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Design of the Competence Model for Staff Demanded by PSEDA Industrial Enterprises

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Abstract*: The article proposes to consider the scheme of the competence model of staff demanded by PSEDA industrial enterprises (located in the territories of priority social and economic development - PSEDA). It identifies a need for a new type of personnel, presents an attempt to build a competence model of a specialist, which contributes to defining a refined list of competencies for a new type of specialist demanded by PSEDA enterprises. The complex of "significant" competencies, confirming the uniqueness of the professional activity of specific PSEDA team, should be applied to conducting various personnel procedures that evaluate professionalism and to designing programs for professional instruction offered to PSEDA personnel [9]. The proposed solution involves the implementation of a two-circuit model, which clearly defines the sequence of stages to design and evaluate the quality of educational programs, as well as establishes the relationship between the internal processes of quality assurance of training and the external environment.

***Keywords*: competence model, industrial enterprise, PSEDA, two-circuit model, professional standards.**

I. INTRODUCTION

Due to the constantly growing demand for new types of competencies and methods of training demanded specialists in the territories with special economic statuses, the analysis of various literature sources and on the request of employers (the survey at LLC "Agro-industrial complex "Kamsky", "Green project", "United woodworking trade and industrial company", LLC "Siberian investment group", "Raw alternative", LLC "Khayer Applaensis RUS"), organizing their production in the territories of priority social and economic development (PSEDA), the authors mention that the preparedness level of graduates of educational institutions and in-service enterprise specialists in popular specialities does not always meet the goals and objectives of enterprises.

The identified need for a new type of personnel creates a certain need to build a competence model of a specialist, which contributes to defining a refined list of competencies for a new type of specialist, demanded by PSEDA enterprises.

II. LITERATURE REVIEW

To this date, a certain scientific experience of understanding the essence of the categories "competence", "competency" and "competence model" has been accumulated (A. N. Dakhin, O. V. Lebedev, G. V. Golub, T. V. Ivanov, A. V. Barannikov, O. V. Churkova, A. V. Khutorskoy), however modern pedagogical literature has still no clear generally accepted division between these concepts. At the same time, the desire to participate in the Bologna process, which along with the universalization of reforms in the field of degrees, training cycles, student and teacher mobility, international recognition of degrees, the system of educational credits and their implementation, implies certain terminological unification. It should be emphasized that the language aspect of this problem is important. So, A. G. Bermus in his article "Problems and prospects for the implementation of the competence approach in education" supplies the point of view by M. E. Bershadsky, who considers the penetration of the concepts of "competence" and "competence" in the Russian language as another manifestation of the process, as a result of which "teachers will soon begin to create texts, writing down English words with the help of Cyrillic" [1]. Thus, according to M. E. Bershadsky, the concept of competence does not contain any fundamentally new components that are not included in the concept of "skill", so all discussions on competence and competency seem somewhat artificial. N. B. Chelyshkova notes that at the moment there is not only a single understanding of the content of the term competence / competency, but there is also no single accepted term because of the ambiguous translation in Russia [2]. In general terms, the dictionary by S. I. Ozhegov [3] interprets these terms in the following way. Competence: 1) the range of issues in which someone is well aware; 2) the range of someone's powers, rights. Competent: 1) knowledgeable, aware, authoritative in any field; 2) obtaining a competence.

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The dictionary "Vocational education" gives the following definition [4]. Competency: 1) the measure of correspondence of knowledge, skills and experience of persons of a certain social and professional status to the real level of complexity of the tasks performed and the problems solved; 2) the scope of powers of the governing body, officials; the range of issues they have the right on.

Competence: 1) the range of powers, rights and duties of a particular state body; 2) the range of issues which the official has knowledge, experience on. It is obvious that definitions of the concept "competence" given in the cited dictionaries do not coincide, and in its second meaning the main emphasis is placed on the legal component. In the psychological aspect, the term "competence" was first used by the American scientist N. Chomsky (N. Chomsky, University of Massachusetts) in 1965 in the context of psycholinguistic research and semantically contrasted it to the term "linguistic performance" [4]. He developed the dichotomy of competence/performance, revealed the difference in meanings of these terms as the difference between the potential knowledge of the "speaker-listener" about the language and the use of language in communication and human activities. The scientist considered language competence, by which he understood language capacity, as full knowledge of the native language, which allows the "ideal speaker-listener" to judge the correctness and meaningfulness of statements. Linguistic performance is the use of language knowledge in specific situations of communication and activity [4]. In Russian psychological science the following situation has developed: the concept by N. Chomsky does not satisfy the specialists in this field since his psycholinguistic theory is fundamentally "antipsychological": it essentially reduces psychological processes to the realization of language structures in speech. In addition, one of the most important provisions of the theory by N. Chomsky was the idea of universal innate rules of language operation. However, the term "competence", introduced into psychology by N. Chomsky, became widespread and has been still used in Russian science with a different meaning: language competence, as a rule, is revealed as a potential ability to receive, process and reproduce information carrying meaning, that is, to carry out speech activity [6].

III. METHODOLOGY

We present a scheme that reflects, in general, the conclusions determining the requirements for the staff professionalism that are currently in demand on PSEDA.

From our point of view, scientific and methodological elaborations are required to build an accurate, complete Concept of the modern staff professionalism demanded at PSEDA, in a competence format (based on the competence model according to the FSES HE). Primarily it is necessary to determine a complete list of the mentioned competencies, and secondly, to highlight the competencies most significant for the professional performance of an employee represented in any job class. We will name these competencies significant. Significant competences allow most accurate determining the competence characteristics of modern staff demanded at PSEDA, in contrast to the already existing characteristics reflecting the competencies of the above-mentioned staff of various professional groups [5, 6]. We consider that the complex of significant competencies, confirming uniqueness of the professional activity of PSEDA specific staff, should be used in conducting various personnel procedures that evaluate professionalism (for example, in conducting staff appraisals, at competitions for candidates for vacant positions, in selecting staff reserves). It is also necessary to design professional training programs offered to PSEDA staff [9].

Let us perform a competency-based model of staff demanded at PSEDA, which we developed and presented schematically (fig. 1).

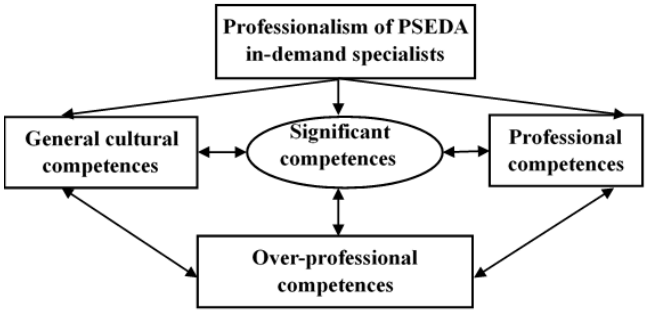

Fig. 1.Scheme of the competence model of staff demanded at PSEDA.

The presented scheme reflects the general structural logic of professionalism of a PSEDA specialist. It reflects the individual elements of a specialist`s professionalism, which make up an integrated system [8, 9].

When modeling, we proceeded from the basic provisions prescribed in the FSES HPE:

- orientation of the content and methods on the result when educating learners, i.e. development of professional and general cultural competencies;
- wide use in educational process of active and interactive forms (problem lecture, lecture-dialogue, lecture-visualization, imitation exercise, problem lecture, role-playing game, business game, discussion, situational exercise, case-study, training, brainstorming, creating presentations and abstracts) in combination with extracurricular work to develop competences;
- the content of the discipline taught, classroom and extracurricular work should be supported with teaching aids;
- development of objective procedures for assessing the level of students' competence (creation of assessment tools funds).

IV. ANALYSIS AND DISCUSSION

We have developed a competence model of a specialist, which includes such components as:

- target (goals, tasks aimed at forming competences);
- methodological (conditions, principles);
- technological (methods, forms, aids);
- organizational and procedural (forming economic and managerial competences);
- terminative (criteria and indicators of forming economic and managerial competences) (Fig. 2.) [12].

Let us reveal the content of each component of the presented model.

Our research is aimed at creating a competence model of a specialist, which helps to determine the renewed list of competences of a new type of specialist, demanded by PSEDA enterprises. We believe that the achievement of this goal is possible through a number of interrelated components.

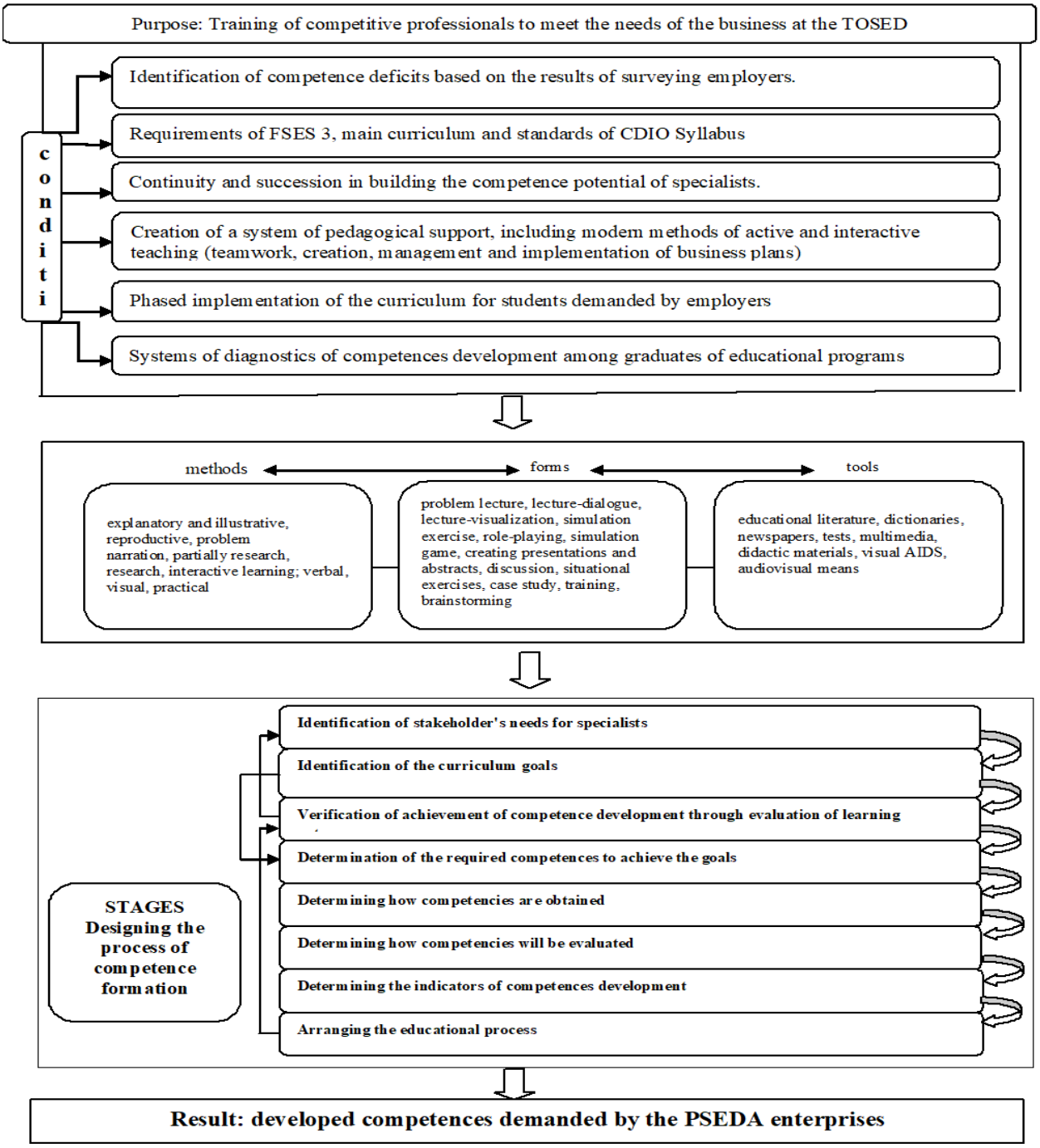

Fig. 2.Competence model of a specialist, which contributes to developing a refined list of competences of a new type of specialist, demanded by PSEDA enterprises

The methodological component contains the conditions and principles to form students' competences that we have identified.

The conditions to form competences:

- identification of competence deficits based on the results of surveying employers.

Documents that lie under the design of learning outcomes in the form of competences necessary for training students and future professionals. Modernized competencies, developed with the participation of employers, should not contradict the fundamental standards

- continuity and succession in building the capacity of the listener.

Implementation of a single goal - competences - implies a consistent chain of educational tasks throughout the courses of curriculum.

Courses of the curriculum should integrate with courses in other fields of education,

thereby promoting complex training of the attendee. Continuity presupposes connection between stages or steps of development, and its essence consists in preservation of various elements of the whole or of individual parties by means of the whole as a system.

- creation of a system of pedagogical support, including modern methods of active and interactive teaching (teamwork, creation, management and implementation of business plans)

Combination of different forms of educational activities for students makes formation of competencies demanded by employers more effective, as various components of competences are developed and integrated into a coherent competence.

Principles of formation

- phased implementation of competences formation throughout the curricula.

Assimilation of knowledge, skills, abilities occurs through interiorization, i.e. gradual transition of material (external) activity into the internal mental plan. Thus, in our opinion, it will be correct to develop competences while training attendees, having involved at each stage various organizational and substantial forms and methods.

- diagnostics systems of forming attendee's competences.

Diagnostics is a tool for education quality management. Diagnostics of graduates allows to assess the level of their competences, identify deficiencies in training and make adjustments in the educational process concerning competences. This task is effectively solved by the dual-circuit model design and implementation of educational programmes (ABET) [13].

Principles of forming students' competences:

The pedagogical principles implemented in our research work, being general principles of higher education and the system of supplementary vocational education (SVE), are some specific provisions that determine the requirements for competence formation.

The scientific principle requires that the proposed content of the program of competence formation should express the state of modern sciences. In accordance with this principle, we have defined the adequate form of presenting the material in the course. In addition, we consider the development of the model of cognitive-informational, perceptual-emotional, activity-motivational, reflexive criteria of students' competence formation and their scientific substantiation as an expression of the scientific principle.

The principle of consistency implies that formation of learners' competences is carried out systematically, is built in a strict logical sequence. This principle assumes reflection of content-logical connections taking into account cognitive abilities of students, their preceding preparation, the contents of other courses.

S. I. Arkhangelsky, speaking about this principle, emphasizes that the system of all educational activities in high school requires scientific justification, which indicates the ways of intensive and deep assimilation of the studied scientific provisions. In other words, one should not limit consideration to one separate course when forming competences. Ideally, it is necessary to establish and consider the relationships between all courses and types of training, including the skill of using knowledge for further independent acquisition of new knowledge and its application in appropriate activities [14]. Therefore, we included classes within the courses of natural science cycle (fundamentals of design, mathematical modeling in mechanical engineering, production management in mechanical engineering) in formation of students' competences.

The principle of connection between theory and practice focuses on the need to verify theoretical provisions through practice, the inclusion of certain activities in the learning content, as well as materials of an applied nature associated with observation and explanation of phenomena occurring in certain areas of human activity.

It should be noted that in accordance with this principle the study of all topics within the curriculum should be based on the professional orientation of the attendee. Students' training is based on the theory and practice of today and the predicted practice of tomorrow. Thus, formation of competences is carried out after a thorough analysis of communication in those courses, whose knowledge and skills are associated with specific activities of the future specialist, identify the need to form the priorities and their importance in the professional activity of graduates.

The realization of the principle of consciousness and independence in learning (the principle of activity), in our opinion, largely depends on the teacher leading the class and stimulating the cognitive activity of the learners, choosing certain methods and forms of learning, clearly formulating his/her requirements. Considering consciousness as a personal attitude in the process of acquiring knowledge, skills, abilities, we note that students should be aware of the importance to study the courses of the curriculum.

We implement this principle through such forms of training as business games, discussions, competition, etc.

The principle of visibility involves all available human senses in perception of educational material. Modern understanding of visibility signifies wide use of various representation forms (sign, formula, graphics, diagram, computer animation) of education content,

and also adequate reflection by these visual means of essential communications and dependence relations between studied objects and phenomena [15]. It should be emphasized that the principle of visibility is especially relevant for such objects, which for a number of reasons are inaccessible to direct sensory perception.

Therefore, it is this didactic principle that we emphasize to form competences, stimulating activities related to modeling, idealization, mental experiments. Here we use presentations, drawing up flowcharts, operating videos, slide films, electronic sources, etc. [16].

The principle of accessibility proposes compliance of competence formation with the already accumulated knowledge and individual characteristics of students, addressing the highest limit of their intellectual capabilities in order to constantly improve it.

In other words, communication with students is carried out at the optimal level, taking into account their interests, and life experience.

Important emphasis is given to the fact that the students themselves have found answers to the questions posed, joined the process of searching for the truth, thereby fostering independence, curiosity, developing analytical skills. These are necessary for their future professional activities since overcoming learning difficulties gives rise to independent creative thinking. In other words, volume and complexity of the material correspond to real capabilities of the student in his immediate development. At the same time, individual and general psychological characteristics of students are taken into account. We should note that the measure of accessibility is always subjective and is not supported by evidence.

The principle of learning retention requires that the content of axiological priorities of competences is fixed in the minds of students for a long time, becoming the basis of their behavior. This is achievable if the student manifests cognitive activity, and the teacher arranges systematic repetition of the material, as well as provides systematic monitoring of learning outcomes, their assessment. In addition, this principle is implemented since the competence will be applied by graduates in their professional activities, reflecting the worldview of the specialist.

The above-mentioned didactic principles are classical and form an integral system, interacting with each other, supplying the teacher with reliable guidelines for the qualified forming the students' competences in the SVE programs.

The next component of the model includes the forms, methods and means of training. In selection of educational technologies that contribute to forming students' competences, we focus on the FSES HPE, professional standards and modern international requirements for supplementary vocational education. According to them, if we intend to form competences, it is necessary to provide wide use of active and interactive forms of classes and extracurricular activities in the educational process. We use the following methods of interactive learning: heuristic conversation, presentations, discussions (comparison of different opinions, conference, discussion in press, on television; discussion-competition, method "Question-answer"), technology "Debate" (Classic debate, Express debate, Round table, "Aquarium"), "brain attack", simulation games, competitions of practical works with their after-discussion, role-playing games, training technologies (communicative, objectification of behavior, group cohesion, leadership, business communication, conflict management, cognitive activities, socialization, self-confidence, personal growth), collective solutions of creative tasks, case-studies (analysis of specific situations: situations-illustrations, situations-exercises, situations-assessments, situations-problems), practical group and individual exercises, modeling of production processes or situations, group work with textbooks, author's manuals, illustrative materials, discussion of special videos, including recordings of own actions; meetings with invited experts, computer technologies [17, 18, 19, 20, 21]. The use of the above-mentioned methods of training aimed at forming competences has determined the choice of means and control of competence formation among graduates in SVE programs.

In our study we focus on the following:

- means of training: media education (multimedia projector, computer, interactive whiteboard); information (videos, presentations, TV shows on RBC channels, Russia); diagnostic (simulators i-exam, tests, flashcards, case-studies, portfolio);

- means of control, accounting and evaluation of theoretical and methodological knowledge, skills, ability to apply methods and techniques of the studied science were carried out on the basis of the developed rating plan: testing, drawing up a business plan at a machine-building enterprise, project management, examination, portfolio, colloquium, observation, psychological testing [22]. When assessing the work of the student during the course (module) the teacher took into account: attendance of lectures and practical classes; activity at seminars; results of testing (TK1, TK2 and final testing); degree of participation in collective discussions; degree of participation in group projects; quality of performance of independent individual tasks, essays, reviews, analysis of documents; preparation of educational abstracts, preparation and implementation of a team business plan and results of project management. The above-mentioned forms, methods and means of training allow students to gain their own experience in various activities that contribute to competence development, to master the necessary skills and methods, e.g. independent work, communication of different styles, methods of people management, methods of economic calculations, research methodology. This has contributed to the formation of popular competences, which is confirmed by the fact that students actively participate in competitions at the University and regional levels (prizes). Many students have opened or are planning to open their own enterprises, thus they realized themselves as management specialists with developed professional competencies [26]. The next component of competence formation includes organizational and procedural aspects. It consists of an adapted two-circuit model of design and implementation of main curriculum (ABET). The implementation of ABET Criteria 2000 proposes a two-circuit model, which clearly defines the sequence of stages to design and evaluate the quality of the curriculum, as well as establishes the relationship between the internal processes of quality assurance of training specialists and the external environment (Fig. 3).

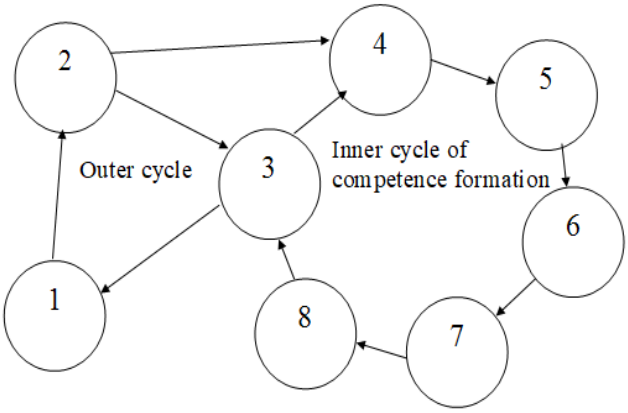

Fig. 3.Two-circuit model of designing the process of competence formation among students in SVE programs.

1 - Defining needs of interested stakeholders in demanded competences of future experts, 2 - Defining training program objectives, 3 - Verifying the achievement of program objectives through the evaluation of training results, 4 - Defining required competences of attendees,

5 - Determining how results will be obtained, 6 - Determining how the results will be assessed, 7 - Defining indicators for obtaining results to achieve the objectives, 8 - Arranging the educational process. The outer cycle of the model sets the initial data for determining the list of required competences of students, and the inner cycle demonstrates the stages of designing competence formation, intersecting with the outer cycle in point 3, where competence achievement is verified and adjusted if necessary. The two-circuit model, the main curriculum design technology, is implemented at the National Research Tomsk Polytechnic University. It was adapted and used to adjust supplementary vocational education programs in order to form required competences of students. The structure of the model remained the same, three stages of the outer cycle and six - of the inner one. The content of the stages has changed, they have become adapted to develop competences of students in supplementary vocational education programs. Diagnostic system of a competence model of a specialist, contributes to developing a refined list of competences of a new type of specialist, demanded by PSEDA enterprises. Diagnostics is a tool for managing the quality of training students. Diagnostics of graduates' competences allows us to assess their level, identify deficiencies in developing competences demanded by employers and make adjustments to the educational process. This task is effectively solved by implementing a two-circuit design model of forming a refined list of competences of the specialist mentioned in the diagram (fig. 2)

Designing a competence model of a specialist with a refined list of competences, that are in demand by PSEDA enterprises, makes it necessary to test when training students through the educational course "Economics and management of machine-building production" in order to assess its effectiveness. The experiment is aimed at testing the competence model of a specialist which proposes forming a refined list of a new type of specialist's competences demanded by PSEDA enterprises, checking the effectiveness of this system when fulfilling an employer's request to provide their employees with corresponding economic and managerial competences. Based on the updated and complemented economic and managerial competences of students (table 3 column 2), criteria and corresponding indicators were identified, and tools and methods for their diagnosis were proposed (table 1). Column 1 in table 1 contains the criteria for economic and managerial competences of students identified by authors, column 2 - indicators that allow diagnosing readiness levels, column 3 - tools and methods for diagnosing demanded economic and managerial competences of students in accordance with the request of the employer. The proposed set of criteria and indicators was agreed on by experts from a number of large companies in and out of Russia including: Gazprom, Magnit, Novatek, Sibur, MegaFon, Lenta, Suek, Alfa-Bank Group, DNS, Russian Railways, Toyota Motor, IKEA, Hyundai Motor, Royal Dutch Shell, various position levels (Deputy Director in production, heads of production departments, senior masters, experts) to assess their completeness and significance. The model was tested in the period from 2016 to 2019 in the training program for students at the national research Tomsk Polytechnic University. 178 participants took part in the experiment, including 83 participants in the control group and 95 in the experimental group. The representativeness of the sample allows us to speak about the consistency and reliability of the results obtained. We used the Wilcoxon-Mann-Whitney criterion to assess the homogeneity of the level of students' knowledge.

Table 1. Criteria and indicators of forming economic and managerial competences of learners

Criteria	Indicators	Diagnostic tools and methods
Organizational and managerial skills	Able to assess the conditions and make organizational and managerial decisions, develop team management methods, participate in the implementation of innovative approaches to management, manage staff at the high level, solve conflict situations, be responsible for management decisions and analyze the quality of completed tasks	Author's test developed on the basis of diagnostic tools: - test by T. Ehlers (motivation for success); - test by T. Ehlers (motivation for avoiding failures); - test by D. Marlow, D. Crown
Technical and economic skills	Be able to analyze and process technical and economic data, conduct production-related, technical and economic calculations, analyze and evaluate production and non-production costs, solve problems with the creation and reorganization of production sites, plan the work of personnel and the payroll	Solving technical and economic problems, calculating and analyzing economic indicators
Project skills	Be able to analyze, conduct feasibility studies and manage projects	Performing a practical task (individual homework)
Entrepreneurial knowledge and skills	Know the economic and social conditions of doing business, be able to assess market opportunities for forming and creating business ideas, develop business plans, create, develop and manage new organizations	Developing a business plan

This method provides a preliminary test of basic knowledge and skills in the field of economics and management, based on special tasks specified in table 1.

The result of the test showed approximately the same level of preparedness of learners (table 2, the columns are highlighted in color).

Table 2. The level of students' competences in the field of economics and management in the control and experimental groups before the experiment

Levels / Criteria	Groups					
	Control			Experimental		
	Low (P1)%	Average (P2)%	High (P3)%	Low (P1)%	Average (P2)%	High (P3)%
Organizational and managerial skills (K1)	50	45	5	49	45	6

Technical and economic skills (K2)	27	60	13	27	59	14
Project skills (K3)	50	43	7	50	43	7
Entrepreneurial knowledge and skills (K4)	48	45	7	45	48	7

The training of the control group participants followed the traditional learning path. When educating students of the experimental group, the author's methodological support of the discipline was used.

Thus, we provide for teamwork, project activities, case study and business planning by students.

The content of the discipline and its implementation technology are aimed at increasing the readiness of students to carry out practical economic and managerial activities.

V. CONCLUSION

The results of the experiment are presented in indicators reflected in the content and technology within the course which are aimed at developing the students' readiness to implement practical economic and managerial activities.

Table 3 shows the criteria and levels of economic and managerial competences in the control and experimental groups before and after the experiment.

Table 3. Dynamics of economic and managerial competences of students in accordance with the identified criteria

Levels / Criteria	Before the experiment						After the experiment					
	Control group			Experimental group			Control group			Experimental group		
	Low (P1) %	Average (P2)%	High (P3) %	Low (P1) %	Average (P2)%	High (P3) %	Low (P1) %	Average (P2)%	High (P3) %	Low (P1) %	Average (P2)%	High (P3) %
1	2	3	4	5	6	7	8	9	10	11	12	13
Organizational and managerial skills (K1)	50	45	5	49	45	6	35	48	17	10	59	31
Technical and economic skills (K2)	27	60	13	27	59	14	17	55	28	10	55	35
Project skills (K3)	50	43	7	50	43	7	35	55	10	30	57	13
Entrepreneurial knowledge and skills (K4)	48	45	7	45	48	7	30	58	12	12	43	40

The data in the table below generally show a positive trend in developing economic and managerial trainees.

Increase in organizational and managerial skills (K1) is clearly expressed by the trainees of the experimental group, the growth rate of P3 indicator was **25% (23 learners)** in the experimental group and **12% (10 learners)** in the control group.

This is probably due to the introduction of experimental *role-playing* and *business* games and other active forms and methods of training aimed at developing organizational and managerial abilities of students in the framework of their future professional activities.

There is a positive trend in the "technical and economic skills" criterion (K2): the growth rate of the P3 indicator was **15% (15 learners)** in the control group and **21% (20 learners)** in the experimental group.

We assume that this is due to the coherence of the disciplines in the course "Economics and management of engineering production" with the content of Natural Sciences block ("Design basics", "Mathematical modeling in engineering", "Production management in machine building") aimed at application of students' knowledge to solving technical and economic tasks. This is also confirmed by the low level of the P1 indicator equal to **27% (24 learners)** in each group, by the high level of the P2 indicator equal to **60% (54 learners)** in the control group and **59% (53 learners)** in the experimental group and of the P3 indicator equal to **13% (11 learners)** and **14% (11 learners)** in each group, respectively, before the experiment began.

Satisfactory indicators were identified in the K3 criterion "Project skills". The dynamics of P2 and P3 indicators is insignificant: P2 – **12% (11 learners)** and **14% (11 learners)**, P3 – **3% (3 learners)** and **6% (6 learners)** in the control and experimental groups, respectively. This fact is explained by the weak elaboration of the discipline "Economics and management of machine-building production" and the lack of effective tools and methods for preparing students for project activities. The highest growth of indicators is observed in the K4 criterion "Entrepreneurial knowledge and skills". The growth rate of the P3 indicator was **33% (30 learners)** in the experimental group and **5% (5 learners) in the control group.**

The dynamics of results is explained by the introduction of disciplines for the experimental group through team work in practical classes. This included drawing up a business plan for a machine-building enterprise in accordance with the context of engineering activities and the CDIO approach "Conceive-Design-Implement-Operate". This approach made it possible to combine the theoretical training of students with the practical one for successful implementation of team projects as effectively as possible. The K4 criterion combined students' economic and managerial competences in the field of communication, teamwork, organization and team management, analysis and processing of economic and managerial data, assessment of economic and social business context. The increase in the level of economic and managerial competences of students indicates the effectiveness of implementing the author's methodological support of the discipline, which provides for team work, project activities, case study, and business planning by students. The content of the discipline and its implementation technology are aimed at increasing the readiness of students to carry out practical economic and managerial activities.

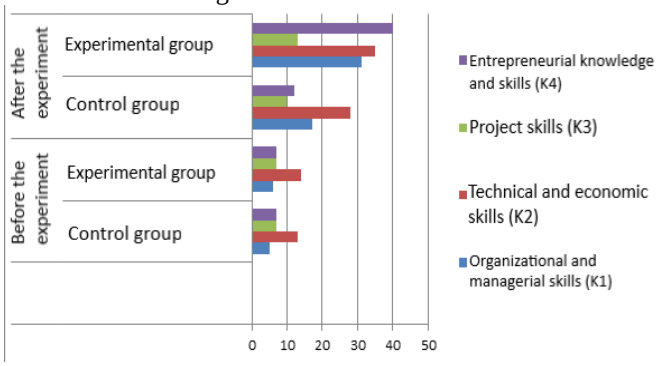

Fig. 4 Dynamics of growth in the indicator (P3) of economic and managerial competences of students in accordance with the identified criteria

Positive results of experimental work (fig. 4) give reason to believe that the created model of developing economic and managerial competences of students contributes to the implementation of high-quality professional activities of future graduates. This is confirmed by the dynamics of growth in indicators of economic and managerial competences of students in accordance with the identified criteria.

A theoretical and empirical summary of the problems range of this study made it possible to develop a model and highlight the main structural components in it. In the process of modelling and development, we used competency-based and systematic approaches. Such trends in Russian education as the need to form a new type of competence in the human resources of Russian society, improve the quality of specialists training, prospects for the free integration of specialists in the socio-cultural and economic space of modern Russia and the near and far abroad countries, into the international system of labour division, the formation of conditions for expanding access to educational services market created a special educational context requiring the use of competency-based approach for modelling. The competency-based approach determines the most important methodological guidelines for arranging didactic and methodological support for the educational process to develop competences among students. This system provides opportunities for solving the given problem [13, 14].

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