

**STRUCTURAL AND FUNCTIONAL MODEL OF MASTERS'  
PROFESSIONAL TRAINING AIMED ON EDUCATIONAL  
MEASUREMENT PROGRAM AT PEDAGOGICAL UNIVERSITY IN  
CONDITIONS OF STUDENT-CENTERED APPROACH**

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***Summary.** This article describes the structural and functional model of masters' training in educational measurement program at the pedagogical university in conditions of student-centered approach. There are counted units it consists of and revealed the content of its components. There is shown the interrelation between components and also the logic and structure of their placement. We have also lead the expression of such terms as «pedagogical model», «professional training», «educational measurement». Given the specificity of masters' training in educational measurement program, a semantic content of certain structural elements of the model was detailed.*

***Key words:** master, professional training, model of masters' training, educational measurement, student-centered approach.*

**Formulation of the problem.** The process of implementing educational measurement practices in Ukraine has extremely actualized the problem of training highly qualified specialists in this field. Increasing problem in such experts was caused by all out realization of the External Independent Testing, massive introduction of testing technologies in educational process in all levels of scholastic institutions, conducting monitoring studies in education, using of tests for staff recruitment by employers and others. Most people, who work in this area, have got specialized higher education and have no training in educational measurement.

**Analysis of recent studies and publications.** Analysis of learned treatise proved that the attention of researchers is centred on such aspects of professional training of specialists in the branch of education as methodological foundations of modern educational philosophy (V. P. Andruschenko, I. A. Ziazium,

V. H. Kremen), problems of continuous professional education (S. Yu. Honcharenko, N. H. Nychkalo, S. O. Sysoieva), higher pedagogical education (V. I. Bondar, A. A. Bulda, O. V. Hluzman , V. I. Lugovyi, V. K. Maiboroda), masters' training in different branches (I. I. Drach, V. A. Bereka, S. V. Burdina, R. A. Heiserska, A. N. Svielousova, I. V. Sharan). Regarding the masters of educational measurement, the various aspects of their training outlined in scientific quests O. V. Avramenko, Yu. O. Kovalchuk, L. O. Kukhar, R. J. Rizhniak, V. P. Sergiienko and others.

**The aim of the article** is to reveal the components of structural and functional model of masters' professional training aimed on educational measurement program at pedagogical university in conditions of student-centered approach.

**Presentation of the main material.** Modeling in education plays an important role and takes one of the most significant part of scientific pedagogical researches. Right a model of an object or phenomena can show its approximate predicted growth and the possible consequences of it.

Developing structural and functional model of masters' professional training in educational measurement at pedagogical university in conditions of student-centered approach, we were guided by the laws of dialectics, the principles of science, logic, integrity and reliability, and also used a number of terms, including pedagogical model, professional training, educational measurement and student-centered approach.

Following the definition of E. O. Lodatko "*pedagogical model* is a mental system that simulates or reflects certain properties, features and characteristics of the research object or the principles of its internal organization or functioning and it is presented as a cultural form inherent to peculiar sociocultural practice" [2, p. 108]. Pedagogical simulation is a complex process and it requires a compliance with necessary rules. According to the V. Maslov [4], the main purpose of modeling is creating a working analogue as close to the existing original as possible, while the model should reproduce the most complete picture

of perfect process (object) that is systemic in nature. It means that it is necessary to know and consider features that are innate for systems. Among these features are: structuring, hierarchical pattern (subordination), interinfluence and quality correlation between the components of systems (subsystems) and systems of more general level, tendency to the primary chaotic state and the presence of such a component that stabilizes namely management system. Developing the educational models it is viable to take into account such their features as integrity, completeness, insularity, limitation, informativeness and cultural correspondence; stability, adaptivity, controllability; purposefulness, uncoiling, feasibility; adequacy, relevance, validity and evidence. [2]

Considering the concept “professional training” we refer to the scientific research of I. I. Drach who explains this definition as continuous and controlled process of gaining personally-subjective professional experience to create professional competence [1, p. 129]. The process of masters training concerning educational measurement must be an entire system that takes into account the trends and regularities of contemporary development of education, necessary requirements to the content of professional competence required for successful professional fulfilment, permanent growth and improvement of professional and personal qualities. And it is promoted with a new paradigm of higher education – student centered approach, which is based on the idea of raising students' suitability for employment (employability). The key concepts of the new educational paradigm are learning outcomes and competencies over the definition and wording of which should work all stakeholders: universities, graduates, employers, professional organizations and others. [7, p. 16 - 19]

Another concept which is worth to be determined to understand the specifics of the developed model is an “educational measurement”. It has been widely used in Ukraine actually since the beginning 2000 (the introduction of the External Independent Testing, participate in international and national monitoring studies, etc.). According to statements given by us in one of the previous publications [3], we use the following interpretation of the term “Educational Measurement is a

scientific knowledge which examines the history, theory and method of developing and application tools for measuring educational achievement in all areas of application mathe-statistical analysis of the results of measurements and their interpretation". Thus, a specialist in educational measurement should have deep knowledge, understand in details, to be able to apply appropriate, analyse and evaluate basic concepts, principles, fundamentals, history, current status and trends in the processes of evaluation, testing, monitoring in education; consciously act in their professional activities; own professional and personal qualities that provide the availability of critical thinking, information literacy, creativity, the capacity for communication, collaboration, reflection and more.

Considering the above, we have developed a training model that consists of three parts: purposeful, content-operational and effective. Each of the blocks has components that come logically from each other and which are placed in hierarchical sequence.

The first block, purposeful, reflects the metatask - to form a masters' willingness in educational measurement to professional activity. It consists of a target and motivational components.

Target component is a fundamental backbone concerning the model, because all the other components will be directed to the aim achievement, that is the final result, on which is directed the hypothetical model, striving for the ideal, system. As a result, after the goal achievement, ultimately we will have prepared a competent professional, competitive specialist in today's job market, who has deep professional knowledge and skills, who is able to solve professional tasks and problems, ready to work individually and in a team, has formed professional competence and a system of personal values and important for our job qualities, who will meet his professional and personal potential and needs of society in the field of educational measurement. Defining the goal of preparation, in our opinion, is preceded by an analytical study of the labor market and awareness of training relevance. Achieving the goal as the final desired outcome of functioning of created model is a long-term process that has certain stages and conditions.

Therefore it is important to formulate tasks, the implementation of which will influence on the quality of the final result. The main tasks of the professional training of masters of educational measurement are:

- to form general, professional and substantive competences;
- to highlight and enhance personal and professionally-important features;
- to motivate to be successful in professional activities.

The second component of purposeful block is the motivational one, which includes:

- to determine needs (both applicants and employers);
- to formulate motives and incentives for studying (professionally oriented work, analysis of the contingent of applicants and students);
- to formulate motives and incentives for job matching one's qualification (analysis of statistical data on target employment of graduates).

Motivational training component is responsible for formation of stable internal system which makes undergraduate of educational measurement interested in studying and acquisition of knowledge, skills and competences. Until he becomes successful and has a job matching his qualification, and what is the most important, until the systematic development of personal and professionally-important qualities which are required in order to reach the highest level of professionalism, to studying through the whole life and to self-development.

The next block is content-operational one, it is the core of the model. This block is realized using following components: organization, theory, content and technology.

The first unit in the structure is organization, because it helps to identify subjects and objects of training and conditions in which they interact. It means that resource-organizational and psycho-pedagogical conditions in which interaction between subjects occurs (undergraduates, academic staff: teachers, curators of coursework, curators of pre-graduation coursework or research work, production practical training or prospective employers) and objects (university, production practice bases, potential places of employment including the Ukrainian Centre of

Educational Quality Evaluation, the regional centres of education quality evaluation, departments, centres, laboratories of education evaluation or laboratories of education quality monitoring of schools or local authorities, staff of various departments of state and private type of ownership.

But it should be noted that we try to take conditions out of the list of constituents, because they permeate whole content-operating unit.

The next unit of this block is the theoretical one. It includes 3 components: regulatory and legal principles, didactic principles and theoretical framework.

Regulatory and legal principles unite main and basic documents which regulate the process of training of masters of educational measurement at European, state and region levels. Those documents are: The Constitution of Ukraine, Education Act, Higher Education Act, Act on Tertiary Education, decisions of Cabinet of Ministers of Ukraine, orders and letters of the Ministry of Education and Science of Ukraine, internal orders of universities and rules of entering (admission).

Didactic principles describe the laws, principles, modern educational ideas that create the basis for the training of future specialists in educational measurement. During the search phase of the pedagogical experiment we concentrated our attention on various traditional and modern teaching principles. Since the student-centered philosophy of teaching is widespread, we should highlight next didactic principles: scientific, systematic, consciousness of studying, the unity of concrete and abstract component, stability and reliability of knowledge, unity of research, teaching and learning and educational activity of students, principle of professional independency and mobility.

We think that didactic principles help to separate general teaching approaches to the organization of the educational process. In the terms of the analysis of the scientific literature we've discovered that the best approach for the modern paradigm of professional training of masters is competency approach with components of systematic, student-centered, reflective and acmeological approaches. We think that this complexity provides the efficiency and

effectiveness of the educational process and its compliance in the world of changing requirements of our society.

This component is also determined by scientific and theoretical principles of training. Those principles are: measurement theory in education, education quality monitoring, methodology of ranking in education, expert evaluation etc.

Following the principle of consistency, the next component is the content.

It is extremely important because it reflects the process of formation, development, improvement, sometimes even adjustment of the content of professional competence.

Its first component is design and planning, which includes information about educational qualification characteristics (description of requirements for professional skills, knowledge and abilities of a person who graduates), curriculum (which includes the content of training, the list of standard and optional subjects) and diagnostic tools (where the amount of necessary knowledge and skills are recorded). In addition, this component includes curriculum, work and training plans of disciplines. Projective-planning component is responsible for the correct planning of the educational process, which depends on its efficiency and effectiveness.

The next one is competency-productive component. According to the terms of student-centered approach basic definitions of the educational process are competencies and learning outcomes. In the work of specialist in educational measurement, we can highlight following areas: managerial, analytical, creative and pedagogical. According to these areas the scheme of educational process results was developed. In order to succeed graduates should learn subjects curriculum: “Fundamentals of educational measurement”, “Scientific bases of designing tests”, “Testing in the field of HR-management”, “Technology of Distance Education and Testing”, “Mathematics and Statistical Methods in Educational Measurement”, “Education Policy”, “Monitoring Educational Quality”, “Cognitive psychology and psychometry”, etc.

The final part of content-operating block is the technological one. Educational and practical component describes goals of studying (training), content, forms of organization, methods and tools. Main features of masters' training in educational measurement program are the diversity of applicants according to the area of previous degree and age factor. Thus, forms methods and tools of studying must be predicted. We should consider the combination of philosophical-humanitarian and applied mathematical training. Also we should pay attention to some aspects of the concept of lifelong studying. Educational-practical component is probably the most important in terms of providing efficiency of the final result of specialists in educational measurement.

Evaluation-correcting component of technological part requires an effective system of monitoring educational quality and efficiency diagnosis of the educational process. It allows us to manage the educational process and to make adjustments if necessary. Very important aspect of this component in the terms of training masters in educational measurement is to use computer technologies, especially MOODLE platform.

The final block is the result block. It provides an evaluation of the efficiency of the model and determination of the quality and level of readiness of masters in educational measurement to their profession. The final goal of further research is to define criteria and indicators of formation of readiness of masters of educational measurement to the profession.

V. Maslov [5] states that the model based on scientific basis, should be easy for understanding to all participants of pedagogical experiment. It should reveal hierarchy and sequence of interactions, following the principle of the unity of general and specific. We think the structural and functional model of masters' training in educational measurement program at the pedagogical university in conditions of student-centered approach takes into account all aspects of training masters of educational measurement.



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