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*Levina I. A.*

## **PEDAGOGICAL MODELING AS A MEANS OF PROFESSIONAL SKILLS FORMATION OF FUTURE TEACHERS OF NATURAL MATHEMATICAL CYCLE SUBJECTS**

*Odessa, Ukraine*

**Abstract.** *The article is dedicated to the problem of appliance pedagogical modeling as a means of professional skills forming of future teachers of natural mathematical cycle subjects, on the basis of experiment data analysis the level of efficiency of modeling pedagogical situations in the course of study pedagogics was defined. We infer under pedagogical modeling an ideal modeling with the help of which the models of pedagogical phenomena and objects are created. We detach reproductive, productive and creative pedagogical situations. We consider models of reproductive, productive and creative pedagogical situations.*

**Keywords:** *pedagogical modeling, pedagogical situations, professional skills of future teachers*

*Foreword.* The relevance of the research is defined by fundamental transformation of our society, that demands radical changes in the educational process of higher educational establishments, the use of new technologies and methods of education, that help to form the professional skills of future teachers.

We consider, that in order to form these skills students should be involved into the activity, which is maximally close to the teacher's labour. Thus, the modeling of pedagogical situations, in which a future specialist on the basis of

the obtained knowledge and experience can practice in successful performing of the teacher's educational functions, we consider as an instrument of successful forming of future teachers' professional skills.

*Summary of publications on the subject of research.* Theoretical bases of the research were made up by the scientific works, revealing pedagogical activity and the specification of teacher's professional labour (V.V. Butkevich, F.N. Gonobolin, N.V. Kichuk, N.V. Kuzmina, Z. N. Kurland, G. A. Nagornaya, A. F. Linenko, V. A. Slastyonin, N. N. Soldatenko, R. I. Chmeluk, O. S. Tsokur, G. P. Shevchenko etc.); the didactical and educational opportunities of modeling (N. M. Amosov, V. A. Venikov, B. A. Glinskiy, L. R. Karapusha, A. I. Uemov, V. A. Shtoff etc.); the activation of cognitive activity in the process of education (E. Ya. Golant, M. I. Machmutov, S. L. Rubenstein, R. G. Lemberg etc.).

The scientific works of N. M. Amosov, K. B. Batoroev, V. A. Venikov, B. A. Glinskiy, A. I. Uemov, V. A. Shtoff, V. K. Lukashevich, V. O. Slavin etc. are devoted to the analysis of the didactical and educational opportunities of modeling in gnoseological and methodological plans. The works of L. R. Karapusha, Yu. A. Kovarskiy, V. P. Mizintsev, N. A. Soloduhin, V. A. Tainitskiy etc. are dedicated to the learning of the models' role and opportunities in the educational process. In these works the models' properties are defined, the methodological schemes of their use in educational process are developed; there are different models' classifications. One can mark such didactical features of their use as: temporary limitlessness of work with them, the presentation of an object in three-dimensional space; the opportunity «to touch» an object with the hands, to look through this object from all sides and also the opportunity of practical operations performing in the process of work, the most important role of which is the forming of the searching structure of thinking and the development of its controlling function is underlined in some psychological-pedagogical and methodological investigations (P. Ya. Galperin, N. A. Menchinskaya, E. N. Kabanova-Meller, L. L. Gurova, etc.).

In series of researches (V. G. Boltyansriy, D. V. Vilkeev, G. V. Gabdreev, V. V. Davidov, N. V. Kuzmina, Yu. O. Kusiya, N. G. Salmina, L. M. Fridman, S. G. Shapovalenko, N. M. Shahmaev, A. A. Shibanov, etc.) of the didactical and psychological-pedagogical plan the main attention is focused on problems of the defining of the didactical and gnoseological functions of educational models, the optimal conditions of their use at school and higher educational establishment are substantiated.

N. V. Kuzmina distinguishes such gnoseological functions of models as: illustrative, translational, explanatory, predictive [123]. The models, methods and mechanisms of the increase of educational process' effectiveness were defined by (V. Babkin, I. V. Bureeva, V. Kuz, I. S. Kolodiy, S. A. Sharonova), the modeling of pedagogical situations as a means of future specialists' training were studied by (A. Berezuk, M. Gorkun, A. M. Dahin, Yu. M. Kulutkin,

A. G. Shtep), the psychological aspects of modeling were considered by (A. A. Bratko, V. A. Shtoff, D. B. Elkonin), the peculiarities of studying with the use of role modeling are reflected in the works of M. Voronko, etc.

Some dissertational researches (A. A. Usandro, V. A. Daibov, G. P. Kobel, A. Ya. Shatagina, etc.) are devoted to the problem of the modeling introduction into the educational process of a school or a higher educational establishment. So, in the work of A. A. Usandro [237]: 1) the opportunities of school educational modeling of natural processes and phenomena dynamics are identified; 2) the initial requirements to making models are concretized, the new educational dynamical models on the magnet basis are created; 3) the conditions of their effective use as a means of activation of students' cognitive activity are defined. V. A. Daibov [74] shows, that in order to learn modeling skills students should learn to perform such operations as: 1) the building of a mathematical model; 2) the choice of a model; 3) the research of a mathematical model; 4) the verification of a model; 5) the interpretation of the results. In this work the main requirements to models (adequacy, simplicity, visibility, and solvability) are studied. G. P. Kobel. [108] adds to them such requirements as: manipulativeness and beauty. A. Ya. Shagalina [267] developed the methodic of the playing imitation modeling use as the source of problematic situations.

The analysis of psychological-pedagogical literature showed, that the scientists didn't ignore the problem of creating and the use of the situations of a teacher's professional activity in the process of students' education. So, pedagogical situations were the subject of research of V. Andreev, V. Malev, A. Matskailova, G. Muravyova, L. Richkova, L. Sivenko, where their essence is reflected and theoretical bases of these situations' creating in the educational process of a higher educational establishment are laid. But behind the carried out investigations remained the problem of the forming of professional skills of future teachers of natural-mathematical cycle's subjects by means of professional situations modeling. The opportunity of using the means of modeling for these purposes is substantiated by the fact, that the skills of modeling are fundamental in the system of teacher's professional skills.

*The goal of research* was definition of the level of efficiency of pedagogical modeling as a means of professional skills forming of future teachers of natural mathematical cycle subjects.

*Research materials and methods.* Before coming to the description of the experimental work content by application pedagogical modeling as a means of professional skills forming of future teachers of natural-mathematical circle's subjects, let's give the definitions of the studied phenomena lying in the course of our research.

We define "a model" as a created with the purpose of getting and (or) keeping the information specific object in the form of thinking image, the description by the sign means (formulas, graphics, etc.) or a material subject,

reflecting the properties, characteristics and connections of an original object of random nature, essential for the task, solved by a subject (a person).

A model is a four-seated construction, the components of which are: a subject (a person), a task, solved by a subject, an original object (the fragment of reality) and a language of the description or a means of the model's material reproducing. A mathematical model is a special description (often approximated) of some problem, situation that in the process of its analysis gives the opportunity to apply a formal logical mathematical apparatus. Modeling is the investigation of cognitive objects on their models, the building (analysis and studying) of objects' models (systems, constructions, processes, etc.).

It was estimated, that modeling has its own structure, being subdivided into four stages:

stage I – the set of a task;

stage II- the creation and the choice of a model with the purpose of the original studying;

stage III- the model's studying;

stage IV- the shift of the data, obtained in the result of model's studying, onto the original.

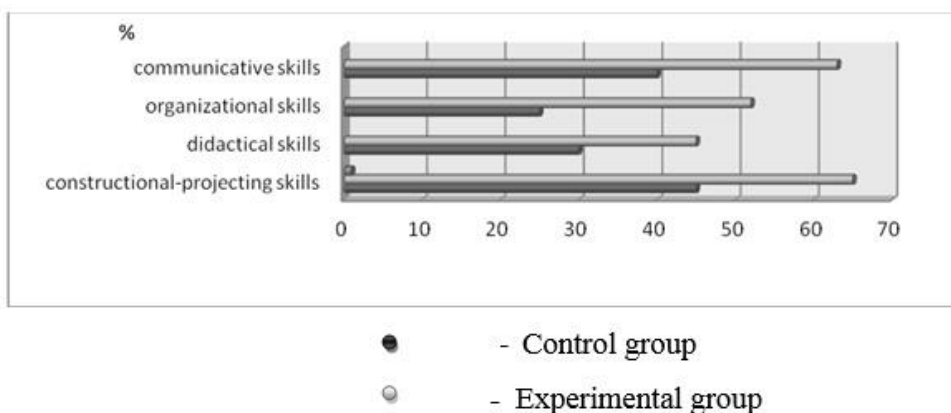
We classify models depending on the way of their reproducing (i.e. on the means, with the help of which a model is built) and on the character of the objects, that areas of the objective world, which are reproduced in the models, combining them into two big groups: material (physical and analogical) and ideal (intuitive and sign). In our turn in sign modeling we emphasized mathematical modeling particularly.

Within a framework of our research under pedagogical modeling we infer an ideal modeling with the help of which the models of pedagogical phenomena and objects are created. On the basis of the pedagogical proceedings we define pedagogical situation as a conjunction of pedagogical conditions in the course of reviewing knowledge and skills received by the students are transformed into the complex of professional actions. Taking into account the role of pedagogical situations in the course of study and in accordance with the character of a teacher's professional activity we detach reproductive, productive and creative pedagogical situations. Upon that reproductive pedagogical situation is that one which combines pedagogical situations foreseeing the students' solving of conventional one-type pedagogical situations. By productive pedagogical situation we mean a combination of pedagogical situations, foreseeing self-instructional students' work on defining those methods among others which are necessary for achievement the goals. Creative pedagogical situations includes a combination of pedagogical situations which envisage a pedagogical experiment held by future teachers.

For evaluation of the level of effectiveness of pedagogical situations modeling the groups of students were separated, equal on numerical strength

and progress in studies in the World's Languages Institute of SNPU named after K. D. Ushynsky. In the first (experimental) group the studies were held with the usage of three types mentioned pedagogical situations modeling according to growing creative order, in the second (control) group the traditional technologies were used. To sum up the level of effectiveness of applying the pedagogical situations modeling as a means of professional skills forming of future teachers of natural mathematical cycle subjects the methods of A. Rean, V. Yakunin, A. Kuznetsov, N. Schurkova were used.

*Results and their consideration.* Research results on sufficient level of formation future teachers of natural mathematical cycle subjects are represented on the picture 1.



Picture 1

Sufficient level of formation future teachers of natural mathematical cycle subjects

Conducted research demonstrated that the usage of pedagogical situations modeling in an educational process facilitated the students' level of mentioned skills formation.

*Conclusion.* Thus, pedagogical modeling is an effective means of professional skills forming of future teachers of natural mathematical cycle subjects. The main advantage of pedagogical modeling – is an opportunity of systematic inclusion the students into profession-oriented activity with the growing creative nature. Pedagogical modeling also promotes to upgrade the students' study motivation, formation their professional interests. Applying of pedagogical modeling while professional training of future teachers makes an educational process more vivid, dynamic, creative, intensive and elevates it to higher and more modern level.

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*Lynenko A. F.*

**THE QUESTION OF EMOTIONAL COMPONENT  
FORMATION OF MUSICAL PERFORMANCE CULTURE FOR  
FUTURE TEACHER IN PRC**

*Odesa, Ukraine*

**Abstract.** *The article deals with the issue of peculiarity of emotional component formation of musical performance culture for future teacher in PRC. The reasons for the lack of emotional expressiveness of the piece of music interpretation by Chinese students are highlighted. The ways to overcome this problem are under study. The author underlines the characteristic features of the piano playing teaching in China such as: the belief of music and teaching community in mastering the technical excellence of execution; the lack of teachers' attention to the depth of understanding the idea and content of compositions, especially the methods of teaching students in music schools and universities. It was mentioned that technical excellence becomes more relevant factor in assessing the pianist than the depth of idea and individuality of interpretation that reduces the level of Chinese artists and teachers of musical specialties.*

**Keywords:** *culture, emotional expressiveness of music interpretation, Chinese set of mind.*

The issue of peculiarity of emotional component formation of musical performance culture for future teacher of Music is of great importance in respect of the theoretical and applied aspects. For the future Chinese teacher of Music