A New Model of Russian Professional Education

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Abstract: The article represents solutions to some problems that occur during the implementation of new educational standards of professional education. The author studies the problems of the formation and measurement of competencies of future specialists. The role of employers in the development of requirements of the main educational programs of a University is analyzed. According to the author, the competency of University graduates is a system of professional tasks that a graduate solves. Solving a professional task is regarded to be the result of an action of the system of basic knowledge and skills on specific disciplines.

Key words: Educational standards · Graduate's competency · Professional standards · The main educational program · The system of basic skills and knowledge

INTRODUCTION

At the present moment, two state educational standards (SES) are functioning in professional education [1]. Students of upper years are finishing studying according to the old standards called SES of the 2nd generation and students of lower years (mainly bachelors and masters) started studying according to the standards of the 3rd generation, called Federal state educational standards (FSES). FSES, unlike SES of the 2nd generation, require implementation of the so-called competency approach that assumes forming competencies among students that are required by the modern society and a potential employer in a specific field of human activity, i.e. according to the specialty of professional preparedness.

The new standards describe types of professional activity of a future bachelor or master (such as the organizational-controlling one, the pedagogical one, the industrial one, the scientific and research one, etc.) and, therefore, solved by them professional tasks. FSES also describes the competencies that are forming in a graduate (divided into two categories: the common cultural ones and the professional ones) that have the wording that starts with the words «able...» or «ready...», for example, for fulfilling certain actions or operations. There are several dozens of competencies formulated in total in FSES, often approximately 20 common cultural ones and approximately 30 professional ones.

The analysis of FSES in a lot of focus areas shows that some of the competencies are worded so generally, vaguely and ambiguously that it is not easy to understand through them what student's ability needs to be formed. There are quite a few wordings of competencies that are expressed too narrowly (however few published competencies there are available), which, naturally, poses questions to the need of having too many details of these particular competencies when there are more relevant competencies for this focus area of preparedness. It is true that, as discussions show during different scientific events, such claims of stylistical and typographical character to FSES exist. [2]

Besides, FSES implementation is accompanied by problems that are related to the following:

First of all, the absence of clear and unambiguous instructions when developing new main educational programs (MEP) of a University specifically during the implementation of the 3rd generation standards, because the majority of the professional competencies that are formed in students (the variable part) have to be created by Universities themselves and only the basic part is described in FSES including the MEP contents on learning (disciplinary) cycles as the goals of studying;

Secondly, the absence of an organizational and administrative mechanism (including financing) in Universities of the intermediate period that are changing

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from the old standards to the new standards (that is why not the most experienced specialists will be the responsible parties);

Thirdly, the absence of the necessary specialists of the professional education locally (for example, in local areas or in specialized industry Universities) which will lead to mass use of «alien» specialists created for other requirements of the labor market, MEP (for example, by copying through the Internet);

Fourthly, the reduced deadlines of implementing the new standards (together with the previous problems) leads to copying and transformation of the contents of the old tried and tested MEPs into new ones which destroys the idea of a competency approach «in the bud»;

Fifthly, the complexity, the absence of methods, discovery and systematization of the exhaustive number of competencies required for a specific profile of preparation and for a specific industry;

Sixthly, the need in preparing the whole professor and teacher staff (PTS) for the implementation of a new paradigm of professional education, to new work conditions and new forms of the academic and didactic provision of the study process;

Seventhly, the conservatism of many teachers and their unwillingness to retrain, which, in the end, lead to irrelevant for this area of focus educational modules getting into MEP.

Overall, the appearance of FSES is quite justified and timely, because new standards opened for academic communities opportunities a creative approach when developing MEP. It is true that in SES of the 2nd generation the freedom of actions is limited in some ways, especially in terms of the offered mandatory minimum MEP where the contents of disciplines (even their names) in many specialties have long lost their relevancy [3].

The Main Part: The problems of implementing FSES can be resolved more effectively if employers take part in this process. Today some industry communities of employers develop the so-called professional standards describing the competencies of a potential employee that they expect. The most colorful example are the professional standards of the Association of computer and IT companies (ACITC) [4]. Even in 2007 (before the appearance of FSES) ACITC that today includes more than 100 members (1Ñ, IBM, Intel, Kaspersky Laboratory, Microsoft, Yandex, etc.) developed and published on its website professional standards in the IT sphere on the most in-demand professions: a Programmer, an Informational Systems Specialist, an Information Security Specialist, etc. It is necessary to note that the list of professions is constantly expanding and the content of the document is being updated.

ACITC professional standards give the requirements to education, work experience and certification of specialists in accordance with their qualification level. It is explained quite clearly (as a table with three columns):

- The job responsibilities, i.e. (in FSES terms) the professional tasks that are performed at a workplace;
- The main skills and abilities that are necessary to fulfill job responsibilities, i.e. the competencies that developed a graduate of a secondary school or of an advanced degree professional educational institution;
- The main knowledge necessary to fulfill the job duties, i.e. the subject knowledge that is contained in MEP as disciplines or educational modules.

The role of professional standards in education has already been positively evaluated at different levels. L.D. Reiman has justly noted that "if Universities start taking into account professional standards when preparing or updating educational programs focusing on employer requirements, they will always be competitive" [4]. I.I. Kalina noted that "IT business representatives as one of the most active and innovating members of the society, in essence, formed their requests for the educational system, having developed professional standards in the IT sphere" [4].

However, employers in many other subject areas are not rushing yet to generalize their requirements and the interaction of employers with educational institutions can be evaluated now as very weak and fragmented.

Today, when developing new MEP, based on the competency approach, Universities are doing not typical for them work to find the requirements of the society and employers for their future graduates. In order to solve this task at the correct level it is necessary to have well-educated human resource potential and tried and true methods. Many Universities don't have either of these [5].

It is evident that the most common and accessible methods of searching and collecting employers' requirements are the following: questionnaires, interviews, analysis of industry job instructions and other standard documents, analysis of the information from job fairs and employment websites and, most importantly, studying the experience of successful workers and the leading achievements of the best companies.

In order to receive true and objective information, it is important to have an adequate and scientifically well thought out organization of these events. For example, at least asking specific workers questions, such as «Specialist with what personal and professional skills would be able to perform his job duties well at this (or in your) position?» or "What are you missing in your professional preparedness to achieve better results and growth in your career ladder" would look inappropriate. Being scared of losing their job, the respondents' answers to such questions are doomed in advance to be deceitful. There is a need to involve qualified psychologists, teachers and managers when an educational institution is working with an employer.

The generalization and systematization of the current requirements of employers that are usable in form in the development of MEP are performed by the so-called recruitment firms. Recruitment firms regularly provide a survey of the Russian employment market in a specific industry based on the following sources: employment websites; specialized communities and forums; web and printed mass media; analytical portals, etc.

When developing MEP, other than employer requirements, the results of the research of the world scientific community in the industry, the achievements of the scientific and technical progress, the opinions of the academic community overall are taken into account so that MEP is focused not on any single random employer, but the innovative achievements of the industry.

CONCLUSIONS

The result of MEP functioning in a professional educational institution is the formation of the required FSES competencies in a graduate. That is why the solution of the problem «How to form and measure competency?» starts with an adequate development of MEP that consists on the following: the educational process schedule, the educational plan schedule and learning and teaching complexes (LTC) of carefully chosen educational modules (disciplines).

MEP determines the contents of professional training that comes from a specific set of the studied disciplines (the majority of which are «made up» by an educational institution based on the labor market requirements). It is evident that the content of training has to have the necessary and sufficient for graduating a qualified specialist optimal framework [5,6]. Overall, the following opinions are not deprived of any logic: knowing Mathematics would never inconvenience a good engineer; or that one could hardly «spoil» a future

manager with psychology, or spoil a future architect with Computer Science, etc. However, «issuing» the contents of professional training at the minimum set of skills according to the standard permitted or according to the principle «a lot of everything» are two unacceptable extremes when developing an optimal MEP.

A competency needs to be understood as an ability or readiness to fulfill a certain sequence of recognized, based on subject knowledge actions that lead to resolving specific professional tasks in a specific subject area [7].

The process of solving any task is in the actualization of the corresponding basic skills and abilities and setting the necessary logical connections between them. The mental process of building up a strategy of solving the task starts with breaking it down into subtasks and selecting for their solution the necessary elementary subject knowledge and skills. At that point, solving the task can look like a chain of sub-tasks the solution of each of which is based on elementary knowledge (definitions, theorems, algorithms, formulas, etc.) from different disciplines. Therefore, the professional preparation in a University has to be focused on forming a system of elementary subject knowledge and skills in a future specialist through MEP developed and implemented in the University [8, 9].

It is true that it is possible to be talking about the formed professional competency of a graduate if a specific basic system of skills and knowledge has been formed that contributes to the solution of typical (or standard) professional tasks, i.e. the tasks that are solved easily by using the well-known methods and means. Creative skills to be able to solve complex non-standard tasks come with life and practical experience. A University graduate has to prove his competency in solving at least typical professional tasks described in FSES [10].

If a graduate formed not a set of fragmented knowledge and skills in different disciplines, but a system where all the elements are inter-connected, i.e. a graduate will be forced to set up inter-connections between the elements of knowledge from different subject areas in solving a professional task, then we could say with confidence that the competencies that correspond to the tasks have been formed in a graduate. Then, in order to measure the formed competency, it is necessary and enough to find out the formation of the specific system of knowledge and to teach the graduate to set up inter-connections between its elements. The training and professionally focused tasks (in a form of a project, business game, practical work, etc.) are an effective way of both forming a system of knowledge and of revealing the degree of its formation.

It is evident that a certain basic standard system of knowledge can be formed in a University that is constantly appended with current knowledge, allowing a graduate to solve new professional tasks that come up in the process of development of science and industry. That is why today it is very important to ensure that students develop a habit of studying independently and expanding their system of knowledge and skills.

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