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Review of the international experience upon professional preparation of teachers

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Abstract: The topicality of research is implementation of the innovative international experience of professional preparation of future teachers is an aim for modernization of the system of higher education. Improvement of the quality of human capacity and provision of future specialists with highly skilled workforce is possible only under the condition of integration in the global educational space. In this regard, the current stage of the reform of higher vocational school and the development of educational process in higher educational institutions (HEI) set new requirements for innovative update of its organization, content and methodic. **The aim of the research** is to identify the specific of directions in of professional preparation of future teachers on the base of the research of the international experience. The study of perspective systems and methodic in professional preparation future teachers are base of research methodology. Rapid increase in scientific and technological progress, integration into the global community, emergence of new information technologies sets increasingly demanding requirements for education. Higher education institution shall not only provide quality educational services, but also promote the formation of intellectual potential, restructuring economy and development of science-based production. Currently, professional preparation of teachers in universities are demand for a new results innovative education, integrated with intensive scientific research activity, interdisciplinary of education and scientific research, close connection of training with the consumers of industry and economy. Revealed concepts and provisions in the result of research will be the basis of implementation into the pedagogical process of higher education institutions.

Keywords: professional preparation, future teachers, international experience, sectoral training, university education.

Introduction

The quality of higher education predetermines sustainable competitiveness of the country in the context of globalization. As the process of globalization, internationalization of the economy and business advances, higher education faces new topicality objectives – training of professional workforce able to operate effectively in changed market conditions. The aim of the article to give particular attention to the professional preparation of future teachers upon the research of international experience.

The problem of professional preparation of students – future teachers on the example of specialty of Vocational training, for light industry is a direct reflection of core aspects of the sector. Consequently, a number of remaining challenges appears background of the problem:

- lack of formed subject-oriented practical knowledge of the specificity of productive process (Burleson, 2005), model for the formation of a specialist with applied abilities (Rauhvargers, 2009);
- disunity of methodology, which results from the lack of the aim, idea, realization of the necessity and social significance of the outcome – education product (Rauhvargers, 2009).

"Science for the sector" – this idea is the central today in the formation of the strategy of a new specialists' training model in the system of education, forming human potential, which defines the economic potential of country to a crucial extent (Zhanguzhinova, Magauova, Nauryzbaeva, 2016).

Objectives of industrial-innovative development of economy necessitate the implementation of innovative methods and technologies of teaching in universities. The state has adopted a series of measures aimed at creating a network of science centers through the development of technology parks and business - incubators, which allow to integrate science and business; and to raise the quality of teaching in universities. (The state Program…, 2010).

The implementation of aims may positively affect into the organization of pedagogical process in HEI, as it promotes effective work in changing conditions of global market, namely:

- identifies the need to reconsider education paradigms, content of training programmes, modules, orienting towards global thinking and vision;
- forms professional preparation of future teachers in organization of training for competitiveness at the global labour market, as it suggests international context and content of studied disciplines at all levels of higher education;
- stimulates acquisition of the best foreign standards and directions of education, mechanisms of process in training of specialists, integration of sectoral innovations.

Identified modern conditions of professional preparation of future teachers influenced on the implementing international experience into the system of higher education. The purpose of article in improvement of the quality of human capacity and provision of with highly skilled workforce, able to operate effectively in changed market conditions, assimilation of the best foreign standards and technologies, is possible only under the condition of modernization of higher education and integration in the global educational space. *In this regard,* ***the research problem*** *defined is:* insufficient development of professional preparation of future teachers of Kazakhstan based upon the research of international experience that impedes the integration into the global educational space and requires the study of European experience.

The aim of the research is to identify the specific of directions in of professional preparation of future teachers on the base of the research of the international experience.

Methodology

The question of research is: what mechanisms and directions of professional preparation of specialists are actual in educational process? The current stage of reformation of higher professional school, development of educational process in higher education imposes entirely new requirements for innovative renewal of its organization, content and methodology. This is review article, which aims to study and analyse the international experience of professional preparation of future teachers in universities and theoretical generalization of main mechanisms and directions. Participants of this research are students – future teachers, bachelors at 1-4 year at universities from Great Britain and France. Methods of research are analysis and synthesis. The procedure carried out on revealing types of professional preparation of future teachers with two different directions of HEI and their self-mechanisms.

Results and Discussion

The research of the problems of professional preparation of teachers on the base of international experience revealed two directions in Formation of Professional competence (FPC) on "methodic" and on the "system" (Zhanguzhinova, 2017), what allowed to determine:

- "methodic" – based on a decentralized approach in USA and UK with passing exams and issuing certificates, confirming the level of competence (Kennedy, Ahn, Choi, 2008; Darling-Hammond et al., 2012) (Table 1);
- "system" – centralized training with practically oriented goals, (state order) in Germany, France, Denmark, Portugal, Switzerland, Netherlands, Latvia, Spain, Finland, Belgium, Norway, Kazakhstan, Russia, Kyrgyzstan with Fulfillment of state orders on the basis of a holistic pedagogical process (Daniela et al., 2014; Halbe, Adamowski, Pahl–Wostl, 2015; Zhanguzhinova, Magauova, Nauryzbaeva, 2016; Rauhvargers, 2009) (Table 2).

The theories presented above allowed to reveal on the base of research the international experience on professional preparation the dependence on defining functional responsibilities of future teachers, on the basis of content and methods; existence of a uniform electronic base on ratings and data base; professional orientation; competitive examination; professional qualification level listing. Therefore, according to analysis of international experience on professional preparation of future teachers, the conclusions are the following:

- necessity of pedagogical interaction of best European experience in professional preparation of future teachers and modernization of the pedagogical processes in education, determined by Bologna declaration, such as:
  - strengthening of international competitiveness in higher education and research;
  - active participation in the integration of European higher education;

  - raising the quality of education and research through the participation of students and teachers in the international process of knowledge sharing;
  - diversification of the directions of supply of educational services;
  - accessibility of higher education; universalization knowledge;
  - the expansion of curricula and training of students in foreign partner universities;
  - trans-boundary education;
- development of flexible system of requirements, training trajectory, forms of work for implementation of institutional reforms in higher educational institutions on the basis of dynamic links;
- increased opportunities of Modular training with application of innovative methodic for professional realization of competent specialists in further labour activity on the basis of dynamic links;
- development of the assessment Criteria of the Formation of Professional competence.

Table 1

Types of professional preparation of future teachers in Great Britain

Nomination	Description of types of professional preparation of future teachers in Great Britain	Application in the research
Functional approach	Performing work in accordance with a certain professional standard, with a characteristic desire for greater integrity and functionality by integrating knowledge, understanding, values and skills, demonstrating abilities, determines the professional preparation of teachers in the UK. In the procedure for assessing each competency, sub-levels are allocated, and for each sub-level, in turn, specific performance criteria are defined (Atkinson, 2004).	The subject-practical approach to the FPC is a consequence of the systematicity, technological effectiveness in the professional training of teachers
The main specialized professional association	The presence of a single electronic database, in which educational institutions are obliged to make data on specialists who have received training or professional preparation with the award of qualifications. The educational institution interested in conducting training in accordance with certain qualification requirements, it is necessary to fulfill a number of mandatory conditions. The university must be in the special register of educational institutions of Great Britain and, accordingly, have a registration number. Conducts inspection of the university, on the basis of the developed qualification requirements, accredits educational institutions according to approved requirements (Harris, Sass, 2012).	Systematicity, techno-logical effectiveness, livelong of processes of professional preparation creates prerequisites for motivation and FPC in the professional future teachers
Certificate PGCE	PGCE – Postgraduate Certificate in Education – Training is provided in the technical colleges of colleges (Colleges for Technical Teachers) of artistic and pedagogical (Art Training Colleges) and pedagogical departments of universities. In schools an obligatory condition for obtaining a qualification in the specialty is 15–32 weeks of practice after 3–4 years of basic education at a university (Mukhametkaliev, 2011).	A subject-practical approach to the activities of future teachers is facilitated by the FPC
Certificate QTS	QTS – Qualified Teacher Status – includes a contractual training scheme for teachers; scheme of licensed training of teachers; a special scheme for the training of teachers who have received pedagogical training in countries that are not members of the European Community; school centres for the initial teacher training (open according to the Law of Education of 1994) (Gough, Scott, 2003).	Variability in the FPC creates prerequisites for motivation and intellectual-cognitive self-development

Table 2

Types of professional preparation of future teachers in France

Nomination	Description of types of professional preparation of future teachers in France	Application in the research
Certification	To confirm their professional competence and the ability to teach in a certain field, teachers need to pass a competitive examination, which results in the issuance of a state certificate for the fields of teaching (Rychen, Tiana- Ferrer, 2004)	Systematicity stimulates self-development and FPC of future teachers
Tests system	Careful selection of candidates through testing, analysis and interview (Rauhvargers, 2009)	Technological effectiveness stimulates the FPC of future teachers
Retraining "school – enterprise"	Training is carried out in vocational training centers, where students obtain the theoretical course, combining it with practice in the enterprise. Professional training can be carried out at the enterprise, without paying salaries to students. Alternating vocational training (also under contract with the enterprise) involves the internship of interns who have already received a special education for the purpose of specialization or pro–orientation. In this case, trainees receive a salary (Stoof et al., 2002)	The subject-practical approach contributes to the FPC in the activities of future teachers
Lifelong education	Concerning workers who raise their qualifications without interruption or with separation from production, is carried out without coordination with state bodies at the expense of enterprise funds and tax from workers. There is such kind of professional training as an internship at an industrial enterprise. It is foreseen for both students at different stages of education in HEI, and for graduates (Daniela et al., 2014; Rychen, Tiana-Ferrer, 2004).	The subject-practical approach contributes to the continuity of the FPC in the work of future teachers
Partnership of enterprises and educational institutions	Integration of all partners involved in the training process, including trainees, at all stages, beginning with the distribution of responsibilities (the enterprise outlines goals, and training institutions offering training courses offer ways to achieve them); mutual information of the personnel; mutual responsibility, including students; attestation of teaching staff; cooperation on conditions of competition (Stoof et al., 2002).	Communicativeness in the FPC stimulates technological effectiveness, self-development in professional activity
Differentiated multilevel system	Type of vocational guidance in pre-professional education, implemented in school. Profiling, differentiation and deep general education. There is a tendency for gradual expansion and deepening of general education as a basis for further specialization (Rauhvargers, 2009).	Technological effectiveness in the FPC of future teachers
Nomenclature of levels of professional classification	The existing types of training specialists are interrelated and unambiguously correlated with the nomenclature of the levels of professional classification, which allows solving the problems of employment, tariffs and labor remuneration of trained specialists, taking into account the changing demand and new requirements for employees (Rychen, Tiana-Ferrer, 2004).	Systematicity and technological effectiveness in FPC of future teachers

To stimulate the process of professional preparation of future teachers on the example of specialty of Vocational training in universities, in our opinion, it is necessary to reorient the process of preparation from the creative-empirical to the applied-subject, in line with contemporary technological innovation and market demands.

Strengthen the teaching of computer-oriented, creative-technology and commerce forming disciplines to create the conditions for the implementation of exchange projects with real projects for industrial needs.

To do this, HEI need to create conditions for the work of students in this prospective way:

- expand cooperation with vendors. Vendor (vendor, the vendor) - company supplier of products and services under its own brand name (often manufacturer). Vendor is a company that produces, supplies its products under its own promoted trademark. The vendor takes the top place in the marketing channel. In modern commerce: producer - vendor - distributor - dealer - customer. Vendors are not always the producers of goods and services. Key activities in the vendor are ownership and management of the brand promotion and distribution of goods and services;
- expand cooperation with major international companies;
- establish cooperation with the "Centers of competence and certification of professional development and advanced training";
- implement creative ideas and realize them in the learning process at the university based on commercialized proposals from the production;
- to contribute to the committed involvement of enterprises in the employment of students.

The professional preparation of future teachers of some European countries on the example of Latvia as a system-based direction, is a part of implementation of innovative international experience in pedagogical process. The education system of Latvia focused on training in two areas: academic and professional (Bertaitis, Briede, Peks, 2011). Professional education gives the graduate qualification, experience in some specialties and sector training.

The duration of training for the specialty in high school is significantly shorter (from 2.5 to 4 years) due to the two-tier system of higher education and the reduction of non-core subjects in the curriculum. The number of credits allocated to the practice is in the range from thirty-nine to forty-five credits ECTS.

State Education Development Agency of Latvia initiated reform of professional education dated 06.27.2015. European Social Fund project implemented "Creation of branch system of professional qualifications and improvement of professional training efficiency and quality".

The implementation of the project involved: the tripartite National Council for Co-operation, including teachers' council on professional training and employment, which works in close cooperation with the Latvian Employers' Confederation, the Ministry of Education and Science, Ministry of Welfare, Ministry of Economy, Ministry of Environment, the Union of Local governments, free Trade Union of Latvia.

The project aim is to improve the system of ensuring the content of professional education, functioning continuously in accordance with the needs of industries.

Objectives of the Project:

- creation of twelve expert councils in the economy sectors (just twelve for Tourism, textiles, construction, electronics);
- conducting of fourteen researches in sectors of the national economy and the creation of a professional structure for each industry (main profession, specialization, related profession);
- creation of a national qualifications framework in accordance with the European Qualification Framework structure;
- the development of new occupational professional standards or updating existing ones;
- building a new flexible modular program based on competencies and learning outcomes;
- the content of qualifying examinations; alternative methods;
- creation of a system of competences recognition acquired through informal way (Cedefop, 2015).

The research of the examples on the international experience on professional preparation of future teachers for innovative sectors, it is necessary:

- research projects had applied nature (Daniela et al., 2014);
- HEI must meet the needs of business (Bertaitis, Briede, Peks, 2011);
- all projects with scientific orientation should be implemented into practice (Xakellis et al., 2004).

One of the system solutions of the educational problem is the empowerment of the Dual training as a professional activity of future specialists is associated with object-practical application of their skills. For students it is an adaptation of the graduates to the real production conditions and high probability of successful employment within the specialty after graduation. For the enterprise, it is an opportunity to prepare HR for them, reduce costs, provided on the search and selection of employees, their retraining and adaptation.

According to Zhanguzhinova, another key factor as a system-based direction in the modernization of the system of training is an advantage of the credit system in higher educational institutions of Kazakhstan: the formation of modular educational programs, promotion of Academic Mobility opportunities, ECTS, strengthening of scientific and research activity of students, because the root of the problem is inadequate training of specialists of the educational springboard (Zhanguzhinova, 2017).

Conclusion

Thus, the study of international and blight experience of countries on methodic-based direction on the example of Great Britain the result of many years of scientific research, allow us to formulate the following positive mechanisms for the formation of social and sought-after experts in the field of light industry in the conditions of modernization of production technologies:

- a wide range of various forms of improvement and confirmation of experts' professional competence creates a mechanism for licensing and certification, with a centralized national institution - Industry Certification organization.
- the ratio of the results of advanced training and self-education with wages of teachers and social benefits package;
- own development strategies of sector institutions: conditioned by their own method of teaching and the payment system; practice-activity-related project work on orders that have a social, national significance;
- opportunities for international cooperation associated with a large set of entrants' coverage and marketing of educational services, staff advanced training.

At the same time, the advantages of the professional preparation of future teachers on the system-based direction on the example of France for innovative sectors compared with foreign countries revealed mechanisms, namely:

- centralized training system of specialists for system-based direction in preparation of specialists, conditioned by the framework of a unified state education standards, makes it possible to direct its activities more efficiently and implement consistently in the life of modern achievements of science and best practices;
- modernization will be the development and implementation of criterion evaluation apparatus, professiogram, innovative technologies, methods of training of teachers;
- material and practical orientation of training, built on the basis of the decision of problems of the design course, modular system, facilitating the relationship of the educational process with production and needs of society on the basis of the social order of society by professional preparation of teachers;
- the effectiveness of individually-oriented and subject-active approach to Vocational training specialization, stimulating the quality of training of teachers for the innovative sectors;
- the starting point for the formation of the product in the educational chain - specialists for cluster of innovative sector of production;
- for professional preparation of teachers for innovative sector following schemes of interaction between science and business are the most effective: Expert evaluations; Grants and orders; Investments in research start up; Opening of research laboratories and business incubators; Innovative entrepreneurship; Interaction with venture capital funds, venture capital;
- according to the conceptual ideas of our research, particular importance has the accounting of dynamics of the qualification requirements for the preparation of competitive professionals on the international market for innovative sector considering new requirements of innovation and industrial development of society.

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