

DEVELOPMENT OF MODULAR EDUCATIONAL PROGRAMMES BASED ON THE FORMATION COMPETENCIES

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***Abstract.** Development of modular educational programmes based on the formation of trainees' competencies solves the problem of ensuring a unified approach for the construction of educational programmes of specialties. The implementation of requirements of the Bologna process to ensure the quality of higher education in accordance with the Dublin descriptors implements the novelty of the research in the framework of the modular technology of education in Kazakhstan. The aim of the study is to reveal the process of development of modular educational programmes through the organization of pedagogical process of Formation of Professional competence of trainees. The primary methods used are theoretical generalization, justification and systematization. The study design includes discussions of authors from different countries, definitions of main meanings, schemes, figures, tables. The key results of study is to reveal the Structure, Model, Scheme and stages of the organization of pedagogical process of Formation of Professional competence. Specific asked questions for research in general prospects of implementation of modular educational programmes are formulated in the conclusion.*

***Keywords:** competencies, educational programmes, Formation of professional competence, modular, organization of pedagogical process.*

Introduction

Global trends in education indicate an increase in academic freedom of universities. In Kazakhstan, since 2014, universities have been given the opportunity to take into account the features of labour market characteristics of a

particular region in relevant personnel and expand the right of universities to determine the content of undergraduate education programmes to 55 %, graduate programmes to 70 % and doctoral programmes to 90 %. During the past three years, the country's higher education institutions have developed many educational programmes of specialties that differ in elective components. To systematize educational programmes in frameworks of pedagogical process and creation of a methodology for developing educational programmes in collaboration with key stakeholders' becomes an urgent task.

The topicality of the development of modular educational programmes in the universities of Kazakhstan focused on the formation of competencies as an issue of global trends in professional training.

The novelty of research in prospect of the internationalization in education determined by the competence-based approach that facilitates the implementation of modular educational programmes.

The subject of research is organization of pedagogical process at universities of Kazakhstan for development object of research - modular educational programmes based on the formation of competencies for trainees (undergraduate, graduate and postgraduate students).

The study aims are to reveal the systematization of all stages and development of an algorithm of trainees' professional training on modular educational programmes.

Methods of research are theoretical generalization, justification and systematization of Structure, Model, Scheme and stages of the organization of pedagogical process of Formation of Professional competence.

Methodology

The Modular education programme (MEP) *is a document (set of documents), which reflects the content of professional education and consists of a set of modules and disciplines directed towards the possession of certain Professional competences, necessary to obtain the qualification* (Zhanguzhinova, 2018; ГООС РК, 2012).

The necessity of design and implementation of competence-oriented modular education programmes depends on the implementation of credit-based modular technology of training and ECTS (European Credit Transfer System) units (HKAOKO, 2010). Adaptation of standards and education programmes in accordance with the labour market demands and the establishment of quality assurance system is based on the implementation of Bologna declaration principles for the modernization of higher education system in the Republic of Kazakhstan.

For the development of Modular educational programmes were studied Tannrisever & Erisen (2009), which justified the need to introduce modular – competence technologies with the use of modular training programmes. This characterizes a high level of the achievements of planned learning outcomes and structural, contentive and technological flexibility of modular training programmes (The concept..., 2012).

The analysis of the theory provided above allowed to design a **modular education programme**, structured by the algorithm:

- 1) identify the range of potential users of the modular education programme, to analyse existing education relatively close programmes, which are related and similar in purpose (Navikienė, 2014);
- 2) identify a set of competences, necessary for acquisition (Mardesic, 2014);
- 3) develop a set of disciplines, which constitute the content of modular education programme (Navikienė, 2014);
- 4) construct Working curriculum in modular format (Gonzalez & Wagenaar, 2003).
- 5) establish an interdisciplinary interrelation of tasks with orientation towards project activity within the framework of “Course project” (Tannrisever & Erisen, 2009).

Pedagogical design – *is the purposeful formation of pedagogical process resources on the basis of the Model of education for assurance of effective achievement of planned outcomes (on the basis of state order)* (FOCO PK, 2012).

Results and Discussion

For Pedagogical design, it is necessary to define the *Model of Formation of Professional competence* (FPC) in the system of higher education of Kazakhstan: – based on the theories of: humanitarian pedagogy (Mardesic, 2014), productivity (Navikienė, 2014) and social constructivism (Ahrens, Purvinis, Zaščerinska, & Andreeva, 2016), includes knowledge, skills, attitude, which form Professional competence and characteristics of a specialist (Irbīte & Strode, 2016), identifies **regularity of content goal**.

- based on variability of individual development, personal competency and characteristics of a specialist (Navikienė, 2014). Forms theoretical and practical orientation and experience, which depend on the development of micro (internal factors) and macro environment (external factors), through cooperation between teachers and students, employers. Creation of personal project on the basis of training methods, technology and lifelong of raising of self-education and

qualification level, defines *activity-oriented organizational regularity* (Truskovska, 2013).

- dependant on interdisciplinary links in key competences, formedness of notions and ability to solve professionally-oriented tasks in professional activity, according to common Professional competences (Ofqual, 2015). On the basis of cognitive and didactic approaches towards knowledge, defined by the content of curriculum, according to education standards (Loughran, Berry, & Mulhall, 2012). Organization of the pedagogical process and activity through educational activities, based on the requirements and normative regulatory documents, depends on *resultative criterial regularity* (Ušča, Lubkina, & Pigozne, 2012).
- dependant on *objects* of education depend on external factors, which form Professional competence: Model, activity types (professionally-pedagogical and practical), pedagogical interaction, regularities, organization of pedagogical process, dynamic links. Design of Model defines the trajectory, content, structure of education processes.
- dependant on *subjects* of education depend on internal factors: motives, content, attainments of Professional competence of students, on the basis of the Criteria for the assessment, which are formed in the process of pedagogical interaction with teachers and employers. Harmonization on the achievement of common aims of the FPC and learning outcomes, solution of the MEP tasks for the implementation of the Methodic on the basis of activity types (professionally-pedagogical and practical) is carried out through the pedagogical interaction of students, teachers and employers.

On the basis of the conducted theoretical analysis and the study of regularities and dynamic links, it is identified that the Structure of the regularities of Professional competence of trainees, must be the basis of pedagogical process in the system of higher education in Kazakhstan (Figure 1).

As a result of the analysis of the theory, the developed structure of organization of pedagogical process of Formation of professional competence of trainees for the higher education system Kazakhstan is based on three regularities:

1. ***Regularity of content goal*** includes:

- Professional competence of trainees in Clothing design: knowledge, skills, attitude.

2. ***Activity-oriented organizational regularity*** includes:

- Factors (external; internal);
- competence types;
- didactic principles;

- training approaches;
 - Conditions:
 - normative;
 - pedagogical;
 - professional;
 - Stages of the Formation of Professional competence:
 - professional preparation;
 - raising of self-education and qualification level;
 - assessment of competencies.
3. *Resultative criterial* includes:
- Criteria for the assessment of Professional competence (motivational, contentive, procedural);
 - Organization of the process of Formation of Professional competence: requirements, training trajectory, forms of work;
 - Pedagogical diagnostics.

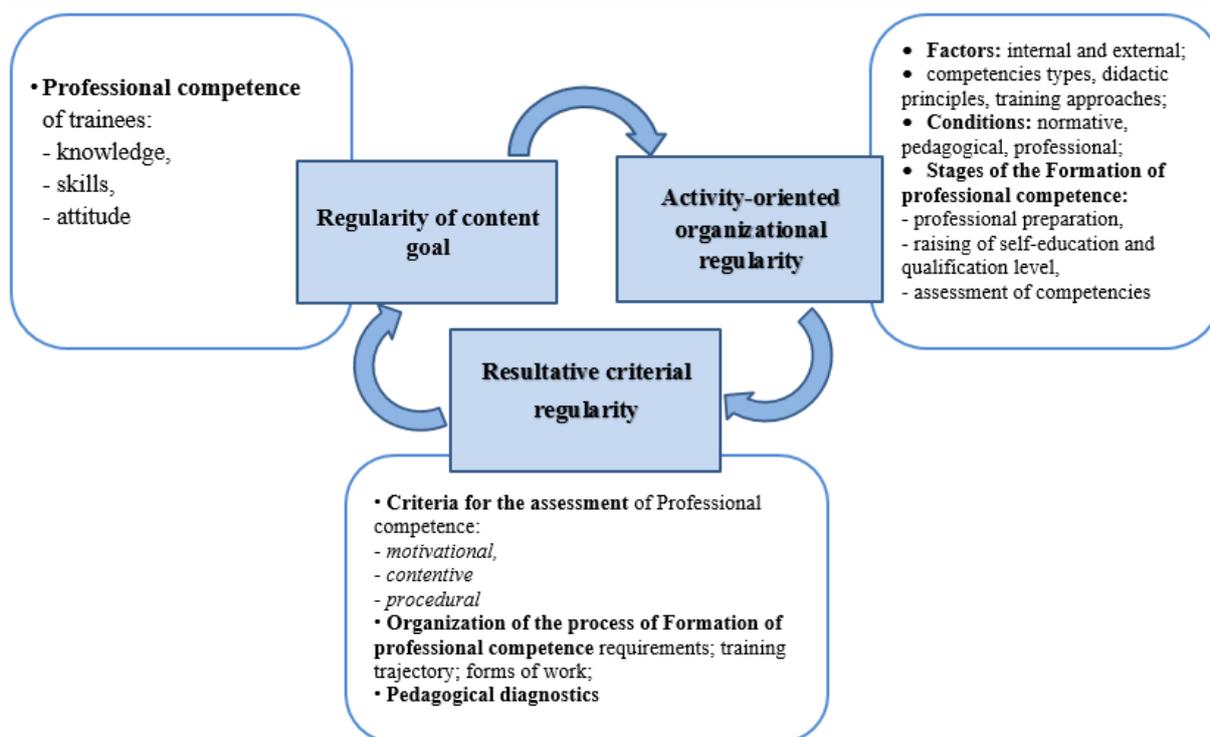


Figure 1 Structure of the organization of pedagogical process of Formation of professional competence of trainees of Kazakhstan

The implementation of the structure is directed to the realization of the Formation of professional competence of trainees of Kazakhstan.

The introduction of the proposed structure has created the need and the basis for designing the Model, which will ensure the modernization of the higher education system in Kazakhstan (Figure 2).

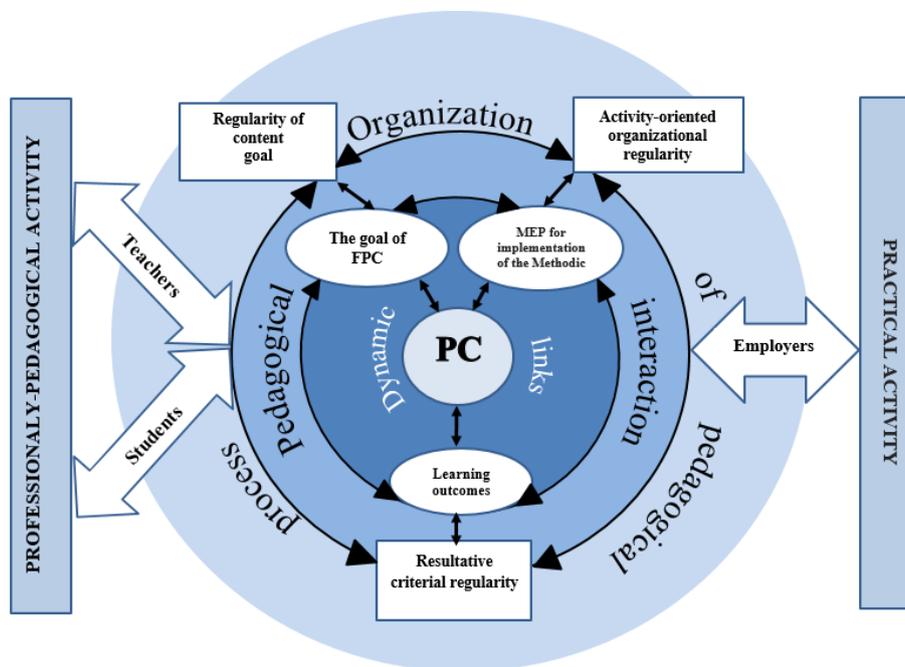


Figure 2 Scheme of the Model of Formation professional competence of trainees

Therefore, Model of Formation of professional competence of trainees promotes disclosure of scientifically-theoretical foundations of Professional competence with a goal of Formation of professional competence for implementation Methodic on Modular educational programmes with identifying Learning outcomes through dynamic links and pedagogical interaction between students, teachers and employers in activity types (professionally-pedagogical and practical) on the outlines of regularities of organization pedagogical process at Higher Educational Institutions.

Thus, the structure of the organization of the pedagogical process is substantiated (Figure 1) and the Scheme of the Model is revealed (Figure 2). The pedagogical design in a pedagogical process allowed to disclose all definitions of main meanings, schemes, figures, tables presented above. The pedagogical design's algorithm of all stages in the organization of Formation Professional competence in pedagogical process based on Modular education programme provided below.

At the first stage, the analysis is carried out on: the labour market base for the demand of specialists and standards and education programmes for development of qualification requirements and identification of spheres and organizations for the employment of graduates according to specialization.

At the second stage, *the identification of a set of competences (for cycles A, B, C in TC)* facilitates the design of the Modular education programme on the basis of competence-based approach, result-oriented training trajectory is formed, a set of competence types necessary for acquisition is identified. A list of general-professional and Professional competences (according to activity types and considering training profile), provided by SCES RK, is considered as a base (ПУПЛ, 2014), (ГОСО РК, 2012).

At the third stage, *a set of Modules is identified and an algorithm of goal implementation and problem solving in professional activity is formed* on the basis of the methodology of competence-based approach. Consideration of the dynamic links, identified during the determination of professional activity types of specialists allowed to apply the methods for programme's realization.

At the fourth stage, *a Working curriculum in specialty is drawn up (distribution of modules in cycles A, B, C) and specification of modules (aims, tasks, criteria for expected module results) is drawn up* (Правила..., 2011). The requirements, set towards structure and module content design, reflect the name of each module, its aim and objectives, requirements towards learning outcomes, including a number of credit points, expected module acquisition results (knowledge, skills, attitude), a mechanism for the assessment of an achievement of the planned results (assessment criteria, forms and methods), resource support of the module.

At the fifth stage, *a Working curriculum in specializations is drawn up (distribution of modules in cycles A, B, C). Consideration of logical dynamic links of the modules (interdisciplinarity, opportunity of academic mobility)* for the assessment of possibility of their concentrated acquisition and organization of academic mobility (intramural, intra-Kazakhstan, international).

Development of the Modular education programme (requirements towards competences, knowledge, skills and attitude) arises from the specificity of the structure of the Modular education programme:

- 1) students' acquisition of a discipline of each module during one year, but in different semesters;
- 2) the duration of a module depends on its content and specificity (general, supportive or specialized);
- 3) for the acquisition of a discipline on a professional level, it is necessary to study gradually at all education stages;
- 4) in order to ensure mobility, division of "comprehensive" modules into units based on a number of study years is recommended: 1 year – 1 modular unit.
- 5) a modular unit is an autonomous study material with a duration not more than one semester and it is finished with the formation of "portfolio" (ГОСО РК, 2012).

The example of formation of Modular programme implements the scientific and theoretical bases of professional competence through activity-oriented and system-oriented approaches in the process of professional-pedagogical and practical activity types based on the pedagogical interaction of students, teachers, employers. The goals of the Modular educational programme are implemented in a comprehensive manner on the basis of regularities and dynamic links of the Organization of the pedagogical process, complicating the thematic tasks from simple to complex. The tasks of the Module education programme are focused on the formation of knowledge, skills, attitudes of students, which must be implemented in accordance with the universal Methodic with the identification of learning outcomes, including unified system requirements, normative, pedagogical, professional conditions (Working training programme, The State Compulsory Educational Standard of the Republic of Kazakhstan) (Жангужина, 2018).

Conclusions

Thus, the following steps are necessary to develop Modular Education programmes, disclosing general prospects of their implementation: within the framework of training areas with higher education, universities independently develops various educational programmes in accordance with the National Qualifications Framework, professional standards and agreed with the Dublin descriptors and the European Qualifications Framework. The educational programme has a modular format and its design is carried out in the following sequence, which:

1. Formulation of the goal of the educational programme.
2. Mapping the areas of training in the educational programme.
3. Development of qualification characteristics of the alumnus.
4. Development of a specialist competency map.
5. Compiling a matrix of disciplines that form study modules.
6. Mapping the study module.
7. Development of the content of the educational programme.

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