

Enhancing Personal Competitiveness of Graduates in Conditions of Development of Polytechnic Education: Self-Competitive Model

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Abstract—In this study the formation of competitiveness of the future employee for modern economy by means of education is discussed. The concept of competitiveness as a fundamental indicator of the qualitative characteristics of a modern employee in the labor market is considered. Different approaches to the determination of personal key indicators of competitiveness in the economic environment are analyzed. The article reveals the links of the student's academic success with his potential success in working life. The structural-content model of forming the competitiveness of students in the educational process which helps a student to compare himself not only with other students but with himself is presented. Mathematic description of the model helps to clarify the idea of organizing this process.

Keywords—polytechnic education; competitiveness; qualification; structural-content model.

I. INTRODUCTION

The beginning of the 21st century is characterized by innovative changes in all spheres of activity. The labor market needs specialists capable of solving economic problems in civilized competitive market relations. When moving from a traditional industrial society to a postindustrial one, it is necessary to grow flexible interdisciplinary forms of educational process, the transition from qualifications to competencies. At the same time the degree of future specialist's professional competence is defined by his competitiveness [1]. Thus, the actuality of guiding the higher school educational process to create conditions for the upbringing of a competitive personality is an evident strategy.

The dynamics of changes in the economy, business and companies dictate new rules and peculiarities of the polytechnic education. The main goal now is not only the transfer of knowledge, but the preparation for practical activities, the formation of important professional abilities and skills: the ability to make decisions and work in a team, the ability to build up competencies and competitiveness. New paradigm of education as a process of the continuous development of the human personality, its knowledge, skills, experience and abilities to formulate judgments, to find the meaning of one's life, to understand oneself, to set goals and to achieve them is in demand in the modern world. Main attention is given to the skills necessary for students to succeed in a rapidly changing digital society. The change in emphasis in the modern approach to the management of

organizations and people in them forces a deeper identification of the links between the academic successes of the student and his potential success in labor life.

Since polytechnic education is an education aimed at acquaintance with the basic principles of all productions, mastering the knowledge of modern production processes and relationships, it must take into account the interrelation of internal and external causes of the alleged professional activity of students. The addiction of different people to receive education and the effectiveness of their efforts depends on the personal qualities of people who differ in their abilities and motivations. The ability of persons to individual achievements in labor, which will contribute to the achievement of the organization's development goals, characterizes the competitiveness of the employee. In the process of forming and developing the competitiveness of employees, the unity of economic and social processes is manifested: the employer is oriented towards achieving its goals on the basis of attracting competitive employees while the only stable factor in the effectiveness of a modern organization is the competitiveness of its staff. The competitiveness of the human resource is the main factor of scientific and technical innovations, the decisive condition for the survival, growth and competitiveness of most enterprises. And employees, in turn, are also interested in increasing their individual competitiveness. At the same time the starting professionals face a unique problem: there were no opportunities of getting the skill of personal competitiveness during the period of their education [2]. These aspects actualize the search for mechanisms to enhance the competitiveness of the individual in conditions of polytechnic education.

II. DISCUSSION

Ideas of scientists on the problems of world development led some of them to the conclusion that it is based on "Man's self-control" [3]. And, indeed, the present students will soon bear the brunt of the problems of the economy's transit from a standard quality level to a renewed, new, unknown one. A noticeable increase in the pace of change will require their accelerated reaction to instantaneous changes of the circumstances, proactive solution of problems and readiness for competition in various labor situations [4]. The analysis of different approaches to defining personal key indicators of the

competitiveness in the economic environment made it possible to find common positions, the significance of which is noted by scientists, practitioners and experts of different levels [5]. The main, in the opinion of most specialists, is the ability to make an informed choice in professional life and to bear responsibility for it [6]; to communicate effectively and to interact constructively within the framework of various professional groups [7]; to improve personal and professional qualities continuously [8]; to solve problems creatively [9]; to work with information [9].

The idea of forming these key skills of the individual becomes the main one in the polytechnic education and re-orientates the evaluation of the result of higher education from the concepts of preparedness, erudition, professional culture to the concept of competence [11]. But, even today there is no unambiguous definition of this concept. Some authors define it as a willingness of a specialist to apply the received knowledge in practice, others as the ability to solve problems. This point can be attributed to the question if there are only cognitive facets that should be included in measuring competencies acquired over the course of higher education or it is important to consider attitudes as well [12].

A deep paradigm analysis of this concept [13], still does not provide clear guidelines for its measurement and evaluation as a result of education. A detailed analysis of the term leads us to the following results: in the notion of competence there is an important component of the modern mentality - the competition. If we consider "competence" as a framework of broad psychological and pedagogical meaning [14] it includes the potential of the most important qualities of a person, which determine the realization of his opportunities to communicate to a large extent.

But while a whole galaxy of higher education has arisen to retrain students to communicate with each other correctly and close the gaps of the high schools where they taught only knowledge, the younger generation does not experience difficulties in communication, since they were born in another environment.

Consideration of the concept of competence as "a measure of the inclusiveness of a person into activity" [15] and as "a way to utilize the education system in accordance with the tasks posed by the social environment" [16] allows us to consider the notion of competitiveness in addition to concept of competence as a key one for the development of polytechnic education. This sustains the competitiveness to link professional competence with personal qualities [17].

The situation of the inevitable choice, which the personality faces from the very beginning of labor activities, causes the activity connected with overcoming uncertainty. The ability of the individual to compete, to find mechanisms of sustainable development for himself and for the community come to the fore. Personal development can no longer be understood only as adaptation to routine work and a certain degree of satisfaction of needs, but also as a continuous process of mastering and creating new forms of activity, the development of various life-building mechanisms, and non-trivial actions closely related to the notion of "competitiveness".

To achieve the main goal of professional education is possible only if the organizational conditions for competition

are created in the constantly changing circumstances of educational activity. Competitions help to increase competencies, stimulates a person to self-development, because the situation is perceived as a competitive interaction [18].

The measurement of competitiveness in terms of the educational result involves comparison and exchange. Competitiveness arises at certain stages of education and is preserved only when there is a corresponding influence. The competitive environment provides such an impact, but the student is not completely included in the competitive environment, which is constantly evolving. Hence there is the need to create a competitive environment within the educational process.

But the question arises: in what, where and how can students compete?

Competitiveness is a concept that can be used in a comparative sense or analysis [19]. Acquisition of competitiveness by a student in the educational process will be determined not so much by his desire to study better than the other students, as by the ability to provide continuity to self-process: self-development, self-improvement, self-realization. In this case, we can talk more about self-competitiveness, when a student tries to work better today than he did yesterday, and plans to work better tomorrow than today.

Focusing on the complexity and prominence associated with the concept of competitiveness, we consider that the system of competitiveness includes different indicators. Taking into account that the rapid changes in the world actualize the inability to identify in advance and to predict the competitiveness indicators that can be claimed in years, the main attention should be focused on:

- Knowledge, skills and competencies that will allow each graduate to adapt to the future labor conditions and to act in a constantly changing situation;

- Evaluation of the significance of the real situation and its possible consequences;

- Adjusting one's level and profile of education, building and maintaining productive communication;

- Definition strategies to achieve the goals, taking responsibility for the choices made.

Knowledge and skills can be considered the basis necessary for the emergence of student's competitiveness. However, the evident fact of having knowledge does not set the prospect; knowledge itself has ceased to be the capital [20]. In these conditions the importance of research activities of students in the educational process is increasing. The research activity of students (the integral part of the whole educational process inseparably linked with other forms of educational activity) causes an incentive motivation to acquire competitiveness. The student bears the independent responsibility for the decisions, determines the goals, based on their own values.

In this understanding, the activities of students integrate 3 aspects - cognitive (knowledge), operational (methods of activity and readiness for the implementation of activities) and axiological (the presence of certain values). At the same time, the student not only masters the preset benchmarks, he is an individual who has the ability to realize his own competitive advantages, to compare, evaluate himself, project his future.

III. MODELLING

When developing the model of competitiveness of students, one must take into account that there exists both a common understanding of the model and a specific one that takes into account the specific features of a certain activity of the future specialists [21].

In the proposed model, each student receives estimates based on a 100-point system for a certain period for three types of activities: research sessions; testing in subjects; economic workshop.

All data for each student is regularly recorded in the journal of following form (Fig. 1).

Figure 1. Estimation Journal for all types of activity

Types of activities	Estimation Journal					
	Points of activities I period	Average result (R _y)	Points of activities II period	Average result (R _y)	Points of activities III period	Average result (R _y)
Research sessions			X _{1.1}		X _{2.1}	X _{3.1}
Tests			X _{1.2}		X _{2.2}	X _{3.2}
Economic workshop			X _{1.3}		X _{2.3}	X _{3.3}

Students, performing this or that work, earn a certain number of points and get a comprehensive assessment — the result of success — R_y, which is calculated as the average result for each activity. In our form are the indicators for the type of activity in the relevant period. At the end of each period, they can get an integral assessment of their achievements. On the diagonal of the matrix, the following is calculated: adaptation result — R_{adapt.} (1), (3), (5); the result of training -R_{train.} (2), (4), (6).

Period I:

$$R_{adapt.} = \frac{X^{1.1} + X^{1.2} \cdot 10 + X^{1.3} \cdot 100}{3 \cdot 10} \tag{1}$$

$$R_{train.} = \frac{X^{1.1} + X^{2.1} \cdot 10 + X^{3.1} \cdot 100}{3 \cdot 10} \tag{2}$$

Period II:

$$R_{adapt.} = \frac{X^{1.2} + X^{2.2} \cdot 10 + X^{3.2} \cdot 100}{3 \cdot 10} \tag{3}$$

$$R_{train.} = \frac{X^{2.1} + X^{2.2} \cdot 10 + X^{2.3} \cdot 100}{3 \cdot 10} \tag{4}$$

Period III:

$$R_{adapt.} = \frac{X^{1.3} + X^{2.3} \cdot 10 + X^{3.3} \cdot 100}{3 \cdot 10} \tag{5}$$

$$R_{train.} = \frac{X^{3.1} + X^{3.2} \cdot 10 + X^{3.3} \cdot 100}{3 \cdot 10} \tag{6}$$

Summing up the “result of training” (R_{train.}) and the “result of Adaptation” (R_{adapt.}) everyone can get a “success result” for each period of the matrix (R_y I, R_y II, R_y III) and compare himself not only with the other students but with himself (7).

$$\text{Personal } R_y = \frac{R_{yI} + R_{yII} + R_{yIII}}{3} \tag{7}$$

The students are granted to get the opportunity to watch their achievements themselves and it brings students’ confidence that they can be successful. This system creates a positive outlook on oneself, provides all with equal opportunities and leads them to success. It is a way to increase one's opinion about oneself, to develop the ability to cope with important tasks, which in turn leads to the increase in the personal indicator of the success of each student.

In order to determine the level of competitiveness we compare the level of success of one student with others who participated in all types of activities. For this purpose it is logical to find the average coefficient for all participants in the group (8).

$$K_{average} = (\sum 1^m N)/m \tag{8}$$

The difference between the result of the success of each student and the average one is his coefficient of competitiveness in numeric expression – Z (9)/

$$Z = N - K_{average} \tag{9}$$

IV. CONCLUSION

The problem of competitiveness of graduates of higher educational institutions is considered in the context of training young professionals for future work in the nowadays process of obtaining vocational education. The notion of competitiveness has recently penetrated the educational process from the economy, where competitiveness is the ability to meet the high demands of the labor market. Concept of the development of competitiveness as a dynamic and self-developing process determines the assertion that in modern conditions one of the priority tasks of education is the formation of students' competitiveness as the basic quality of a developing personality.

An important factor in the development of a competitive person is his internal environment, that is, his subjective position. The level of competitiveness required in the modern labor market claims such education, where the student is the subject of his own education. He is aware of his tasks, goals striving to reach the heights of professionalism. He is ready and able to engage in self-improvement.

The significance of the proposed model lies in the fact that with its help it is possible to solve not only the tasks of strategic and tactical-operational management of the student's competitiveness, but also to form the personal position of the student in relation to his competitiveness. It will allow forming a changeable attitude to oneself, to his activity, to develop actions by himself and evaluate their compliance with plans.

This mechanism will allow the students to manage their personal competitiveness themselves during their studies at the university and monitor the process of using their potential. It determines the tactics and strategy of their behavior, self-control, as well as the continuous development of abilities, skills and personal qualities. In addition, the presented model allows forming not a separate property or quality of a person,

but a significant set of personal characteristics that contribute to the achievement of success in professional activity in a competitive environment.

This approach to the organization of students' activities, which motivates the acquisition of competitiveness and which will be carried forwards the future for any new task, when it turns out to be significant after graduation from the educational institution, will become an integral part of the overall task of education of the modern specialist.

The change in the level of requirements to the student's personal and professional development, his own desire to improve himself in the profession, to improve his professionalism will determine his desire to overcome the challenge of uncertainty and optimize the entire system of his activity in the new economy. And also, it will help their personal professional development and will establish the pace for further continuous creative self-improvement.

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