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Abstracts

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The XLVIIIth National Scientific-Methodological Session "Educational Methods and Means for Chemistry", Iasi, Romania

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- **Student Marlena Pintilie -** Faculty of Chemistry, «Al. I. Cuza» University of Iasi, RO

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- **Teacher Cecilia Foia –** School Inspector of Chemistry, CSI Iasi, RO
- **Teacher Olivia Gornea –** «Nicolae Iorga» Theoretical High School of Botosani, RO

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C-01. Educational purposes

Bogdan-Constantin Neculau*

"Alexandru Ioan Cuza" University, Faculty of Psychology and Educational Sciences, 11 Carol I Bd., 700506 Iasi, Romania

The educational aims refer to the manner in which the teacher assures his didactic design, establishing, in operational terms, what must be accomplished at the end of a lesson or course hours. The operationalization of the objectives is a very important requirement, because it allows the highlighting of the steps necessary to translate into practice a task, a requirement, etc.

The action verbs required by the operational objective syntax are selected according to the operational criterion, respectively of the most precise quantification of the degree of achievement of the proposed objectives. From this list the intellectualist verbs or phrases of the type: to know, to see, to be convinced of, to understand, etc. are excluded.

The formulation in operational terms of the objectives ensure the consistency of the lesson.

Keywords: educational purposes, operationalization, educational ideal, skills

*Bogdan-Constantin Neculau, *e-mail*: neculau@uaic.ro

C-02. Teacher's style - influences on communication in the teaching learning act of chemistry

Danut-Gabriel Cozma*

"Alexandru Ioan Cuza" University, Faculty of Chemistry, 11 Carol I Bd., 700506 Iasi, Romania

Starting from the traditional triad of the student's learning styles: visual – practical - auditory, the characteristics of the teacher's teaching styles are analyzed, expressed through the effects produced on the student in certain training directions, such as:
- choosing the professional route in tertiary university education;
- interdisciplinary teaching with the integration of the experimental aspects in the lesson;
- the effect of some active - participative methods, which capitalize the intellectual availability of the student, on the heuristic level;
- the role of the predictors, for example the specialization followed in high school on the professional path and the role of Chemistry in a future successful career of the student.

The theoretical directions are argued by the results obtained from the pedagogical research carried out in collaboration with the factors involved in the initial training of students for the teaching career, module I.

Keywords: evaluation, professional route, multivariate statistics, interdisciplinarity

*Danut-Gabriel Cozma, *e-mail*: dcozma@uaic.ro

O-01. Recent trends in the perception of the training role and information of chemistry

Irina Pop*, Danut - Gabriel Cozma

"Alexandru Ioan Cuza" University, Faculty of Chemistry, 11 Carol I Bd., 700506 Iasi, Romania

In the age of globalization, access to information benefits from the free movement of ideas and concepts. Chemistry, as a discipline in pre-university education, goes through many reconfigurations, both from the point of view of students (recipients of education), as well as from the teachers point of view (one of the providers of education). Another important decision maker is the labor market, in which Chemistry is found in a wide spectrum of professions. In present study, the authors tried to monitor the respondents' opinions regarding the educational / informative role of Chemistry from the perspective of two categories of school population of close ages (high school students and university students), in order to obtain opinions that generate repercussions regarding the efficiency of teaching. - learning chemistry.

Keywords: perception, chemistry, formative, informative, efficiency

* Irina Pop , *e-mail*: irina.pop1997@gmail.com

O-02. The impact of information technologies on the development of chemistry research competence

Diana Chisca, Eduard Coropceanu*

Tiraspol State University, 5 Gh. Iablocikin Str., Chisinau, Republic of Moldavia

The use of the computer in the educational process has a series of effects with decisive impact on the metamorphosis of the modern teaching methodology: it contributes to the revision / adaptation of the teaching methods, significantly extends the access to the information sources, allows the autonomous development of the personality beyond the curricular boundaries, etc. The rapid evolution of information technologies adapted to the specific field of Chemistry allows the explanation of some fine processes, which cannot be achieved on the classical methods. Carrying out investigative activities with the help of information technologies has a valuable impact on the development of chemistry specific competences, but in particular - on the evolution of the research competence, which allows the autonomous development throughout the entire life, including the development of useful competences for future profession, for example the entrepreneurial competence. To achieve this objective can be used the virtual laboratories, that allow the reproduction, tracking of the effects of chemical reactions, as well as specialized programs for determining the structure of the substance, the energy of the molecular systems, etc. An example could be the Crocodile Chemistry Program (CCP), which can be used at both classroom and laboratory hours.

In order to verify the role of information technologies in the motivation for learning the pedagogical experiment at chemistry was organized by the technique of parallel samples (experimental and control sample). The students of the experimental sample were trained and evaluated with the help of digital resources and those of the control sample by the traditional methods.

The final stage of the pedagogical experiment pursued to determine the level of knowledge, skills and aptitudes of the students at the end of the research period. The students from both samples (62 students) were surveyed and questioned to determine the motivation of learning chemistry and the need to use ICT to improve the quality of education in chemistry.

More than 90% of the students wish to carry out activities using information technologies and the majority believe that the use of ICT in teaching - learning - assessment will contribute to improving the quality of education.

Keywords: information technologies, chemistry, interdisciplinarity, research competence, autonomous learning

*Eduard Coropceanu, *e-mail*: ecoropceanu@yahoo.com

O-03. Interdisciplinary project "Diabetes, the disease that sweetens our blood"

Elena Cojocaru*, Elena Matei

Oituz Gymnasium School, 10 Principala Str., 607365 Oituz, Bacau county, Romania

Health depends on the balance between nutrition and physical activity.

Hypocrate

Education on an appropriate lifestyle, achieved during childhood, creates the premises for gaining healthy skills, which will be practiced throughout his / her life and it will determine maintaining his / her health for a long period of time. Learned as a child to eat breakfast daily, to eat fruits and vegetables, to move around, to appreciate their health, children will practice all these skills in adult life or even will educate their children by applying the same principles. Therefore, the investment in children's health education is necessary because this has effects over generations, contributing to a sustainable development of the nation.

The purpose of this research was to raise awareness among students of long–term harmful effects on the human body of the foods consumption with high sugar content, the formation of a healthy lifestyle, the development of motivation and responsibility for one's own and others' health.

At the basis of this research there are two motivations. More and more children develop type 2 diabetes due to unhealthy eating habits (overeating) and sedentary lifestyle. Hence the necessity of an early education in order to know the risk factors that determines the occurrence of this disease and their avoidance.

We aimed to identify the eating habits of students and parents and to intervene by informing them about the pursuit of a healthy lifestyle for a harmonious physical and mental development.

The pedagogical research was carried out during one school year, the students involved being of the 7th grade. During the research questionnaires were applied to both students and parents in order to identify their eating habits.

The statistical analysis of the data taken from the Onești Municipal Hospital and the Bacau Municipal Hospital was performed, regarding the number of cases of diabetes in both adults and children from the Trotus Valley. Subsequent conclusions were presented and discussed with the students, thus contributing to the structuring and strengthening of the prophylaxis measures related to this disease.

Also during the research were carried out different activities to inform the students about the role of carbohydrates in the body, blood glucose and how it is regulated, the pathology of the pancreas, the labels content of various products frequently consumed by children. It has been found that most students eat carbohydrate-rich foods and juices even though they are aware that high sugar consumption is damaging the human body.

The purpose of the activity was achieved. The subjects were introduced to the topic of eating health, they identified their own eating style and became aware of the factors underlying the maintenance of optimal weight. In the same time, it was confirmed the importance of the medical visits necessary for the early detection of metabolic diseases and the need to discuss such a topic with the students in the school.

Keywords: health education, diabetes, prophylaxis, statistics

*Elena Cojocaru, *e-mail*: fly_rosess@yahoo.com

O-04. Persistence of the perception on the difficulty of the contents at Chemistry in gymnasium

Cristina-Ioana Nastase, Marlena Pintilie*, Andreea-Roxana Tanase, Gabriel-Dănuț Cozma

"Alexandru Ioan Cuza" University, Faculty of Chemistry, 11 Carol I Bd., 700506 Iasi, Romania

In this study the authors tried to answer at the question: "What is the opinion / perception of future / potential Chemistry teachers are currently in the process of initial training, on the difficulty of the specialized content?"

The data obtained, from the analysis of the received answers, were compared with those obtained from a study conducted 10 years ago on the same topic. The study was necessary to follow the evolution of the perception / thinking of the students of the Faculty of Chemistry over a decade, 2009 – 2019, respectively.

It has been confirmed the persistence, throughout the generations, of the same perception about the difficulty degree of the subject of the Chemistry contents at the gymnasium level.

Keywords: initial training, perception, difficulty

*Marlena Pintilie, *e-mail*: marlena_pintilie@yahoo.com

O-05. Identification of the perception of difficulty and the interest degree of high school students on the chapter's content at Chemistry

Florentina-Cristina Bezercu*, Bogdan Pintilioaie, Gabriel-Danut Cozma

"Alexandru Ioan Cuza" University, Faculty of Chemistry, 11 Carol I Bd., 700506 Iasi, Romania

In the present case study, it was tested whether the profile and specialization of the high school and the area or county from which students come influence their perception of the difficulty degree and importance of the Chemistry as discipline studied in the previous year. In the first stage of study, it was applied the questionnaires to the students from two different profiles, "Natural Sciences" and "Mathematics-Computer Science", from two different high schools located in Bacau and Suceava counties, respectively. Also, it was realized through Cronbach's analysis the fidelity of the subjects of a docimological test applied to the 10^{th} grade students at "Arenes" chapter,.

Two questionnaires were designed and applied to the 11^{th} and 12^{th} grade students. These questionnaires were contained items related to the difficulty degree and importance of the chapters studied in the previous year, at Chemistry. A total of 129 high school students answered at the two questionnaires. The collected data were analyzed through the statistical analysis methods. The conclusions were drawn regarding the profile influence and the area of residence on the students' perception about the difficulty and importance of chemistry subject studied in the previous year.

At the docimologic test 49 high school students from the profiles "Mathematics-Computer Science" and "Natural Sciences" answered. To obtain the fidelity coefficient of each subject of the docimologic test the results were analyzed by statistical methods. Based on the obtained results, it was concluded on the item subject that could be removed from the docimological test so that it would be applied at national level.

Keywords: difficulty, importance, fidelity coefficient, questionnaire, docimologic test

*Florentina-Cristina Bezercu, *e-mail*: bezercu.cristina@yahoo.com

O-06. Research on biology of some wooden plant species grown for ornamental purpose, in natural conditions

Brindusa Roman[*]

"Gheorghe Ruset Roznovanu" Technological High School, 647 Tineretului Str., 617390 Roznov, Neamț county, Romania
"Ioan Grigore Teodorescu" High School of Ruseni, 617088 Ruseni, Neamt county, Romania

Education represents an essential quality of civilization in each country, therefore it is necessary to pay special attention to all the issues raised by didactics and by the psychopedagogigal approach of the diverse school subjects, especially to the scientific school subjects due to their high degree of difficulty and at the same time because of their applicability to day-to- day life.

The progress in society has started to depend mostly on the products of education, on the abilities, knowledge, skills and attitude of this uniquely inexhaustible source –"the grey matter". School and teachers are thought to be the main actors promoting the development of this inexhaustible treasure.

We live in a knowledge - based society, a society in each today's young people will build tomorrow's society. To fulfil this aim they need to have range competences, to take decisions in differed professional situations.

It is vital to build a connection between the related subjects: Physics, Chemistry and Biology. This is a necessary condition required by:

- the experiential and analytical dimension of these subjects which leads to the development of important competences, such as exploration/ analysis and problem-solving;
- the diversification transfers of the knowledge transfers between the subjects belonging to the same curriculum area „Maths and Sience"- with a view to facilitating the in depth – study of each subject;
- a certain important emphasis on the technological acquisition;
- the development of values and attitudes which lay the emphasis on the way in which Maths, Physics, Chemistry, Biology and Technology impact on the practical problems raised by today's social live.

Keywords: ornamental plants, interdisciplinary approach, information transfer

[*]Brindusa Roman, *e-mail*: brindusa.roman@yahoo.com

O-07. Chemistry and education for health: integrated activities

Alina Pintea[1], Roxana Timofte[2*]

[1]*"Babes-Bolyai" University, Faculty of Chemistry, 11 Arany János Str., Cluj-Napoca, Romania*
[2]*"Babes-Bolyai" University, Faculty of Faculty of Psychology and Educational Sciences, 11 Motilor Str., Cluj-Napoca, Romania*

Health education is a necessity nowadays, both in developed and in developing countries. It is believed that through health education the population could be become more responsible and could become more knowledgeable. There is a diversity of sources of information; however, each person should be able to select the relevant information, necessary for development and for enhancing the quality of its own life. Hence, health education should be started at early ages. The health education teacher' role is an important one, since the teacher is responsible for the communication of information regarding health education in a correct and concise manner. It is necessary to train the health education teachers through specialized courses and to assure that the teachers are fully prepared on the topic and on the methods used to instruct pupils in this field. Family must also be involved in health education of children, for health education principles to be implemented at home. Participation of professionals such as medical doctors, police personnel, firefighters, church clerics, social service personnel is stimulating the interest of pupils. By participating in health education classes pupils receive useful information which are necessary in daily life, and they should be able to select all the factors which could lead to a healthy life. Pupils could obtain information regarding health education not only during classes dedicated to health education, but also during Chemistry class. This could be attained by integrating the two subjects. Herein is presented a lesson plan on the topic Vitamins and their role in organism, with the participation of medical doctor and Chemistry teacher.

Keywords: health education; chemistry and health education, integration of activities

[*]Roxana Timofte, *e-mail*: roxanasidonia_timofte@yahoo.com