RESEARCH ARTICLE

INDEPENDENT LEARNING OF STUDENTS ON THE BASIS OF COMPETENCE-BASED APPROACH IS A GUARANTEE OF HIGH EFFICIENCY.

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Manuscript Info	*Abstract*
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	The article elaborates and analyzes the problems and solutions for achieving high efficiency in organizing students' independent learning activities using a competence-based approach.

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Introduction:-

The most important strategic indicators of the conditions of globalization today are determined by the spiritual development of the country and, to a certain extent, by the quality of education. It is important, therefore, that educational institutions have the resources of an educational process that improves the quality and effectiveness of education. Each educational institution is engaged in some way to improve the quality and effectiveness of education. But do they always achieve the expected result?

To answer this question, we can summarize the following: What is being done today to provide students with a good general secondary education?
1.   sufficiently developed student component;
2.   classes are organized on the basis of modern pedagogical and information technologies;
3.   teacher skills in the implementation of pedagogical innovations;
4.   Sufficiency of innovative pedagogical activity;
5.   Rational and effective use of computer equipment and laboratory equipment;
6.   teacher-student partnerships.

Sufficiency of the above-mentioned factors can be the solution to the problems of increasing the effectiveness of education. The effectiveness of the educational process is determined by the desire of the teacher and students to activate their independent activities. The main task is to instill in students the qualities of diligence, diligence, creativity, the organization and formation of independent learning activities. If a student performs homework and other tasks in an exemplary manner, independently studying textbooks and other supplementary literature and participating in science clubs, such learning activities are actively organized.

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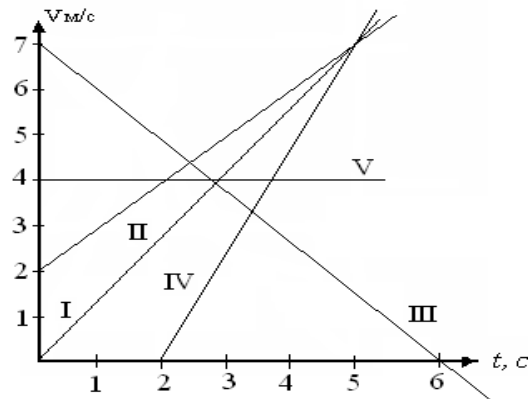
If the teacher makes presentations clear and simple in classroom and extracurricular activities, uses fairness and uses teaching techniques, new innovative and non-traditional methods, the basic competencies will be based on individual and differentiated learning, taking into account the individual characteristics of students. however, learning outcomes are effective. It is desirable for physics students to organize independent learning activities in the following areas:

1. study the text of the topic independently in the lesson;
2. independently carry out thematic exercises;
3. solving experimental and computational issues;
4. independently solve tasting tasks;
5. conducting experiments and observations;
6. work with tables, drawings, graphs, electrical circuits;
7. work with visual aids and other learning aids;
8. computer-aided learning of subject matter;
9. performing physical tasks, puzzles and various individual tasks and tasks;
10. to put into practice the acquired knowledge.

Regardless of the type, independent work is done through specific tasks and tasks. Assignments are simple and complex, and each task has a specific didactic purpose. Certain types of independent work are inextricably linked to each other and, in certain circumstances, they may be combined.

For example, performing physical experiments can be done frontal. At the same time, the activities of students are of a relational nature. Experiments are conducted to reinforce the material studied.

It is well-known that the importance of enhancing students' cognitive activity in organizing independent work in the lesson. Only when students understood the task and was interested in the work that was to be done was that new knowledge was better understood.

When setting learning goals and objectives, it is important to take into account the students' aspiration for self-knowledge, self-expression and the desire to learn.

The teacher thinks about different aspects of the methodology, given the importance of the emergence of interest in knowledge from the beginning of the lesson. The most important of these are the following three situations: first, focusing students on the objectives and tasks of the lesson; secondly, to arouse interest in the content of recycled and re-researched material; and third, to provide students with a form of work that is of interest to them. Active perception of new material occurs in lessons that discuss issues related to the problem of forming students' physical thinking. In this pedagogical situation, a research environment is created, whereby students begin to solve problems more actively. From the issues to the mechanics and electro.

Using the given graph, describe how the bodies move and write a velocity formula for each movement.
Students independently analyze the movement by looking at the graph.
Analyze each look of the chart separately.

The behavior of the graph is analyzed by the students as follows: Figure 1

1. If the velocity increases over time, then the movement is accelerated.
2. Slow down as time goes by.
3. If the velocity remains constant, there is a smooth motion.
4. The acceleration is determined for the alternating motion.
5. For a smooth variable motion, the velocity formula is written from the acceleration formula.

$$\vartheta = \vartheta_0 + a \cdot t$$

The constant values of the graph are determined: Find the velocity axis and the calculation. and the value is put in the general formula.

How the teacher analyzes the graphs based on the students' theoretical knowledge to reach a conclusion based on student responses analyzing graphs based on their independent thinking.

1. In Figure I, the flat acceleration is zero with the initial velocity zero.
2. II is a straight-line motion with an initial velocity of 2 m / s.
3. III is a straight-sliding motion with a starting velocity of 7m / s.
4. IV is a special case of flat acceleration with zero initial velocity.
5. V is a straight line with a velocity y = 4 m / s.

According to the above conclusions, the equations are written by placing the values of acceleration in the formula of velocity:

I $\quad \vartheta_0 = 0$; $\quad a = \dfrac{7 \text{м}/c}{5c} = 1{,}4\text{м}/c^2$; $\quad \vartheta = 1{,}4t$

II $\quad \vartheta_0 = 2\text{м}/c$; $\quad a = \dfrac{7\text{м}/c - 2\text{м}/c}{5c} = 1\text{м}/c^2$; $\quad \vartheta = 2 + t$

III $\quad \vartheta_0 = 7\text{м}/c$; $\quad a = \dfrac{0\text{м}/c - 7\text{м}/c}{6c} = 1{,}2\text{м}/c^2$; $\quad \vartheta = -7 + 1{,}2\,t$

IV $\quad \vartheta_0 = 0$; $\quad a = \dfrac{7\text{м}/c}{5c - 2c} = 2{,}33\text{м}/c^2$ $\qquad \upsilon = 2{,}33(t2-2)$

V $\quad \vartheta_0 = 3\text{м}/c$; $a = 0$

straight action. It can be regarded as a private case of a flat-variable movement with acceleration of 0.

$\vartheta = \vartheta_0 + 0 \cdot t = \vartheta_0$ will be analyzed.

Through these considerations, the graphic matter is considered to be fully processed.
Pupils independently solve problems:
1. strengthens theoretical knowledge;
2. Creates and develops the ability to think independently;
3. Examines the links between physical dimensions;
4. achieves conscious development of physics laws;
5. the ability to make graphs, depending on the situation;
6. learns to record physical data according to the charts.

Experimental issues
Experiments in solving experimental problems should be put in place with all the conditions of the school demonstration experiment. Special attention should be paid to the good look of the instruments and events. It is imperative that the teacher guide the experiment. Here are some examples of demonstration experimental issues.

There is a rotating pivot around a fixed base. On the two ends of the Richag we hang objects with equal mass but of different size. Richag is in balance. If you immerse your body in water, it will be determined that the force that pushes them is affected.

The magnitude of this force is proportional to the body's volume and fluid density. Therefore, a smaller body mass draws the tip of the rod in the water.

This answer will be tested in practice with student participation.
The problem can be solved without experimentation, but more is lost.

The device shown in the figure is collected. Demonstration shops R1 and R2 are represented. Determine the voltmeter whose scale is closed.

On the basis of specially created tasks and instructions, the students independently carry out the experimental tasks, the experiment is carried out and the results are obtained.

Demonstration resistance R1 and R2 are voltmeter, key, power cord, and coupling cables. Using these devices: a) Assemble the electrical circuit according to the diagram given. Sequencing the opposition connect; b) After the electrical circuit is formed, close the second voltmeter by means of the drawer, determine the electrical circuit and the resistance of the second rheostat, open the drawer and compare it with the indicator. Students create an electrical circuit under the supervision of a teacher according to the electrical circuit.

The key is connected and the values of voltmeter V1 and resistors R1 and R2 are recorded. Voltage drop is proportional to the magnitude of the resistance when the circuit is connected securely, so it is possible to write as follows.

Since the rheostats are connected sequentially, the currents are equal, ie I1 = I2.
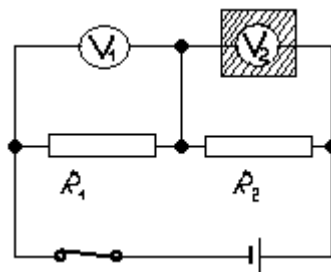
Ом конунига асосан

$$I_1 = \frac{U_1}{R_1} \qquad\qquad (2\text{-}40)$$

$$I_2 = \frac{U_2}{R_2} \qquad\qquad (2\text{-}41)$$

$I_1 = I_2$ эканлиги назарга олган холда

$$\frac{U_1}{R_1} = \frac{U_2}{R_2} \quad \text{бундан} \quad U_1 \cdot R_2 = U_2 \cdot R_1 \qquad (2\text{-}42)$$

$$U_2 = \frac{U_1 \cdot R_2}{R_1} \quad \text{бўлади} \qquad\qquad (2\text{-}43)$$

The value of U2 is determined. Based on the experience, the value of U2 is taken, and the students receive the box above the second voltmeter and the students decide if the solutions they find are right or wrong.

As a result of students' self-experimentation and observation in solving experimental problems, students develop and develop skills and abilities to work independently.

Repetition of the past can also be a basis for developing and reinforcing the interest in knowledge and focusing on the most important issues of the material studied.

Games, workouts, modeling, and other didactic games are used to stimulate students' interest in physics. During the game, each student is active, and there is a competition between some students or teams. Because only students who know the material are allowed to participate in the game, they view the game not only as a game but as a serious and fun activity.

The use of didactic games in physics teaching has been somewhat covered in the methodological literature. Here is an example from didactic games We give examples of didactic games in the study of physics, in class and in class.

It is advisable to use textbooks and additional literature to achieve high performance in these didactic games. Physical dictionary game: The teacher writes a single letter on a blackboard, and students write the physical terminology, physical size, physical instruments, units, etc. in their notebooks. He then tells the reader how many words he has written. The teacher checks around, and the one who writes the most, the student gets the priority.

Then the words that the student found, and the words that were not on the back, are written on the blackboard, and all students copy the words they couldn't find on the blackboard.

For example, the letter T is words such as speed, sound, nature, brake, vibration, temperature, thermodynamics, Thomson, Tesla, fusion, accelerator, fullness, gravity, transistor, transuran, turbulent, smoke, wave, flat acceleration, flat acceleration. A. Accelerometer, amorphous, atomic, Avogadro, acoustics, alpha, antimody, atmospheric, astrophysical, aluminum, adiabatic, eternal, ground, angstrem, aneroid, areometer, ampermeter, absolute elongation, amorphous, anisotropic, circular, etc.

The damino game on physical formulas continues as follows:

$$v = \frac{s}{t} \to \frac{s}{v} \to v = v_0 + at \to t = \frac{v - v_0}{a} \to a = \frac{v^2 - v_0^2}{2s} \to s = v_0 t + \frac{at^2}{2} \to t = \frac{A}{N} \to N = \frac{A}{t}$$

$$\frac{s}{v} \to v = v_0 + at \to t = \frac{v - v_0}{a} \to a = \frac{v^2 - v_0^2}{2s} \to s = v_0 t + \frac{at^2}{2} \to t = \frac{A}{N} \to N = \frac{A}{t}$$

$$t = \frac{A}{IU} \to U = IR \to R = \rho \frac{l}{s} \to S = \frac{F}{P} \to P = nkT \to T = \frac{2E_K}{3K} \to k = \frac{R}{N_A} \to N_A = \frac{N}{v} \to v = \frac{m}{\mu} \to \mu = m_0 N_A \to$$

$$\to N_A = \frac{NRT}{PV} \to T = \frac{P}{nK} \to k = \frac{2E_K}{3T} \to T = \frac{P}{nK} ; n = \frac{N}{V} \to V = \frac{m}{\rho} \to \rho = \frac{m}{V} \to V = Sh$$

A domino game consisting of physical terms. The velocity force frequency is the atomic mass Hygrometer Angstrem meteor lagoon rostat scales work per liter liter The time of radar satellite Charl Lomonosov Thomson Newton Nanometer Radius Seconds continue in the order. In a domino game consisting of physical words, the teacher writes the first word on a blackboard and continues with the last letter with the physical words. «Physical linguistics».

Linguistics deals with language laws, speech charm. The language of physics is very rich, and the appropriate use of its capabilities can greatly enhance students' knowledge. Different physical sizes, laws, and puzzles related to units teach students to be fluent, resourceful, and responsive. This event, first and foremost, encourages them to work independently, gain extra knowledge, and use the physical and written language skills of physics.

When you find the correct answers to the following questions and place their initials on blank cells, one of the words comes from the wisdom that will keep students in mind that physics is a powerful natural science.

We have provided examples of linguistic didactic games in classroom and extracurricular activities that require both meaning and a puzzle.

Task 1:-When you find the correct answers to the following questions and place them in blank cells that contain the initials, one of the wise words comes up and reminds the students that physics is a powerful natural science.

1	2	3	4	5	6	7	8	9	10
Ф	И	З	И	К	А	Ф	А	Н	И
11	12		13	14	15	16	17	18	19
М	У	Ъ	Ж	И	З	А	Л	А	Р

20		21		22		23		24		25		26	
М		А		Й		Д		О		Н		И	

1. Objects made up of various substances are……… called.
2. The object may move so that the line connecting it with its two points is parallel to itself even when the body is moved ……. is called movement.
3. The mass of a substance per unit volume is ……………
4. The velocity of the body after the termination of the effect of another body on one body is called …………………………… ..
5. The effect of one body on another is called ………….
6. Instrumentation for acceleration An expression of a quantitative link between the dimensions that characterize events is called …………….
7. A body immersed in a liquid squeezes a fluid of its own size and is subjected to the same force as the ………….
8. Power Unit ……………………………..
9. The amount of energy transferred to the body by heat exchange is called ………………
10. Physical size characterizing the inertia of objects ……………………
11. Passing through the center of the lens …….
12. Father of Russian aviation …………………………………
13. The chaotic behavior of the molecules that make up the body and the sum of the interacting energies of the molecules are called …….
14. What unit of physical size is kg / m3?
15. Intensity Measurement Tool ………….
16. Size unit …………………………
17. Push on the body immersed in liquid or gas
18. The pulling force ……………
19. A body that can rotate around a fixed base ……………….
20. One of the optical instruments ……………………………….
21. Liquid and solid body by nature ……………………
22. Size of trajectory length ……………………
23. Changes in the shape and size of the body under the influence of force……………………… ..
24. The velocity of the trajectory at a particular time and at a particular point………. called velocity.
25. Power unit capable of accelerating 1 m / s2 per 1 kg mass………….
26. When one object slides on the surface of another body and the force opposite to the action is called …………………

Answers:
1. The physical body. 2. Moving Progress. 3. Density. 4. Inertia. 5. Strength. 6. Accelerometer. 7. Physical regularity. 8. Archimedes power. 9. Newton. 10. Heat volume. 11. Mass. 12. Read on. 13. Zhukovsky. 14. Internal energy. 15. Density. 16. Areometer. 17. Lit. 18. Archimedes power. 19. Richag. 20. Microscope. 21. Amorphous. 22. Path. 23. Deformation. 24. Instantaneous velocity. 25 Newton. 26. Friction force.

In summary, the didactic games used in the classroom and in the circles have the following advantages: - students' cognitive activity increases; - be able to solve the most pressing problems; - Mutual support among students during the course will result in friendly discussion; - pupils independently use textbooks and additional literature during their preparation; - The students are ready to play games with great interest, which results in increased efficiency of acquiring new knowledge independently; sinab It is important for students to test their knowledge and skills, self-esteem, and career choices.

Typically, teachers prefer to provide students with a large amount of information, essentially presenting new material in the planned lessons. However, practice shows that mastering a new material by listening to a teacher's statement is far less effective than mastering it under the guidance of a teacher. However, there are problematic limits for independent work. If much of the content of the new material is based on previously acquired knowledge and skills, it is possible to organize an independent study of the task, which will result in higher education effectiveness.

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