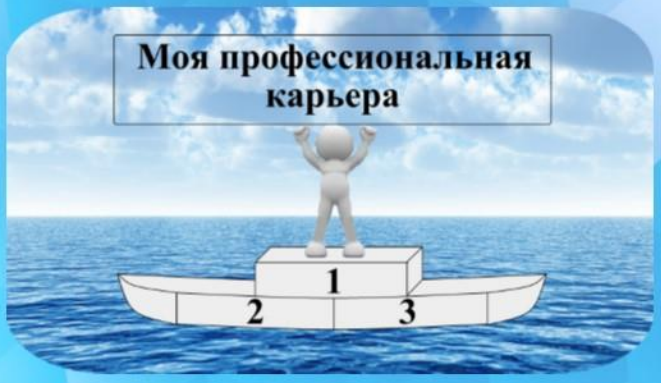

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ОБРАЗОВАНИЕ И НАУКА В XXI ВЕКЕ

Выпуск №10 (том 3)
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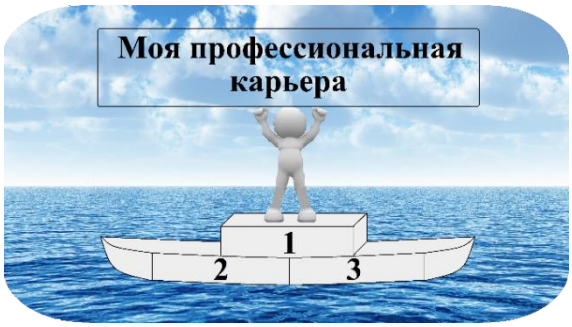

Международный научно-образовательный электронный журнал
«ОБРАЗОВАНИЕ И НАУКА В XXI ВЕКЕ»

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Сборник содержит научные статьи отечественных и зарубежных авторов по экономическим, техническим, философским, юридическим и другим наукам.

Миссия научно-образовательного электронного журнала «ОБРАЗОВАНИЕ И НАУКА В XXI ВЕКЕ» состоит в поддержке интереса читателей к оригинальным исследованиям и инновационным подходам в различных тематических направлениях, которые способствуют распространению лучшей отечественной и зарубежной практики в интернет пространстве.

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Материалы публикуются в авторской редакции. За соблюдение законов об интеллектуальной собственности и за содержание статей ответственность несут авторы статей. Мнение редакции может не совпадать с мнением авторов статей. При использовании и заимствовании материалов ссылка на издание обязательна.

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Название публикации: «DEVELOPING INTELLECTUAL CAPABILITIES OF STUDENTS IN TEACHING CHEMISTRY»

Annotation: The author defines the place of intellectual abilities in the structure of students professional competence of students. This article presents the results of the study of students intellectual abilities and the ways of their development.

Key words: competence, professional competence, intellectual competence, intellectual ability.

Introduction. In the future, professionals working in the field of production will have to live in the socio-economic conditions of the labor market, which include: professional and social training, competence, responsibility for the results of work, individual and group decision-making, debates and It is required to have the same quality as finding a solution to the conflict. It is necessary to learn to work in a team, to know the sources of information, to be able to process it, to be able to distinguish the main ones. I try to form these general learning ability and skills in the classroom.

Based on my own work, I think it is possible to say A.A. Okunev, N.N. Paltishev, I.S. Y.Akimanskaya such conceptual cases as follows:

- personal approach, pedagogical achievement, pedagogical cooperation;

- to remember not by memorization, but by thinking;

- organic connection of individual and collective activity;

- generalization of in-class and out-of-class forms of work;

- conceptual cases as individual training.

Students' intellectual abilities should be developed based on their personal characteristics: age, psyche, level of knowledge acquisition. Students are required to identify their potential to acquire new knowledge. To achieve this goal, the following tasks are required:

- to create a win-win situation for every student;

- Involve everyone in the activity of depicting the active imagination of the student;

- creating opportunities for students to work:

a) at its own possibility; b) at the level of its complexity - productive (reproductive) mark (“3”), analytical (“4”), creative (“5”);

- creation of didactic materials, selection and development of didactic games, which include differentiated developmental tasks according to the level of complexity;

- To increase the share of independent work of students in the lessons to 70%;

- Facilitate the development of students' communication skills through the organization of various forms of imaginative activities in the classroom;

- Development of creative potential of students;

- Creating a system for measuring the development of intellectual abilities of students.

Methods. Problem situations and tasks engage students in the processes of independent search and discovery of knowledge. For example, in the study of "Strong and weak electrolytes", "Why do solutions of some substances conduct electricity and others do not?" a problematic question is asked. In order to expand the acceptance of new material in the study, the information is given orally, the written information is on the screen learners notebook, that is, the main abstract, drawings and pictures. General information is always used, explained with demonstrations throughout the session, and reinforced with laboratory experiments designed in the program. There is a constant conversation with the audience, whether the students and the teacher think in the same way, whether the topic is understandable to them, which parts need to be repeated again. Sometimes students also engage in non-major creative work throughout the lecture, such as a reference to chemical elements, the role of simple and complex chemical reactions in human life and nature. The development of independent thinking in students allows them to work with analytical, comparative texts and tables in the study of new material. Tables store information on a topic, while developing the ability to compare, summarize, and analyze. [3].

In the teaching of theoretical material the modern achievements of the subject, historical materials, examples from the literature, their importance to students are shown. We try to make the learning material clear in order to the teacher’s ability to

engage in excitement and engagement has a great impact on the students and their interest in reading.

We divide the focus of learning - cognition (imagination) activities into two groups:

- sense of duty and responsibility;

- priority, curiosity.

After the new training material is explained, independent work is carried out. Only independent work gives an idea of the level of mastery of the given training material. Students will be given tasks at different levels, from simple to complex, marked with clear symbols:

- reproductive stage

- analytical stage

- creative stage

Students complete the task with bold steps forward to the best of their ability. Being in constant contact with each student allows the application of the individual question and answer method to quickly identify the problem of his imagination and difficulties that arise in the study of new material.

Theoretical material will be studied and practical training will be conducted. Laboratory experiments are performed by students individually or in small groups. This leads them to become independent, to develop the skills to perform practical actions on their own. The application of different levels of experimental tasks helps to direct and develop intellectual abilities and imaginative activity. [5].

The generalization exercises, which are part of the activities section, help students solve the problem by developing thinking, attention, and memory. In such classes, knowledge is not only deepened and strengthened, but also develops the ability to analyze, clarify, generalize, systematize, validate and justify them. We conduct generalizing rehearsals in the form of games using role-playing games. Examples include travel games, seminar balls, search and conference games. They solve the mental state and create the necessary emotional state in the classroom, that allows them to use their maximum intellectual potential, acquire new knowledge without any difficulties, realize their potential. Role-playing games: “Journey between classes of inorganic compounds”, “Journey to the world of materials”, “Journey to

the periodic table of elements", "Hydrochemistry" and others. It helps students to develop communicativeness.

Good results have been achieved in AI Goncharuk's system of training on dialectical teaching methods. These include:

- joint lecture;

- practical and creative individual analysis;

- group training (component as a lecture; division of material into parts, operations on concepts; composing of clusters about classification of inorganic compounds, classification tables and B / B / B tables. Each of students is assessed.);

- Independent preparation (scientific, practical, creative individual analysis and synthesis).

Discussion. We rely on active forms of teaching in the organization of learning activities. When working in groups, we work individually, in pairs, in small groups, by observing the results on the basis of clearly constructed dynamics in the structure of the activity, taking into account the individuality. In the early stages of the work, the effectiveness of the work was determined in heterogeneous groups of students with different levels of knowledge in the subject.

In such groups, the development of intellectual ability is relatively rapid. A "leader or advanced" students who studies hard organize the work. The "weaks" try to be active behind them. As a result, they develop the ability to acquire independent knowledge. In such groups, collective intuition, responsibility, self-discipline and mutual support are clearly visible. Technical and printed means of teaching contribute to the development of intellectual ability and activation of cognitive activity. We place great emphasis on the ability of students to acquire knowledge independently, in the process of working with textbooks and additional literature. Being able to do this is related to the development of logical thinking skills in students. These include: analysis, synthesis, separation of the main, generalization, etc. If the topic text is saturated with specific materials, we suggest adapting the generalizing questions to the entire topic content. Such questions help students to study the whole material and to distinguish the main ones from them. Self-monitoring questions require the emergence of maximum independent thinking, the ability to generalize facts and draw conclusions based on them.

Extracurricular activities with students develop their creative potential. They eagerly participate in erudite contests and intellectual games. The annual Chemistry week and Olympiads demonstrate the interest in learning and understanding, the desire to demonstrate the knowledge and skills accumulated in thinking activities, and their intellectual potential. Research work is an integral part of our work. At the scientific-practical conference held at the Academy of Sciences of Uzbekistan, a freshman participated in a research paper on "The role of chemical methods in assessing the hydroecological condition of water bodies." The student performed methods of chemical analysis of natural waters under our guidance. Analysis of the chemical composition of water can be carried out both in the laboratory and in the field. The chemical laboratory should have the following kit:

- set of indicators; - dimensional cylinders; - volumetric flasks (100 ml); - distilled water; - tripods and test tubes; - test tubes (not less than 10); - tubes; - necessary set of chemical reagents; - burettes (10 ml); - filter paper; - scales [1,2].

Determination of calcium (Ca2 +) ion. Ammonium oxalate ((NH4) 2C2O4) precipitates calcium in the form of CaSO4. To do this, add 2-3 drops of ammonium oxalate to the test water. The calcium ion precipitates in the form of a white fine crystalline precipitate. The precipitate is soluble in strong mineral crystals - HCl, HNO3. But it is insoluble in CH3COOH [4].

Determination of magnesium ion (Mg2 +) ion. NaOH, KOH. The magnesium (Mg2 +) ion forms a white amorphous precipitate with Mg (OH)2. Add 2-3 drops of a concentrated solution of one of the sodium or potassium carriers to the being verified water in the tube. If the water contains magnesium ions, a white precipitate will comes down. An acid or one of the salts of NH4Cl, NH4NO3 is added to the solution for testing. If there is a magnesium ion in the precipitate, it melts when reagents are added [5].

Determination of iron ions. 1. Bivalent iron ions with a complex salt of potassium-ferro-cyanide (K3 [Fe (CN) 6]) form a turnball blue, this is to say blue precipitate (Fe3 [Fe (CN) 6]2).

2. Trivalent iron with NaOH, KOH and NH4OH forms a red-brown precipitate Fe (OH) 3, which is soluble in acids and insoluble in alkalis [6].

Determination of lead ions. Potassium iodide (KJ) precipitates lead iodide (PbJ2) with lead ions (Pb2 +) in solution. Checks are carried out as follows. To the test

solution add a little KJ, then acetic acid - CH3COOH, then heat until the primary precipitate in the solution is completely dissolved. The resulting solution is cooled in a stream of water, in which case the beautiful golden crystals of PbJ2 are completely precipitated in the sediment [7].

Determination of copper ions: A small amount of ammonia solution is added to the solution under study to form a precipitate of the original color salt [8].

Determination of iodine, bromine, chlorine ions: A solution of silver nitrate salt with chlorine ion generates a white precipitate AgCl. The precipitate does not dissolve in HNO3, but it dissolves in NH4OH. Ag NO3 solution with bromine ion forms a light-yellow precipitate that is difficult to dissolve in NH4OH [9].

Determination of SO4-2 ion. Barium chloride forms a white precipitate BaSO4 with the SO4-2 ion and BaCl2. It does not dissolve in precipitated acids.

Determination of dissolved oxygen in water. (By the Winkler method). Determining the concentration of dissolved oxygen in water is a very simple analysis. It is based on the idea of the presence of water-soluble organic matter. The storage of oxygen in water depends on the temperature. The colder the water, the more dissolved oxygen it contains. It is observed that the storage of dissolved oxygen in water depends on the processes of photosynthesis. The more plants in the water, the more oxygen there is. During the day, the concentration is higher than in the evening. The European Commission for Environmental Protection has set the minimum amount of dissolved oxygen in water at 4 ml / l. If the amount is less than this value, the water basin is considered polluted. This method can be performed both in the laboratory and in the field.

Conclusion. It is advisable to use modern pedagogical technologies in teaching to increase the intellectual potentialities of students. Conducting a lesson in a variety of playful technologies or in controversial situations develops students' creative potential.

The role of hydrochemical methods in the assessment of the ecological condition of water bodies is invaluable. Therefore, if we analyze the water content of reservoirs based on hydrochemical methods, then we can always maintain the ecological status of reservoirs in a normal state.

As a result of the quality and quantity analysis conducted with the participation of students, we drew conclusions on the level of water quality, as well as worked out a recommendation.

In a market economy, education, spirituality, professional knowledge and entrepreneurship are given priority.

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Название публикации: «ATOMNING TUZILISHI»

Annotatsiya: *ATOM (yun. atomos — bo'linmas) — kimyoviy elementning barcha xossalarini o'zida mujassamlashtirgan eng kichik zarrasi. Dastlabki «bo'linmas» nomini olgan bu zarraning ichki tuzilishi anchagina murakkab. Atom yadrosi protonlar va neytronlardan tashkil topgan. Atom dagi elektronlar soni yadrodagi protonlar soniga teng (A. dagi barcha elektronlar zaryadi yadro zaryadiga teng), protonlar soni elementning davriy tizimidagi tartib raqamiga teng. Ushbu maqolada atomning tuzilishi haqida fikr yuritamiz.*

Kalit so'zlar: *atom, proton, yadro, neytron, ionlar, izotoplar, izobarlar, Tomson, olim, Rezarford, bo'linmas, o'zgarmas, musbat, manfiy…*

Fanda atomlar bo'linmasdir degan fikr uzoq vaqt hukm surgan. Atomlar mayda qismlarga bo'linmaydi deb hisoblangan. Ayni element boshqa elementlarga aylanmaydi deb qaralgan.

Lekin X1X asr boshlarida ingliz fizigi **Dj. Tomson** atomning eng kichik bo'lagi elektronni topdi.Elektron atomning eng kichik zarrachasi bo'lib u manfiy zaryadga ega.uning massasi 9,1095 10^{-28} g/ ga teng. Uning atom massasi vodorod atomining massasidan 1843 marta kichik.Elektronning zaryadi -1.

Elektronlar manfiy zaryadlangan atomlar esa elektroneytral.Demak atomlarda musbat zarydlangan zarrachalar ham bor.Atomlar yana ham kichik zarrachalardan iborat ekanligi radioaktivlik hodisasi ochilgandan so'ng aniqlandi/ Radioaktivlik hodisasi **1896 y. Fransus olimi Anri Bekkerel** tomonidan ochildi.U uran va uning birikmalarini ko'zga ko'rinmas nurlar tarqatishini aniqladi.

Hozirgi paytda uch xil radioaktiv nurlar borligi aniqlangan. Bular α, β va γ nurlardir.bu nurlar magnit maydoni ta'sirida 3 qismga ajraladi.