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ANALYSIS OF THE FOREIGN PRACTICE OF MODELLING RESEARCH ACTIVITIES OF PEDAGOGICAL EDUCATION SPECIALISTS

The article provides the results of the theoretical study of modelling research activities of pedagogical education specialists based on the analysis of foreign sources of information. The Ukrainian educational system seeks to join the European educational and research space. That is why the study of foreign experience in the implementation of research activities of specialists in the field of pedagogy is especially relevant. Given the fact that modelling is a universal means of conscious perception of reality, it is this aspect of the presentation of research activity that needs systematic consideration and requires detailed study. The purpose of the study is to carry out a theoretical study of examples of modelling research activities of pedagogical education specialists in foreign theory and practice. The object of the study is the process of research activity of pedagogical education specialists. The subject of the study is examples of modelling research activities of pedagogical education specialists in foreign theory and practice. Research methods: review of the literature on the research topic, systematization and generalization of information regarding the process and results of modelling research activities of pedagogical education specialists. The study of foreign sources of scientific information made it possible to determine that research activity is an important component of the professional activity of pedagogical education specialists. The generalized model of this activity is formed by the components: selection of the topic, definition of the problem, formulation of the research questions, creation of the research design (definition of the research purpose, definition of the methods of forming a sample, selection of the methods and procedures for collecting information, development of the strategy for analysing the collected data), presentation of the results. The perspective of further research involves the development of models of research activities of pedagogical education specialists based on declarative and procedural modelling.

Key words: model of research activities, pedagogical education specialists.

The relevance of the problem. At the international level, we can observe an increased attention to research in the field of teacher training for the implementation of research activities, in some countries such training is mandatory [Lidewij & etc.]. The Ukrainian educational system follows these requirements. That is why the key requirements for teachers are participation in the scientific research work of the educational institution, submission of applications and work on grant projects, publication of the results of author's research in the most prestigious and authoritative journals, active involvement of students in research activities, etc. In addition, the demands of students for the quality of the educational process require the teacher to search or develop the author's effective content, forms, methods

and means of training. Foreign educational practice views research as a process of systematic and critical consideration of professional practice in order to obtain information for effective educational activities [Reid].

Therefore, the teacher's professional activity turns into a constant process of research activities, the purpose of which is to improve one's own educational practice, to obtain theoretical and empirical results that are of interest to the domestic and foreign educational community.

However, the results of foreign studies show that some teachers have a negative attitude to such work. The research conducted [Joram, Ponte, Beijard, Ax, Puustinen, Säntti, Koski, Tammi] made it possible to define the reasons for this attitude, namely: the priority of quality preparation for

classes; strong cognitive load during research; obligation to present the results of research work, etc. The importance of combining educational practice and research activities is emphasized by [Miles & etc.]. The author points out that the educational practice of teachers should be based on research that considers teaching practice, as well as research related to teaching practice [Miles & etc. : 9].

Considering the fact that modelling is one of the universal methods of learning reality, the question arises about the availability of research activity models, the implementation of which will contribute to reducing the negative experience of teachers and contribute to the development of their research practice. The trends of globalization of education prompt the search, analysis and generalization of foreign experience.

Analysis of recent research and publications.

The works by V. Bykov, I. Osadchyi, O. Spirin and others have revealed the essence of the modelling process. D. Lande has singled out the properties of the models, and S. Ivanova has formed the stages of their development. The justification of research activity planning models has been presented in the works by L. Prexl, N. Sennewald, K. Girgensohn et al. The components of the model of developing a research question and its essence have been formed in the works by M. Karmasin, R. Ribing and S. McCombs et al. The basic work that reveals the methodology of praxeological research has been presented by J. Formosinho, O. Formosinho. Examples of the practice of implementing various research activity models have been presented in the works by F. Poblete-Valderama et al., S. Chan et al.

Despite the availability of scientific developments on this issue, the analysis of examples of modelling research activities of pedagogical education specialists from foreign educational theory and practice requires further attention. The introduction of the most successful examples into the domestic educational process will improve the teachers' research activities.

The purpose of the study is to carry out a theoretical study of examples of modelling research activities of pedagogical education specialists in foreign theory and practice, to formulate recommendations for their application in domestic education. The object of the study is the process of research activity of pedagogical education spe-

cialists. The subject of the research is examples of modelling research activities of pedagogical education specialists in foreign theory and practice. Research methods: review of the literature on the research topic, systematization and generalization of information about the process and results of modelling research activities of pedagogical education specialists.

Statement of basic research material.

At the first stage of the study, the essence of the "model" and "modelling" concepts will be defined. So, among the universal means of conscious perception of reality, especially in the field of professional activity, there is a model as a holistic reflection of a real object in an ideal form [Osadchyi : 2]. A model is a certain representation (analogue, image) of a system that is projected and reflects the features and properties of this system, and the purpose of its construction is to create an artificial object with the help of which a real phenomenon or system is presented/displayed [Bykov : 232]. By implementing the abstractions and simplifications used in the process of scientific modelling, super-complex objects become objects of knowledge. According to [Goodnough : 749], the model is the basic unit of theory analysis. At the same time, the model is an abstract representation of the theory, and its operational structure can be transferred empirically [Spirin : 339]. Such universality encourages scientists to model certain elements and stages of its implementation. When analysing activity systems, it is advisable to form a model that contains the following components: subject, object, goal, motive, or products that are the result of participation in activity [Reid].

The researcher [Ivanova : 48] formulated the following stages of model development: 1) study of the model building issue, definition of the functions of the object under research, its place and role in the education system; 2) setting tasks to define the components of the model, its effective functioning and diagnostics; 3) identifying the necessary components of the model, criteria for their diagnosis; 4) establishment of relationships (logical, functional, semantic, technological, etc.) between previously defined components of the model; 5) development of the model and prediction of its dynamics [Ivanova : 48]. The properties of the models are the following: adequacy, consistency, certainty, sensitivity, realism, efficiency,

progressiveness [Lande : 39]. The implementation of the formulated provisions leads to the emergence of various models that are substantiated, implemented and changed. Let's consider some examples of the implementation of modelling research activities of pedagogical education specialists based on the analysis of foreign theory and practice.

At the first stage of the research, its detailed planning should be carried out. The author provides a sequence of steps for planning research work: calculation of working hours per day (time of productive work, educational and cognitive features, educational experience); definition of the stages and sequence of their implementation [Prexl]. The opinion about the need for detailed planning continues to be developed in the works of other authors [Sennewald & Girgensohn]. The authors have defined the following stages: search and reading make up 15% of the time (getting a general idea of the topic, formulating a research question); evaluation and structuring of the work – 15% of the time (approval of the research question, formulating the structure); writing a draft version of the work – 40% of the time (writing and discussing the version of the work); finalizing the work – 30% of the time (discussing, adding materials); checking (checking for compliance with requirements, sending and receiving reviews) [Sennewald & Girgensohn : 102]. The stages presented by the researchers should be considered as procedural models for planning research activities.

The next stage of pedagogical research is aimed at defining the purpose of the research. The stages of such activity are the following: search for a topic (reviewing the literature, search for ideas through creative methods, thematic review); definition of the focus of the work (formation of the focus, search for new concepts); formation and clarification of the research question, formulation of the research purpose [Voss, Oehlrich, Kullmann]. Special attention is drawn to the “research question” concept. In particular, [Karmasin & Ribingr : 34] single out the components of the research question model, namely: material, framework conditions, content aspect, structural aspects, methods and theories. At the same time, the research question should clearly define the aspects that will be clarified in the work. It is the research question that directs the scientist's work and determines

the future type of work, namely: primary or secondary, qualitative or quantitative, descriptive or experimental [McCombs].

The next stage of the work is the formation of the “research design”. It should be noted that this concept is new in domestic educational practice, and therefore requires particular attention. So, the term “research design” refers to the strategy of answering a research question using empirical data. The model of the research design formation involves: definition of the research approach (qualitative, quantitative); selection of the type of research and its structure (experimental, quasi-experimental, correlational, descriptive); selection of a sample (probabilistic, non-probabilistic); choosing a data collection method (questionnaire, survey, observation, etc.); planning of data collection procedures; defining the data analysis strategy (quantitative analysis, qualitative analysis) [McCombs].

Summarizing the presented information, let's pay attention to the fact that the analysed sources of information contain specific recommendations regarding the stages of research implementation and recommendations regarding the selection of possible options for its implementation. However, they do not contain recommendations for the research design development regarding specific objects and subjects of educational theory and practice.

Further research will be directed to the study of “training through research” examples and models of their implementation. Consider the example presented by [Poblete-Valderrama et al.]. For the training of teachers, the authors have proposed topics and relevant technologies of activity that reveal the following aspects: introduction to research; research methodology (paradigmatic approach); structure of scientific articles; structure of scientific work; presenting the results of scientific research; mathematical statistics in research [Poblete-Valderrama et al.]. According to the results of the pilot implementation of the specified program (as a model of the teacher's research activity), the authors have concluded that it is effective due to teachers' mastery of the ability to apply the mastered methodologies for their own practice.

Note that the given example has an important feature – it is practically oriented. That is, it allows the teacher to master the methods of research activity

to create products (scientific article, research work, presentation of research results, etc.). The application of such an approach, in our opinion, is appropriate.

An example of the implementation of a research approach in training has been given by [Chan 2016]. The author has drawn attention to the lack of practice-oriented texts in textbooks (transcripts of authentic conversations at the workplace) that are necessary for mastering educational information as evidenced by the study of the opinion of applicants for education [Timmis : 122]. The experimental study provided for the introduction of such texts into the educational practice and research activities of applicants for education. Students' comments received by the researcher are incredibly interesting. These are: "[we] can see real language instead of the 'proper' language in textbooks", "we worked with real tasks", etc. [Chan : 81]. The results of the experimental work allowed the author to form a conclusion that the students studied and worked with "real" materials, which made it possible to improve the understanding of future professional activities.

In the context of the development of domestic educational practice, this example is interesting due to the implementation of "teaching in the real context" and the application of a model based on the combination of pedagogy and research activities. The presented results have shown how useful for teachers is the combination of educational and research activities, the result of which is the formation of an empirical basis for theoretical provisions. Note that the work of the researcher [Chan] stimulates the discussion of ways to strengthen the relationship between research and pedagogy to improve educational practice. Within the framework of our study, this experience directs to the identification of specific products of the teachers' research activities, the study of ways of their development and the involvement of real examples used in educational practice in the educational process.

A fundamental work that reveals the methodology of praxeological research [Formosinho & Formosinho : 601]. In particular, the author has presented criteria of rigour and ethics in qualitative research. The authors have stated that research in education is part of this movement for a more meaningful and useful social research connected to the social practice in natural educational contexts.

Among the masses, the following criteria have been singled out: detailed description of actions, description of the circumstances of the studied action, description of the local research context and its interaction with meso- and macro-contexts. In addition, according to the authors, the detailed description of actions and contexts as a principle for rigour in research is essential for this mechanism of transfer of knowledge, since it is necessary to inform fully the interested researchers, practitioners, policymakers, trainers and other educators that may import the findings to their contexts if dense enough information is provided. Analysing the influence of the researcher's personality, the author points out that the person of the researcher is the main instrument of research. So, researchers' declaration of beliefs, commitments and interests is also an essential principle for ethics in research.

Summarizing the results of the study [Formosinho & Formosinho] provides grounds to draw a conclusion about the need to perform the following procedures for revealing the essence of research activity: defining the stages, clear structuring the content of each stage, forming the results of the performance of each stage of activity. The objective could be achieved by developing models of the stages of the implementation of research activities and the results of their implementation. In particular, we consider the implementation of declarative and procedural modelling of research activity to be promising. At the same time, declarative models should be aimed at the reproduction of domain objects, their properties and relationships between them. They determine the content or semantic part of domain knowledge. Procedural models should present the principles and order of transformation of domain objects (algorithms, methods, instructions, recipes, decision-making strategies, etc.). In the context of our work, we note that declarative models determine the content (semantic) part of domain knowledge and form a subject model of research activity training; procedural models present an operational model of research activity.

Findings from the study and prospects for further research. The work has presented examples of research activity modelling. Using theoretical research methods, we have studied the essence of the concepts of model and modelling, considered models of research planning and implementation.

The concepts of research question and research design, which are new in domestic education, have been characterized. Using the analysis of examples of practice, the author's ideas for modelling research activity have been formed.

Finally, we remind the reader of an important clause of our analysis. We have analysed a limited number of scientific developments. Although we

consider our findings as valuable evidence of the relevance of modelling the research activities of pedagogical education specialists, our analysis is able to evaluate only some of its examples. However, this did not prevent us from deciding that further work should be directed at defining the stages of research activity, developing declarative and procedural models for their implementation.

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АНАЛІЗ ЗАКОРДОННОЇ ПРАКТИКИ МОДЕЛЮВАННЯ ДОСЛІДНИЦЬКОЇ ДІЯЛЬНОСТІ ФАХІВЦІВ ПЕДАГОГІЧНОЇ ОСВІТИ

Стаття презентує результати теоретичного дослідження питань моделювання дослідницької діяльності фахівці педагогічної освіти на основі аналізу закордонних джерел інформації. Українська освітня система прагне долучитися до європейського освітнього та дослідницького простору. Саме тому вивчення зарубіжного досвіду реалізації дослідницької діяльності фахівців педагогічної галузі особливо актуалізується. Зважаючи на те, що моделювання є універсальним засобом усвідомленого сприйняття дійсності, саме цей аспект представлення дослідницької діяльності потребує системного розгляду та вимагає детального вивчення. Мета дослідження – здійснити теоретичне дослідження прикладів моделювання дослідницької діяльності фахівців педагогічної освіти у закордонній теорії та практиці. Об'єктом дослідження є процес дослідницької діяльності фахівців педагогічної освіти. Предметом дослідження є приклади моделювання дослідницької діяльності фахівців педагогічної освіти у закордонній теорії та практиці. Методи дослідження: аналіз літератури з теми дослідження, систематизація та узагальнення інформації щодо процесу та результатів моделювання дослідницької діяльності фахівців педагогічної освіти. Вивчення закордонних джерел наукової інформації дозволив визначити, що дослідницька діяльність є важливим компонентом професійної діяльності фахівців педагогічної освіти. Узагальнену модель цієї діяльності формують складові: обрання теми, визначення проблеми, формулювання дослідницьких запитань, створення дизайну дослідження (визначення мети дослідження, визначення методів формування вибірки, обрання методів та процедур збирання інформації, формування стратегії аналізу зібраних даних), оприлюднення отриманих результатів. Перспектива подальших досліджень передбачає розроблення моделей дослідницької діяльності фахівців педагогічної освіти на засадах декларативного та процесуального моделювання.

Ключові слова: модель дослідницької діяльності, фахівці педагогічної освіти.