# THE ROLE MODELING OF PHYSICAL PROCESSES IN THE DEVELOPMENT OF STUDENTS' CREATIVE THINKING

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***Abstract.*** *Today, students are paying more and more attention to modern information sources of the new generation. Models of physical processes are presented in the form of a model instead of a real object in cases where it is not possible to carry out a natural experiment in the researched object, the duration of time is long, expensive, and dangerous, and it increases the interest of students.*

***Keywords:*** *potential, theoretical study, analysis, practical application.*

Today, students are paying more and more attention to modern information sources of the new generation. Models of physical processes are presented in the form of a model instead of a real object in cases where it is not possible to carry out a natural experiment in the researched object, the duration of time is long, expensive, and dangerous, and it increases the interest of students. The intellectual potential and range of knowledge of students expands, the quality of education increases, and the exchange of opinions between teachers and students improves.

Theoretical study, analysis, practical application of process modeling in teaching physics, as well as creation of its tools and models, creates the ground for students to study and analyze physical phenomena and processes in depth, and develop their creative thinking.

In their research, the researchers V.A.Petruk [2, p. 60-65] and D.Raven [3, p. 396] the competences formed in students as a result of mastering education on the basis of interactive tools, in their researches, general cultural competencies, specialized competencies, psychological competence, information competence, creative competence (innovative, critical, creative approach to professional activity, ability to demonstrate one's independent creativity skills), innovative competence, communicative competence, technological competence. In addition, modeling of physical processes is also important in the development of students' competence in the following areas of competence (Fig. 1):

**Areas of competence**

Professional competence- is the acquisition of knowledge, skills and abilities necessary for the implementation of professional activities by a specialist and their practical use at a high level Social competence - the ability to show activity in social relations, the ability to communicate with subjects in professional activities.

Special competence is preparation for the organization of professional pedagogical activity, rational solution of professional pedagogical tasks, evaluation of the results of activities, consistent development of BKM, and on the basis of this competence, psychological, methodical, informational, creative, innovative and communicative competence is maintained.

Researchers such as A.V.Seliverstov [1, p. 162-167] and A.V.Raysev [4, p. 146-153] suggest using a composite physical experiment in their research. By composite presentation, he refers to "a collection of different types of interconnected lecture presentations that show the same phenomenon from different angles and allow comparison of results". The use of composite exhibits

can also be used in a visual experiment, because a composite experiment performs many functions, obtaining quantitative data, processing experimental results, observing relevant relationships in the form of graphs, charts, tables, and comparing experimental results.

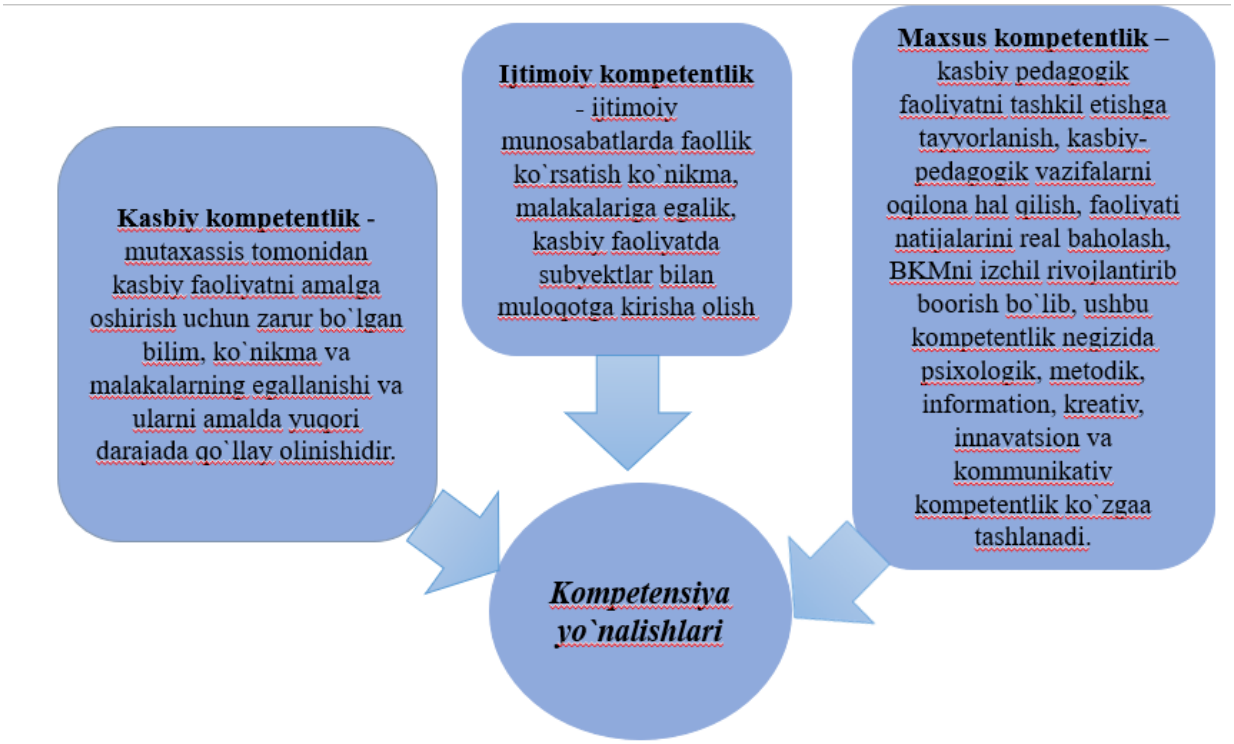


***Figure 1. Areas of competence***

It offers the use of composite physical practice in the learning process (an interrelated unit of virtual, computational and natural experience). The introduction of the composite physics laboratory makes it possible to structure the teaching process more precisely, to organize the educational process with more effective programs, didactic materials and manuals, to create a visualized model and to combine educational information.

The information technologies used for visualization and modeling are diverse (FEM.Lab; Maple; Visual Basic; MX Media Flash; Matlab; ERwin DM; Java, etc.) and interactive references, presentations, element-by-element video integration of educational material characteristics through schemes, signs, directions of movement, displays graphics on one monitor in detail through a parallel plane, forms interdisciplinary communication based on computer science, physics-mathematics and visualized information space, synchronous modification in virtual scheme and provides opportunities to use a full-scale experiment with simultaneous imaging of various aspects of the studied phenomenon.

It is important for a student - a future specialist not only to understand and assimilate information, but also to know how to apply it in practice and make decisions. As the use of modeling in the educational process creates an opportunity to clearly imagine physical phenomena and processes, it leads to the development of creative thinking of students as a result of in-depth study and analysis of the process.

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