

Summary

In scientific research practice student 6 courses, group OF-31, FMF,
«Igor Sikorsky Kyiv Polytechnic Institute»

RudykArtemArtemovych

On the theme: "**General using of visual applications for studying physics in high school**"

The methodical approach of complex use of visual aids for physics study at the senior school for formation of physical concepts is developed in the individual work; it is caused by features of process of cognition as such that reflects the objective reality by a person.

The procedural-methodical instrument of complex use of visual aids is specified and expanded in the research; concepts "visual methods", "visually-creative thinking", "visual aids" are concretized concerning physics study of pupils of the senior school.

It is proved that pupil's learning of a physics concept which in the verbal form displays the important properties of an object of studying takes place as creation of the generalized image of a modeling object. The analysis resulted in the work testifies basic difference in images which are formed during natural and modeling experiments – the first provides formation of images which display external properties of the object, the second – assists comprehension of internal structure and properties of the object. Thus, modeling experiment in comparison with natural gets the prime role in formation of physical concepts. Accordingly, modeling experiment initiates theoretical style of thinking.

The technique of complex use of visual aids for physics study of pupils of the senior school includes creation of visual aids for creation of problem situations at

studying physics ; visual aids are used at different stages of cognitive activity (carrying out of intellectual experiment as means of visualization during studying physical concepts and physics problems solving); use graphically-mediated

visualization at formation of nuclear physics concepts (nuclear binding energy); unification of different kinds of visual aids during studying of direct current electric

circles (studying of the Ohm law). Use of computer programs for visualization of a physics material and simplification of graphs construction during graphic physics problems solving. So, complex unification of visual methods of demonstration of the physical phenomena, visual creative problems, and analysis of the graphs helps formation of physical concepts, in particular at studying not observable phenomena and processes in physics.

The methodical approach of complex use of visual aids for physics study at the senior school is directed to formation of physical concepts by drawing of pupils into active work with optimum complex use of visual aids (designing, modeling, forecasting, programming, etc.) and conscious studying of physics that increase a learning efficiency, and so improve a level of knowledge physics of pupils. The analysis of results of research confirms efficiency and productivity of the developed scientific-methodical complex approach to visual aids use for physics study at the senior school. Criteria according to which physical concepts are formed are offered in the work. Comparison of results of the entrance and final control of educational achievements gives ability to draw a conclusion that after application of the complex approach the level of building up physics knowledge of a high level has significantly increased. The analysis of the statistical data testifies that the method of complex use of visual aids is an effective and covers the aspects necessary for formation of physics concepts.

The work does not solve all problems concerning the organization, technology, improvement of quality of physics study at the senior school. Continuation of scientific research can be carried in the following directions: application of the methodical approach to the problem of complex use of visual aids for physics study of pupils of the senior school of different types.