

## METHODOLOGY OF THE ORGANIZATION OF EDUCATIONAL AND METHODOLOGICAL ACTIVITIES OF PUPILS IN THE PROCESS OF FORMATION OF THEIR INDEPENDENCE AT PHYSICS LESSONS

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### ABSTRACT

This article analyses innovative methods of teaching physics not as an exact science, but mostly as a subject that allows each pupil to see not the complexity of this science, but its connection with the outside world. It allows pupils independently to express their thoughts in solving each task set for them. For this purpose drawing, charts, surrounding us those tools (such as: a table, a chair, books, handles, etc.) are used during the lessons, and sometimes, pupils can be participated as the visual aid (if they want). Understanding the task of pupils through visualization and illustrative examples helps them to accept physics as an exact science and to easily use formulas for solving problems and laboratory work.

**Keywords:** Methodology, information, methodological teaching process, structure, self-determination, action, diagrams, result.

### INTRODUCTION

In this article, we would like to consider several techniques for organizing the process of forming independence, students in physics lessons. Studying some of the methods given in various literature by our colleagues, we have come across with the fact that the psychology and worldview of schoolchildren who studied 10–20 years ago is not at all like the psychology of today's modern students and therefore we need completely different methods and approaches to pupils who correspond to them.

Before learners to find necessary information went to the library, looked for and found necessary literature, they spent so much time to reach the result. Today with the developing of our technology, it is easier to do it. With one pressing a button, all needed information appears on the screen of computer or mobile phone. The main problem is that how to motivate pupils to find information by themselves because it is better than they will obliged.

### LITERATURE REVIEW

The methodological basis of the paper were “The Strategy of further development of the Republic of Uzbekistan” under the leadership of the President Sh.M.Mirziyoyev, which initiated a new stage of reforms in our country and the Constitution of the Republic of Uzbekistan, the law of the Republic of Uzbekistan "On Education" and the National Program for Personnel Training.

In addition, in the paper also widely used:

- Works of foreign researchers such as A.M.Matyushkin, N.K.Gladisheva, I.I.Nurminskiy, I.Ya.Lanina, V.P.Shuman and others on issues of formation of pupils's cognitive interests in physics lessons as well as statistical patterns in the formation of their knowledge and skills.

## METHODOLOGY

This article explores the scientific research works, views and opinions of native and foreign scientists on the importance of effective formation of cognitive independence of pupils.

During the study the following methods were used:

- theoretical methods: analysis, synthesis, generalization and logical method;
- empirical methods: observation, description, measurements.

## RESULTS

Encourage learners to study the physics, in the first lesson, give impulse them to explore the subject with big pleasure, and of course learners can help each others to study physics.

The organization of learning process which forming confidence of our learners depends on not only teacher, but also from the pupils. As said in a proverb: "Does the slap come from touching two palms", doesn't it? Matyushkin A.M, the author of the book "The problematic situation in thinking and in teaching" noticed that: "Collaborative activity has common aim, which achieves in the result of interactions of participants" and one should make an effort to do it [4; 193]. For this instance, it should be drawn up the definite structure of definite work, with the help of it could move on.

The main components composing the structure are the following:

- Target;
- Motivation;
- Requirement;
- Actions;
- Authentic materials;
- The result satisfied the requirement.

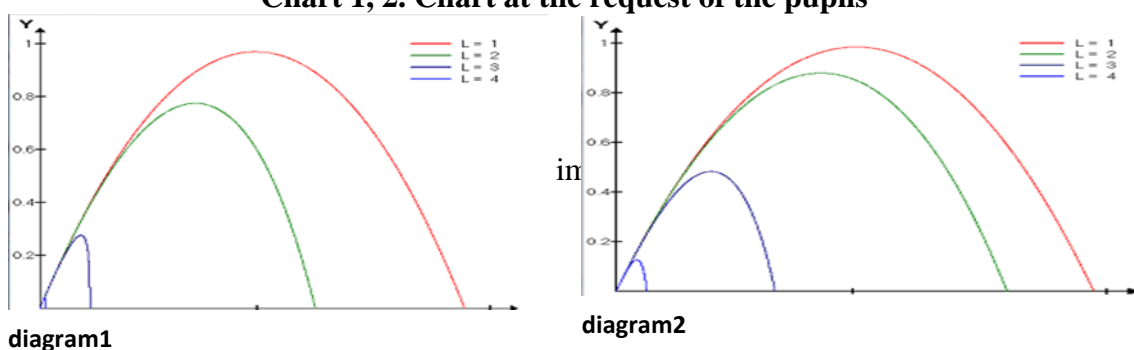
Teaching, based on the developing and using only memory becomes dull and boring, in addition difficult for student. However, the reading of books not only increases the ken of pupils but also develops his intellectual function of brain. Pupils critically and creatively imagine the picture of the given task, without any misunderstandings.

By giving intellectual and creative tasks, we can increase the substantively working of pupils.

For example, in the 7<sup>th</sup> grades books of physics we have such kind of task: the boy throws the ball on 45 degrees with started speed 5 m/s, the time of flying is 6 seconds. Find out the most height of flying of the ball.

If we do this task with students spontaneously, they will not have any interests, they just done it. We offer to do this task by adding creativity. We may say to change some numbers by the will of pupil and to make a diagram belongs to the task. For instance, this is one sample:

**Chart 1, 2. Chart at the request of the pupils**

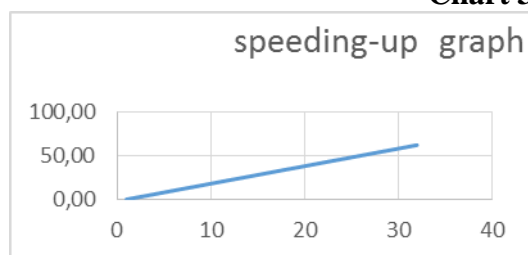


Let every pupil to draw and have pleasure. There is so much enthusiasm! With the help of the drawn picture, we can do our task faster, rather than doing this task through using only formulas. We think that innovative methods in doing task are beneficial in teaching process nowadays. Because learners want to do tasks again and again.

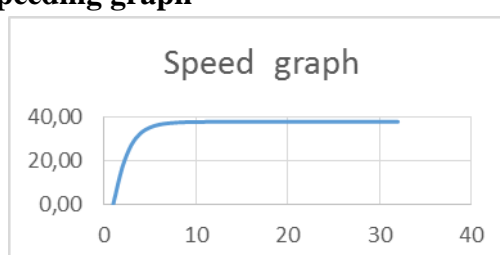
Without any doubts, that physics is considered to be as one of the most difficult subjects among others and without any distraction of formulas.

**Task №2.** The boy, standing on a cart, pulls the rope, attached to the wall, with the strength of 80 N. Then, the cart in a second acquired the speed of 2 m/s. What acceleration did the cart get? [Text book Physic 7<sup>th</sup> form .P.80]

**Chart 3, 4. Speeding graph**



**diagram3**



**diagram4**

By doing the tasks on Optics

You can not only creatively make the figures from glass, beams and lengths, but also get additional knowledge on geometry and mathematics, which connected with physics. In other words with ring of the same spheres.

For instance, to explain the theme “The pressure in liquids” we involve some volunteers to participate in educational process. One student sat on the chair, the second one sat on the knee of the first student, the third to the second. The first participant felt pressure more than the third participant did. Here everyone could see that the pressure stratum (we suppose water) has more pressure, than the previous. Students tried to do this experiment at home and remembered this definition for a long time.

Let us observe other theme such as “The construction of atom”. We asked two students come to the blackboard and play the role of proton and neutron. One is proton and the other is neutron, around of them 5 or 6 students standing like electrons, creating orbits of electron, and moving around their axis. Students easily understood the definition of construction of atom and we sure that this information will be remembered not only for visual or kinesthetic learners it will be successful for auditory learners too.

Besides, for every new lesson teacher may prepare the video-lesson for appropriate theme. Using of graphics gives an opportunity for students, who percept bad on hearing. It is helpful to understand the theme through watching the video. Flexibility in working – is a great pleasure, you just need to be patient and the result will be visible soon. One more method offered for developing substantively – home tasks like the one project works on interested themes. At the end, taught material can revised.

According to scientists while doing home task after multiple reading the learnt material is fixed in our memory for 45 percents, if you don't do the home task, it will disappear for 15

percent, and by the end of the month all information on the theme will disappear. That is why each home task of the lesson must be checked.

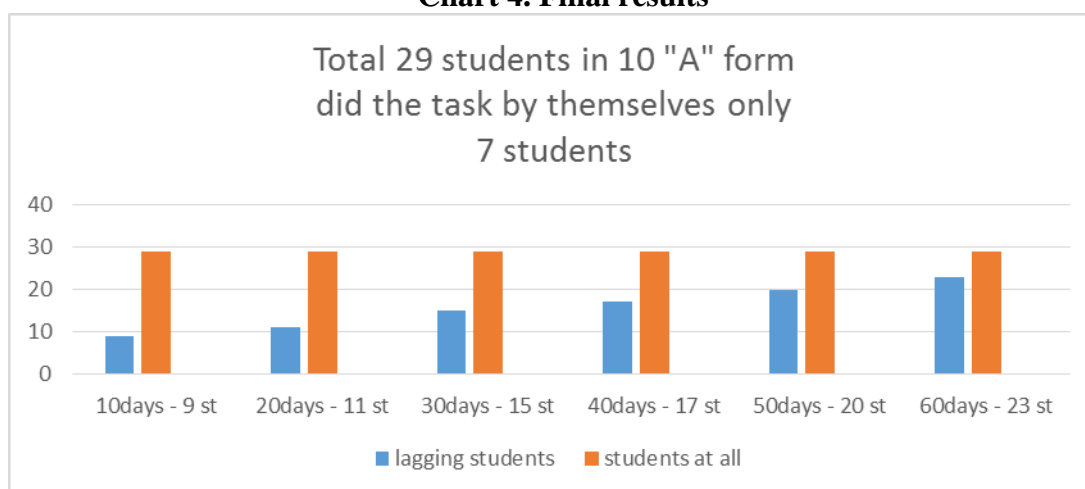
Nowadays there are many progressive computer programs for learning and different kinds of virtual laboratories. Pupils have an opportunity to choose the type of experiment, to assort equipment, to set necessary installation, which has shown in the book and observe the results. Every pupil wants to do the task first and by reaching good results he/she develops his/hers leadership qualities. [2; 128]

Of course, the entire pupil must be highly appraised by the teacher and assessed honestly because it is the first and main thing for pupils. It can be reasoned, a pupil satisfied with the answer will wait for the next lesson with eagerness.

At the end of each term, we may hold revision lessons. This form of performance based on the needs of the pupil, in self-confidence, in cognitive approaches and in communication. Pupils divided into teams and different questions have been given according to the previous themes. This is a good opportunity to revise the knowledge. This method requires being ready beforehand, to make good pupils' disciplines, stimulates to liquidate missed knowledge, to achieve cognitions that are more modern, proficiency, and ways of educational and mental activity. Usually parents, pupils, teachers are invited to such competitions too. [3; 110]

We involve in our experiment 29 pupils from 10 "A" form, school №5 of Andijan region. Below you can see the diagram after 60 days of viewing.

**Chart 4. Final results**



After two months, a pupil's ability to do tasks on physics increased by 82 percent. Among 7 students, who did the task, now 23 pupils could do it.

## DISCUSSION

In order to achieve the aims of learning – cognitive activity could be the own aims of the learners. There must be appropriate learning materials – methodical techniques that cause the preparation of learners to reach goal. Furthermore, students must understand the followings [1; 33]:

- About significance of physics;
- About interaction of physics with technology and other scopes of science field ;

- About the importance of facilities of physics, attributes and phenomena laws in entity, in human life;
- About intersubject communication of physics with other professions;
- Evaluation own knowledge and improvements
- About the meaning of contents, pointed in given program.

The stimulus may be proof of primacy among the teenagers. Because in 7<sup>th</sup>, 8, 9<sup>th</sup>, 10<sup>th</sup> grades pupils try to demonstrate their abilities to all that they are the best of all. The teacher should pay attention in this process to create potential of every student.

## CONCLUSIONS

The extremely role in effective forming of cognitive approaches of learners are teachers, who teach with modern technologies and try to invent in practice with own learners. How to become the best teacher? The students say, "Be on the same wavelength".

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