assessment and improvement of the curriculum itself. As a systematic process of collecting, interpreting and using the information on student education, it can be an instrument for improvement of the education,, [3].

The adaptation phase follows, corrective actions. Teachers need to perform a thorough analysis of the results, so as to create constructive feedback, aimed at planning support and increasing the efficiency and effectiveness of learning in the following cycle.

The systematic implementation of these successive steps as a quality management model in the geography education process can be measured by:

- Achievement of the set goals;
- Sustainability of the result achieved;
- Positive comparisons to other organizations.

The question arises – is the quality character objective or subjective. The points of view regarding „quality“ differ in different users (students, parents and employers), as well as between the different teachers and structures in the education system. I accept that it can only be determined if the system of assessment of the person, who uses the product and who is estimating its quality [11]. Thus, by taking into account the different positions, it is possible to determine the overall multi-faceted picture of the abstract term „quality“, i.e. the approach of unification should not be sought, but rather the one of the coordination of the different points of view.

Facing the challenge of educational realities the necessity of geographic knowledge quality, geography and economics teachers must.

- .. apply alternative approaches in the education process;
- .. find opportunities for activating the students;
- .. introduce an interactive and innovative learning environment;
- .. apply active / interactive training methods;
- .. provide an upgrade of their professional competences;
- .. stimulate the students to become co-authors and creators of their own learning;
- .. provide a friendly relationship in the learning process.

Conclusions:

Teachers can achieve quality management through a targeted application of the cycle: planning, performance, verification, monitoring and process analysis, improvement action, so as to allow new planning to be effected.

To achieve quality management in the geography and economy education process, teachers are required to apply the systematic approach and plan their work on the basis of adequate measurable indicators.

It is necessary to analyze the results of each student, to be linked with activities on improvement of the quality of the educational product, of the process of geography education and the system as a whole.

References

[1]. Vasileva, M. An attempt to construct a model for the functioning and management of geography education. Autjor's paper, Sofia University „St. Kl. Ohridski“, 2015.

- [2]. Dermendzhieva, S. et al. Geography and education. Methodology of Geography Education, Part One. TI „St. St. Cyril and Methodius“, Veliko Tarnovo, **2010**.
- [3]. Dermendzhieva, S., B. Dimitrova. On the benefit of uniform standards for current evaluation. -B: Bulgaria, Bulgarians and Europe - myth, history, modern times, V. Tarnovo, TI „St. St. Cyril and Methodius“, **2011**, pp. 449-461
- [4]. Dermendzhieva, S., P. Sabeva. Socio-cultural roles of educational geography. - B: Intercultural Dialogue and Education in the Balkans and Eastern Europe - Second Scientific Conference with International Participation, ed. „IVIS“, V. Tarnovo, **2012**, p.138
- [5]. Duchenjiev, G., R. Yordanov. Quality control and management, „Softtrade“, S., **2012**, p.12
- [6]. Ivanov, Iv. Theories of Education - Shumen, TI „Ep. K. Preslavski“, **2004**, p.129-138
- [7]. Krusteva, A. Quality of Education - Reality and Perspectives, Pedagogical Almanac, № 1-2, **2006**, p. 49.
- [8]. Hegel, G. V. Fr. Encyclopedia of Philosophical Sciences, Vol. 3, S., LIK, **1998**.
- [9]. <http://tuj.asenevtsi.com/TQM2009/TQM02.htm>, 22.10.2017
- [10]. http://ime.bg/var/images/secondary_education_Adrian.pdf, 22.10.2017
- [11]. <http://deming.eng.clemson.edu/>, 22.10.2017