

Abstracts

for

**The XLVIth National Scientific-Methodological
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Chemistry”, Iasi, Romania**

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C2. Experimentation an items set evaluation in the context of learning program of chemical concepts and phenomena at learning unit "chemical reactions. stoichiometric calculations based on chemical reaction equations"

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Starting from the premise that exploring the universe of chemistry is an essential way to develop creativity and critical thinking, we posed the question if lessons that involve actively students in solving of some problems that pursue clear and well-organized goals are those that provide the learning more profound and lasting. Also, if the application of the various evaluation methods will stimulate motivation for learning, increase school performance and develop the self-evaluation capacity of students.

The main objective of the research was to improve the organization and management of chemistry classes using various assessment methods, mainly written, oral or based on the chemical experiment.

In study was involved the 8thA and 8thB grade students from "George Tutoveanu" Secondary School Barlad during september - october 2015, for 5 weeks:

- To both classes, an initial test was applied. The test took into account both the level of knowledge acquired by pupils in the 7th grade and the quality of students' thinking.

- To the experimental class (8thA), throughout stage, students were examined in each lesson using methods and techniques of creativity stimulation to promote interactive learning. A form of evaluation of the gained knowledge is the laboratory experiment. This method was applied by using worksheets, experiments and "cube" method for assessment of students' knowledge at the learning unit "Chemical Reactions. Stoichiometric calculations based on chemical reaction equations".

- To the control class, the teaching method was common, using classical assessment methods (written evaluation test).

- At the end of experimentation period the students' evaluation was carried out both by analysing their individual portfolios and applying a final test, the same to both classes, experimental and control.

Achievement of practical assessment based on the chemical experiments led to better results, reflected in higher scores to the written and practical evaluation tests obtained by the 8thA class students, compared with those of 8thB.

The application of modern means and methods in the assessment process increases its value when it is combined with classical methods, differentiated working groups and teamwork.

Keywords: assessment test, chemical experiment, chemical calculation

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O1. Difficulty estimation of inorganic chemistry and physical-chemistry content from high school students perspective

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Docimologic fidelity term designates the agreement or the expected stability of some similar measurements and also presumes repeated comparisons of some sets with results that engage the scoring system.

Docimologic fidelity refers to variance value that appears in case of some self-scoring or repeated didactic evaluation. Therefore, this context implies the differentiation of *extern docimologic fidelity* and *intern docimologic fidelity*. Extern docimologic fidelity unites all the individual variances that are registered at self-scoring level of a student or a didactic scoring realized by a professor. We refer to the differences that have occurred over time inside of the same type of evaluative principle or self-scoring principle.

The *extern docimologic fidelity* is not centered by the temporary variations of individual or a professor evaluation, but it is the extern variance manifested at the level of relation in self-evaluation - didactic evaluation couple. The responsibility of scoring, classifying or ranking is assumed by an extern evaluator, that is different from the one of intern evaluator.

Keywords: Evaluation, docimologic tests, validity and fidelity estimation tests

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O2. The effects of extracurricular resources used in the implementation of the interdisciplinary optional class: chemistry-physics-biology-mathematics on chemistry teachers and on their didactic activity

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The extracurricular resources used in the implementation of the interdisciplinary optional class: “The Human Body - A Lively Lab”, proposed to the 8th Grade for one school year foresaw a study visit for the Chemistry teachers as well. This method has been chosen to stir other teachers’ interest for this optional class who have not taught it yet, but who could be interested in it after they have noticed its applicability.

I have designed a questionnaire to analyse the impact this study visit has had on the teachers who have attended it, on their didactic activity and on the necessity of such an optional class in which interdisciplinary notions are used successfully. 24 teachers who teach in middle schools, members of the Pedagogical Circle of Suceava area, have been questioned about it. Its questions have aimed at the teachers’ reactions after the study visit that took place as the main activity of the Pedagogical Circle in the first term of the school year. The activity took place on 29th October, 2015 as a visit to “The Factory of Antibiotics-Iași” and it consisted in a description of the activity of the medicine producing department, watching a documentary and the visit of some departments of making products based on nystatin and the department of making parenteral (injectable) products.

The questionnaire consisted of 9 closed-ended questions in Linkert scale and it has been filled in by the interviewees at the Pedagogical Circle of Suceava area in the second term of 2015-2016 school year on 12th May, 2016. I have chosen this date for the questionnaire because the teachers had the time to notice and to draw their own conclusions about the effects this activity has had on their instructive-educative process. I mention that the participants have not known the content of the questionnaire beforehand.

Giving a questionnaire after a long period of time is advantageous because the emotional impact as well as the novelty of the information is excluded. In contrast to an immediate response to this questionnaire which can be misleading because of the hurry and tiredness after an exhausting activity, giving a questionnaire after a long period of time has the advantage of using the experience of the didactic activities held after that study visit. Their opinions show that the extracurricular resources which we use in class increase the value of the didactic activity.

Key words: extracurricular resources, optional class, questionnaire

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O3. Laboratory experiment in the efficiency of chemistry training of gymnasy students

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The lab experiment is an heuristic method used for checking, studying, taking shape and consolidating the knowledges and the psychomotor habits, leads the students from observing to checking and applying the phenomena in practice, succeeding the hierarchical steps of learning. The topics that we have chosen the acids, the bases and the salts are compounded substances classes very important in biological and industrial processes but also in daily life. To study the efficiency of the lab experiment in streamlining by the gymnasium students of the properties of the compounded substances that we have already mentioned, the following steps were done:

- registering and interpreting the results that the students got at chemistry in the previous year (2015-2016) at two 8th grade different classes.

- pursuing the students' progress also at physics and comparing the results with those from chemistry

- performing of alternative experiments at the two classes, at the three chapters as it follows:

- a class students made experiments with acids and salts, but not with bases;
- the other class students made experimental activities just with bases.

-applying tests for each chapter and interpreting the results by statistic methods;

-applying final tests at the end of the school year with points for each item and results were graphically interpreted;

- applying a questionnaire concerning the professional orientation of the 8th grade students, but also the usefulness of chemistry in their wishing job;

- applying a questionnaire to the teachers that teach chemistry, physics and biology concerning the utility of the method.

Starting from these considerations we have tried to capitalize the valences of the lab experiment as a way of gymnasium students training in acquiring the specific chemistry concepts.

Keywords: laboratory experiment, acids, bases, salts, statistics

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O4. Development of practical and scientific research competence to students in chemical and biological disciplines study

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Current curriculum policies are centered on developing skills by learning activities centered on students. In this context, the interactive strategies applied by teachers to achieve the expected learning outcomes become important. The subject of this paper refers to the formation and development of scientific and practical investigation skills at students during chemistry, biology, physics, etc. training. All these involves the use of observation, experiment, project and investigation as interactive learning-assessment methods directed towards the efficiency of the educational process and modernization of the methodology of training of practical and research competences in the subjects domains.

The focus is on the practical aspects of the research, metacognition, self-management, which gives to the students the opportunity to show not only what they know but also what they can shape and create. Thus, a close connection between theory and practice is achieved, promoting the development of students intellectual thinking capacities. The scientific research competence is an important condition for success, contributing to the formation of an innovative personality able to actively integrate into social life.

Keywords: competence, learning through research, metacognition, self-management, investigative culture

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O5. Factors influencing the aspects of learning differentiated in classes IX

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The study was conducted for two school years (2014-2015 and 2015-2016) in two 9th grades from ”Mihai Eminescu” Technological High School, Dumbrăveni, Suceava county. According to our teaching experience, we can conclude that the school performance of students is influenced not only by their psychological profile but also by their socio-economic background. These issues were revealed after we analysed the results of two applied questionnaires: one based on students learning styles and the other on their studying conditions (commuting, presence or absence of parents in their lives, the time that they spent with the housework).

In the first semester of each school year, for the students involved in present study it used mainly classical learning methods. In the second semester, using innovative and stimulating techniques of teaching and learning strategies, differentiated learning was practiced that stimulated and training each learning style. For example: visual learners will learn better and faster through images, graphics and charts; auditory learners will often use phrases like „I heard it.” or „It sounds good.” and they will prefer verbal explanations and reading aloud. As far as kinaesthetic learners will be helped by teaching methods that involve working with different didactic objects or materials.

The students were assessed in two written tests in each semester. From the collected data the following aspects were analysed and interpreted: a) the influence of the biannual assessment on grades; b) the impact of the students learning style on their marks; c) the influence of commuting phenomenon and the presence or absence of parents; d) the consequences of the workload of the students in the household on their school results.

Keywords: differentiated learning, learning style.

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O6. Interdisciplinary treatment of the "water" concept from chemistry–physics–biology–geography perspective

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The paper presents an interdisciplinary approach to the "Water" concept for gymnasium level education.

Water is a substance with surprising physical and chemical properties, which makes it possible to say that it is different from the rest of the known substances, being the source of life and the environmental factor that creates the most spectacular views. By interdisciplinary treatment of the concept at the gymnasium level a favourable environment for free speech of pupils is created, the ability to apply some concepts in practice develops, as well as the flexibility of thinking which it helps them to clarify certain themes.

The present study addresses to 6th, 7th and 8th grades and watching the results and responses of students when they working with pupils of different ages. This experience favored: knowledge updating of students from higher classes, opening up interest of 6th grade students in certain areas by coming into contact with new information.

Keywords: interdisciplinarity, science, water, experiment

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O7. Differentiation and individualization - measures for the efficiency of training

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Modern educational approaches advocate for a differentiated and individualized didactic approach centered on the pupil. This type of approach seems impossible to achieve under the conditions of mass education, with crowded classes and too little time to learn at school.

In the case of education organized on classes and lessons, differentiated training has proven over time to be more advantageous than strictly individualized because the second type of training is expensive and difficult to accomplish.

Since no human being is identical to each other and not all students have the same rhythm of learning, this methodical-scientific work has the role of highlighting how it can be efficiently achieve the differentiated and individualized learning in mass education. In the case of differentiated learning, the didactic strategies imply: improving the teachers didactic competence, selecting the most appropriate methods and means of learning according to the peculiarities of each class of students, differentiated tasks and in-learning in heterogeneous microgroups, overtime training, etc. Individualisation of learning can be accomplished by development of specific routes for students who are preparing for certain levels of training and want to accelerate learning by compensatory programs.

By efficient approach of differentiated and individualized learning the teacher can achieve his primary goal: the learning success of all his students.

Keywords: differentiated learning, individualized learning, school progress

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08. Dispute, aggression and violence at children with risk behavior

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The concept of *aggression* is defined as the individual desire to persevere and use force to resolve the dispute (Luckenbill & Doyle, 1989, p. 423). If aggression is transposed into *violence*, it is affected by the disputants characteristics of and their predispositions to degenerate the dispute.

Victimization involves persecuting a person as a result of lifestyle, delinquent friends, drug and alcohol consumption, etc. Violence and victimization are, in part, determined by the circumstances and events that lead the conflict.

Children who exhibit risk behaviors are children most often coming from families where they have been victims of violence and / or witnesses of violence among family members and are particularly vulnerable to victimization.

Concerning the concept of transformation of the *dispute*, the most expressive acts of violence usually start with a dispute over relatively trivial issues. Violence often evolves from "character competitions," where each participant attempts to gain "justice" most of the time by revenge. From here starts or appears violence and the children end up as victims of conflict in most cases.

The concept of deviant lifestyle or deviant or risk behavior is characterized by possibility to expose children at situations where the end result is violence - placing children at a high risk of victimization.

In present study, the sample comprised 125 children from the "Petru Rareș" Secondary School from Harlau town. The children under study were aged between 11 and 15 years, whose level of education was lower than what it would expect from their age, with disorganized families and poor financial situation, from Roma families, etc. The data show that most of the questioned children were involved in conflicting disputes, aggressions and violence.

Keywords: dispute, violence, aggression, risk behavior

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