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Abstracts

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C1. Self-assessment, Inter-assessment and Students Perceptions on Ongoing Evaluation

Anca – Florina Creţu[1*], Mihaela Morariu[1], Dănuţ-Gabriel Cozma[1],Carmen Mita[1]

[1]*Faculty of Chemistry, "Al. I. Cuza"University, 11 Carol I Bvd., 700506 Iasi, Romania*

The indicators used in this study were designed and implemented by the authors based on examples of good practice in pedagogical research, in collaboration with teachers conducting the seminar / laboratory disciplines in the area of Inorganic Chemistry. The data were monitoring and collected during the first semester of the 2014-2015 academic year, for the IIIrd year students enrolled in Chemistry and Technological Biochemistry specializations. This study represents the first attempt to and highlight some indicators order to detrmine if they can be used for assessment methods of improving the ongoing evaluation.

Self-assessment implies that the student knows the theme of the assessment subjects. This can be an objective, a specific competence and/or a specific item which were previously communicated to the test application. The student is forced to analyze some issues falling within the learning and hence, following this approach, learning itself can be improved and cause significant increases in performance.

* Corresponding author, e-mail address: anca.cretu01@yahoo.ro

C2. Traditional and alternative assessment methods. Applications to learning unit „Metals”

Adrian Hagiu[1*], Doina Humelnicu[2]

[1]*”Dimitrie Sturdza” Secondary School, Popesti, Romania*
[2]*Faculty of Chemistry, “Al. I. Cuza”University, 11 Carol I Bvd., 700506 Iasi, Romania*

In this paper we evaluated the degree of knowledge assimilation and quality of the materials developed by students by applying a summative assessment test and the portfolio at the end of the chapter "Metals" at two classes VIII A (control class) and VIII B (experimental class). The main investigated problem was to determine progression or regression of students knowledge at the end of learning unit.

The results of the experimental work revealed the beneficial effect of modern teaching and assessment methods on developing students' intellectual capacities.

Recognizing the links between different evaluation methods of learning leads to justifies their usage. The maximum efficiency is expressed as a combination of these, making the assessment process in multiple forms and functions, fully integrated in the didactic activity.

Based on specialized literature as well as practical experience gained by working with students, we wanted to show that the usage of modern methods in teaching chemistry and in knowledge assessment in combination with traditional and alternative (complementary) methods will ease acquires knowledge and practical development to increase intellectual capacity of students.

* Corresponding author, e-mail address: ady_lumi08@yahoo.com

C3. Chemistry club-form of completion of the didactic activity at "Disperse systems - Applications" theme

Adriana Băiceanu[1*], Paula Lorela Iancu[2], Lucia Odochian[1]

[1]*"Ion Holban" Technical High School, 16 Pantelimon Halipa str., Iasi, Romania*
[2]*Technological High School, 14 Mihai Eminescu str., Harlau, Romania*
[2]*Faculty of Chemistry, "Al. I. Cuza"University, 11 Carol I Bvd., 700506 Iasi, Romania*

The Chemistry club themed ,,Disperse Systems - Applications" is open to students from high schools, especially those of technological profile. The goal of this is to complement knowledge regarding the use of abundant and cheap materials with semiconductor, insulator or adsorption properties in areas of great practical importance.

By organizing this circle it was intended to promote student-centered methods, throught the exploration of reality, systematic observation, experiment, research, learning through discovery - methods based on real action such as: practical work, methods and processes that stimulate the creativity.

The circle theme was performed by students and supported by the reports resulted from systematization of a rich bibliography and experimental study on properties of Mirsid volcanic tuff (Salaj county) and highlight its use in different areas.

* Corresponding author, e-mail address: adibai2005@yahoo.com

C4. Modern approach of chemistry teaching. Application to lesson entitled „Natrium”

Adriana Condrea[1], Dănuț - Gabriel Cozma[2], Anca – Lorena Iojă[2*]

[1]*” Miron Costin” Theoretical High School, 12 Musatini str., 700591 Iasi, Romania*
[2]*Faculty of Chemistry, “Al. I. Cuza”University, 11 Carol I Bvd., 700506 Iasi, Romania*

This paper aims to present the results obtained from an experiment through which we tried to find suitable teaching strategies to optimize learning of the "Natrium" lesson content. Two students groups in the IX[th] grade were involved in the experiment, heving specializations in mathematics-informatics and natural sciences, respectively. Both classes had covered the same content elements, according to the same algorithm study, but through different teaching strategies:

- The control class - predominantly traditional teaching methods, students followed the teacher’s direct instructions (heuristic conversation, explanation, questioning, laboratory experiment).
- The experimental class - alternative assets, based on self-training on communication, collaboration, discussion, teamwork, acceptance, determination, freedom of choice, the courage to express their points of view (Ex.: mosaic technique, brainstorming, I know - I want to know - I learned, the "quintet" technique, tree of ideas, chemical crossword, project activity - lectures, computer training, virtual experiments. These methods have been harmoniously combined with some traditional methods.

The knowledge acquisition on the structure of sodium atoms, natural state and uses of sodium compounds was done by the students under the motto: "what the student has to learn to do, learn by doing". Obtaining methods, physical and chemical properties of sodium, determined by the electronic shell structure of Na, have been highlighted by laboratory experiments based on activity sheets or virtual experiments.

In order to increase learning efficiency were used modern means of learning: computer, educational software, Intuitext programs set, experimental worksheets, journals, exercise books, tools and reagents.

Assessment of the students competences was made by teacher-student conversation, following up the work during experiments and final written evaluation. The control class achieved an average 7.15, while the experimental class score was 7.64, at the final evaluation tests. The value of the experimental class results indicate an increased efficiency of applied strategies.

Teaching experience has shown that there are no good or bad methods, each teaching method leading to targeted skills if it is properly selected, depending on the particular age of the students, grade level, type of lesson, sequence of lesson.

* Corresponding author, e-mail address: anca.lorena20@yahoo.com

C5. Student needs related to school, family and society requirements. Identifying opportunities for facilitating networking between systems

Iurie Ungureanu[1*], Viorica Moraru[1], Dumitru Babin[1], Rodica Ungureanu[2], Svetlana Țurcanu[3], Valeriu Mărcauțan[4], Galina Harabagiu[5], Marian Burducea[6]

[1] *„B. P. Hasdeu" Theoretical High School, 19 Cehov str., Balti, Moldavia*
[2] *Nr. 3 Vocational School, Balti, Moldavia*
[3] *„Vasile Alecsandri" Theoretical High School, 16A Conev str., Balti, Moldavia*
[4] *„Alexei Mateevici" Middle School of Elisaveta, Balti, Moldavia*
[5] *„Dumitru Matcovschi" Middle School of Cotiujenii Mici, Singerei district, Moldavia*
[6] *"Al. I. Cuza"University, 11 Carol I Bvd., 700506 Iasi, Romania*

This paper presents the point of view of the authors on the students needs relative to school, family and society, and identifying opportunities for facilitating networking between these systems. The basic problems of the educational actors in training and personality development of the children are family and positive social behavior, as well as the and influenc of their social backgrounds. The latter is a key factor in goal achievement at a school-family-society level.

Therefore, the Maslow theory of needs highlights each individual's needs and proposes new solutions and paradigms in the field.

Necessity (need) can be solved by elimination of some issues. Nowadays adolescent students issues are complex needs which are generated by their surronding environment: the family, friends, the "gang", etc., in fact a complex environment called society.

Social pressure which aims to create a "good","listener", "obedient" student by school and society, turns him to a victim of system, of some stereotypes, labels and a culture that are sometimes not well defined. All behaviors calsiffied as "naughty" which are contrary to the rules imposed by the system, leads to inhibition, introversion, non-communication, regression, poor self-esteem, confusion, depression and, sometimes, fatal drama.

From the socio-psycho-pedagogical perspective, the student / child already goes into school with some cultural knowledges, experiences and investments from his/her family and social environment. Thus, the student comes with a set of needs that may be more or less satisfied. In this context the concept of slacker student, mediocre student and prize-winning (olympic) student were created without asking why a student is slacker and another is rewarded regardless of their intelligence index and education level.

* Corresponding author, e-mail address: iurie_ungureanu@yahoo.com

C6. Influence of differentiated teaching methods on particularities in learning process of students

Marius-Constantin Pintilei[1*], Dănuţ-Gabriel Cozma[2]

[1] *"Mihai Eminescu" Technological High School, Dumbrăveni, Romania*
[2] *Faculty of Chemistry, "Al. I. Cuza"University, 11 Carol I Bvd., 700506 Iasi, Romania*

Modern approaches of education seem to value student centered education. Students are very different between each other, and mass education using a rigid pattern does not give the best results. Thus, customizing education for each student is the subject of both academic studies and the countless comments from current school practice.

This paper discusses about the necessity of using differentiated learning approach and methods and their selection mode based on the specifics of each student groups.

Because a class has about 28 students, we can not apply one way of learning for each student. This would require at maximum teacher effort and would also require a very long time. Therefore it is reasonable to divide the class into 2-3 subgroups of students by some common features. In the first semester of 2014-2015 school year the students have benefited from classical and indiscriminate learning. The marks obtained in the written works were a part of the database. In the 2nd semester students have benefited from differentiated learning. Data collected (grades from written examination) were compared with those obtained in the first semester. In the differentiated interpretation of results, learning particularities of students were established while also taken into account other causes, such as: the influence of seasonal agricultural work when students help their family, commuting conditions, family conditions, economic and social developmen and lack of social motivation.

In differentiated learning were used learning methods adapted to individual learning styles and characteristics of students. Therefore, in the preliminary stage of the didactic experiment, a questionnaire was a pplied in order to establish the individual learning style of students. Students with a visual learning style were helped by all mean through photos, drawings, video fragments, while those with a practical learning style were aided by assisted modeling and solving exercises and problems.

This paper discusses the need for differentiated learning approach, differentiated learning methods and their selection depending on the specifics of each group of students.

* Corresponding author, e-mail address: pintilei_marius@yahoo.com

C7. A chalenge for research: unusual utilization for ordinary things

Ofelia Marioara Arvinte*

Secondary School of Cosna, 2 Principala str., Cosna, Romania

We live in an era in where things change rapidly. The children and young people must adapt to these changes on the fly. The component systems of society evolve more slowly, including the education system. Traditional learning methods such as lecture and explanation are becoming increasingly inefficient. Today's students, raised with an excess of visual stimulation, are no longer able to folow an explanation that requires more time. If we could present them all information in pictures, it would be much more efficient, but such means are often missing. Computer simulations in AeL software, show some attraction at first but soon turns into a game to find the right answer to whatever is asked. And then how do motivate students to acquire knowledge of chemistry? when on the Romanian labor market the chemical knowledges are not among "favorites". Learn how to write formulas and chemical reactions are an uncomfortable, especially in the early stages of the study of chemistry.

A challenge for the teacher is to show students that, beside physics, chemistry accompanies us at every step that it is everyone’s companion in all their makings. Thus, it can be maintained the native curiosity of children and their desire to know.

The challenge for students is to understand what is really going on in simple, ordinary things that they meet / do daily, to know and be able to answer to the question "Why?"

Starting from these premises the interest of students might be stimulated by practical activities using ordinary substances in unusual contexts. In this regard, during a laboratory lesson at the 'Salts' learning unit, the students were put in problem situations: to discover new ways to use NaCl (salt) and acetic acid (vinegar) - two compounds frequently used in domestic activity. The students sometimes gave unexpected answers, highlighting their creativity.

* Corresponding author, e-mail address: ofeliaarvinte@yahoo.com

C8. Algorithimization-method that facilitates the acquisition of chemistry knowledge in secondary school

Luminiţa Iuraşcu*

No.1 Secondary School, Tanacu, Romania

Is it possible to teach chemistry without an algorithmic method? Is algorithmization an option as a method to teaching chemistry? In this study the author has tried to answer at these questions. Algorithmization is a teaching method that guides the student to a safe end on a relatively narrow, but very well defined path.

Like any teaching method, this one has some advantages - essentialization and structuring of the content, avoiding unnecessary searches and errors, saving time in the teaching process etc, but also disadvantages – it may lead to uniformity in thinking and reduce creativity, and can also stimulate mechanical learning.

Starting from the definitions of algothmization, a classification of different algorithms used in teaching chemistry was performed, then applied in teaching of the concepts of "percentage concentration of the solution" and "chemical formulas".

In this study were involved students from classes VII A and VII B. Class VII B was used as control class (algorithmic method was not applied), while the two themes were taught to class VII A using algorithmization. At the end of the experiment the same tests were applied to both classes. Results were abvious, leading to a firm conclusion: the algorithmic method facilitate the work of the teacher in teaching certain chemical concepts and help the students to find the safest way in understanding various scientific concepts and solving chemistry problems.

* Corresponding author, e-mail address: iurasculuminita@yahoo.com

C9. Aspects of participative learning by problematization of „Acids" unit learning

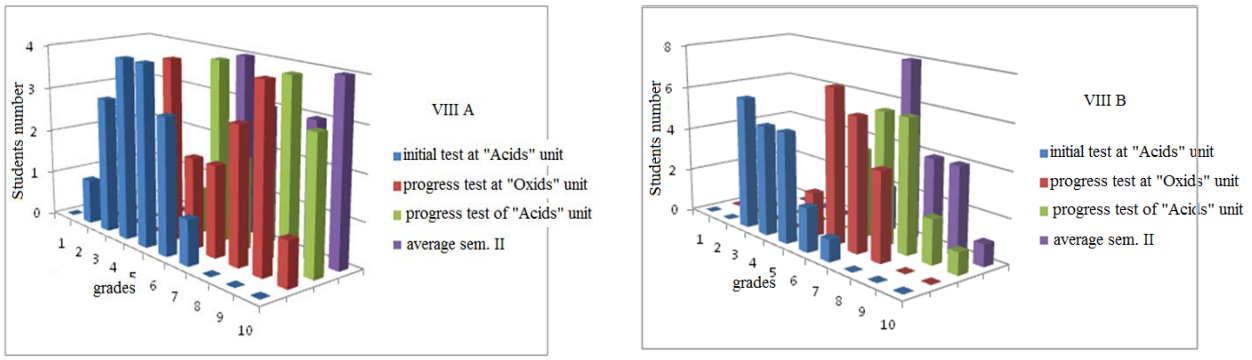
Cristina Rusu[1*], Rodica Rusu[2], Nicoleta Cornei[3]

[1]*"Nicolae Iorga" Secondary School of Iasi, 7 Hlincea str., Romania*
[2]*Technological High Shcool of Food Industry, Tibana, Romania*
[3]*Faculty of Chemistry, "Al. I. Cuza"University, 11 Carol I Bvd., 700506 Iasi, Romania*

The paper presents the study of problematization as a method applied in study of chemistry and some aspects of active learning of the "Acids" unit by using problematized work sheets and working tests to assess learning outcomes. The study involved pupils of classes VIII A (16 students) and VIII B (19 students) from the Technological High School of Food Industry of Tibana village, Iasi county.

• Initially, before studing the "Acids" unit, a test was applied to the both classes containing three questions in the classic version;
• At class VIII A teaching was performed using problematized work sheets.
• At class VIII B teaching concepts related to "Acids" unit was done using classical methods of teaching-learning.
• At the end of the „Acid" study unit an assessment test was applied which contained problematized questions, problems or situations. The subjects had the same difficulty at the both classes.

The results were compared with scores from an assessment test applied after studying the "Oxides" unit and the average of the two semesters of the same academic year. The tabulation of results was drawn in two databases. The statistical processing of data revealed positive and negative aspects of using the problematization method as an active teaching-learning method of "Acids" concepts.



a) b)

Figure 1. The results obtained by students of classes VIII A (a) and VIII B (b) in the 2nd semester.

Using the problematization method pointed out that: the method creates conditions for developing of an independent minds; it enhance the ability to use new informations, introduces elements of difficulty and requires time for preparation and solving problematized work sheets and tests. Supervision of the didactic process must take place simultaneously with independent effort of the students. The method is more effective for students with average and above average intellectual levels.

* Corresponding author, e-mail address: rusucristina69@yahoo.com

C10. Teaching strategies for the development of communication abilities of students in Chemistry

Adina Tudurache[1], Doina Humelnicu[2*]

[1]*Children's Palace of Iasi, 2 Carol I Bvd., 700505 Iasi, Romania*
[2]*Faculty of Chemistry, "Al. I. Cuza"University, 11 Carol I Bvd., 700506 Iasi, Romania*

If we imagine a pyramid at chemistry as a discipline, its base would be ensure a solid theoretical knowledges, the next level will comprise a set of practical abilities, and at the top of pyramid would sit the ability to correlate the theory with the practice. The practical applications are performed to achieve their own new educational products (theories, generalizations, theories developed by experimental verification etc.) or to produce new materials for various applicative fields related to chemistry: medicine, pharmacy, chemical industry etc. In each case the current student - future adult has been, is and will be in the situation to communicate with other people; to make himself understood, to sustain and valorize his/her ideas. This is the main argument which can justify an educational endeavor based on strategies focused on the communication abilities of students.

Being a teacher does not only imply having a numerous specialized knowledge, but also to have the ability to transpose, communicate and streamline reltionship with students based on the answers to the questions: why?, what?, how?, which?, where?, to whom?. Each stage of development is accompanied by examples of good practice which can improve the communication abilities of our students.

If are taken into account "the rules" of efficient didactic communication: to listen – to value the opinions and interests of others; to notice – to be interested in what is happening in the communication situation and be understood; to analyze and know the situation of the receiver; to express yourself - to be exposed to opinions and feelings about the communication subject; to control – to monitore the quality and effectiveness of communication, then the students will have the communication abilities required for their personal development.

* Corresponding author, e-mail address: doinah@uaic.ro