

Corporate Personnel Training System

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ABSTRACT

The relevance of the research problem was determined by the trend in the development of corporate personnel training at industrial enterprises, which demanded the creation of special units in the structure of HR services of the enterprises - training centers that perform the functions of personnel training - taking into account the specificity of the enterprise and the systematization of corporate personnel training. The systematization of corporate personnel training in the situation of training centers of the enterprises is possible by developing of a model of the personnel professional competence, taking into account specifics of the enterprise activity and its sector orientation, as well as through the development of the formation technology for the personnel's professional competence. The purpose of this article is to describe the system developed by authors for corporate training of personnel in the machine building industry as well as the results of experimental approval of the developed system in the conditions of the enterprise training centers. The leading method of the research is a formative pedagogical experiment, in the course of which the system for corporate training of workers in the machine building industry for the lathe works is simulated on the base of the industrial enterprise's training center. The corporate training system is focused on the formation of professional competence of workers in the machine building industry, consisting of core competencies and the individual's professional qualities, which serve as a basis for the selection and structuring of learning content. A formative pedagogical experiment allows us to identify the effectiveness of the complex formation of the trainees' components of professional competence through the application of modular training technology and the methodological support – training elements, developed in accordance with the requirements of the "Modular employable skills" concept and augmented with the complex of production objectives performed directly at the workplace under the guidance of a mentor. The main results described in the article are the system of corporate personnel training in the conditions of a training center of the enterprise, revealing with the three subsystems: organizational (models the organization of educational process in the conditions of the enterprise), content (models the content of the workers training of from the standpoint of the formation of their professional competence), methodological and technological (models the technology of formation of professional competence of workers in terms enterprise). The article may be useful for HR specialists of industrial enterprises, teachers of the training centers of the enterprises, corporate universities, specialists of employment centers as well as psychologists and teachers-researchers.

Keywords: personnel, corporate training system, professional competence, modular technology, machine building industry

INTRODUCTION

In the current socio-economic conditions, enterprises are facing new challenges such as the development of production in the conditions of the crisis phenomena in the economy, improving competitiveness of products, increase of economic efficiency of production, which determine the relevance of the problem of a sustainable operation of enterprises in a market economy. A Sustainable operation of enterprises depends on the timely organizational and technical updates of production, one of the results of which is the emergence of new types of work, determining the need for personnel training taking into account the compliance of their professional competency and the requirements of modern production.

The traditional training of working personnel is now in conflict with the demand of skilled workers in the labour market, prepared in the context of specifics of modern enterprises and able to engage in full professional activity at short notice. This trend is reflected in the works by B.S. Gershunskij [1]; A.M. Novikov [2]; I.P. Smirnov & E.V. Tkachenko [3]; A.A. Verbitsky [4], etc.

The search for reserves for ensuring the production with qualified personnel is now conducted in two directions: the establishment of social partnership between institutions of the professional education system and enterprises, and the organization of personnel training directly in the conditions of enterprises. Large modern enterprises adhere to the second direction and conduct the personnel training on their bases creating training centres, training areas, and departments of staff training focusing the personnel training on the specificity of these enterprises.

Currently, there is a new round of development of personnel training at enterprises. To ensure the production with qualified personnel, the departments of staff development including educational centers, training areas, departments of personnel training are created in the structure of human resources of many large modern companies. Also, the works on implementation of activity - and personality-oriented technologies of personnel training are conducted, which is reflected in the publications [5, 6, 7, 8, 9, 10] and which allows us to talk about the orientation of enterprises on the second direction of ensuring the production with qualified personnel - on the personnel training in the conditions of enterprises.

The theoretical bases of the personnel training in the conditions of enterprises are integrative in nature. A significant contribution to their development was made by works by S. Ja. Batyshev [11], B. C. Badmaev [12], A. M. Novikov [2], A. Shelten [13], in which the role of personnel training in the conditions of enterprises is examined, as well as by studies of the problems of worker training in the institutions of primary professional education, in the training centers of enterprises [11, 14, 15, 16].

A significant contribution to the development of interactive scientific bases of formation of professional competence of working personnel was made by studies by E. F. Zeer & I. V. Bragina [17], M. V. Simonova et al. [18], V. A. Fedorov & N. V. Tretyakova [19]; V. A. Kalnej & S. E. Shishov [20], in which the structure of competence, competencies, professionally important personal qualities and individual's professional qualities were considered.

In the works by E. Crochet [21], P. A. Juceviciene [22], N. V. Borodina & N. E. Erganova [23], N. G. Kalashnikova & M. V. Borzov [24], V. A. Degterev [25] the problems of the organisation of training with the use of modular training technologies were considered.

The analysis of theoretical approaches and the developing practice of personnel training in the conditions of enterprises showed that the most effective training organisation method is the establishment of enterprise training centers as educational institutions of a new type, the goal of which is to organize the formation process of the personnel's professional competence with an orientation on the specifics and the requirements of the customer-enterprise, taking into account the existing level of preparedness of the student.

The training center of enterprises is a new type of educational institution, the goal of which is to organize the preparation of personnel training with the orientation towards taking into account the specifics of the enterprise and the requirements of developing production and the the existing level of preparedness of the trainee [9]. Training for trainees who do not have any qualification and personnel retraining and improving of their skills are conducted in the training center.

In the article, the system of the corporate personnel training is described. The system is based on a modular approach to the formation of professional competence of workers in the course of their training in the training center of the enterprise of machine building industry, which allows to comprehensively consider both current trends of education development and the specifics of the enterprises, customers of trained workforce.

METHODOLOGICAL FRAMEWORK

Literature Review

Currently, departments of staff development organizing personnel training both out of the enterprise and in the enterprise, both at work and at specially organized training centers are created to ensure the production with personnel in the HR structure of enterprises. As the analysis of existing experience of personnel training in the conditions of enterprises shows [11, 12, 15, 16, 13], the effective way its organization is training in the training centers, includes classroom instructions under the guidance of a teacher and practical training at the workplace under the guidance of a mentor.

The training center of enterprises is created in the structure of their HR service and is a new type of educational institution, the main objectives of which consist in the organization of training of qualified and professionally competent personnel with the orientation on the specifics and the main directions of development of the production process of the enterprise and the requirements of modern production, on account of the existing level of preparedness of the trainee [9, 26, 27].

Training, retraining and personnel qualification improvement in the training center requires a new approach to the organization of training, to the structuring of its contents, to the design of new learning technologies and their application, differentiating of training depending on the level of trainee's preparedness, flexibility and continuity of learning caused by the need of urgent reorientation of production on the production of competitive products.

To solve the given tasks, the training center cooperates with the departments of personnel development in the enterprises on the issues of formation of a contingent of trainees and teaching staff from among the employees of the enterprise and new entrants into the workplace. The contingent of trainees is formed by personnel development services on the basis of applications for training, retraining and qualification improvement coming from the HR departments. The teaching staff for the theoretical training is taken by the personnel development services among the engineering-technical workers of the enterprise, and for production training - among the skilled workers with experience of mentoring. Prospects of development of the enterprise are taken into account during the organization of personnel training at the enterprise, allowing them to create a pool of personnel with required qualification.

To solve the set tasks, the following types of training were developed in the conditions of training centers [11]: training for new employees, retraining for a second career or specialty, qualification improvement within the existing profession or specialty.

Under the training of new employees (focusing on A. Shelten [13]), we understand activities for the preparation of people at the new workplace, who cannot achieve high productivity, as well as training of people who do not have a working profession.

Retraining is organized for workers who want to change their profession to meet the needs of production, to increase their professional profile, prepare to work in collective forms of work organization, and in combined professions [28].

Professional qualification improvement indicates that all forms of implementation of organized training relate to professional activities after the end of the first stage of professional education and after the beginning of professional activity [28].

In the frame of our research as the scientific basis for establishment of a system of personnel training in the conditions of the enterprises, two approaches were listed - competence-based and modular. Correlation of essence and features of the selected approaches shows that they complement each other: competence-based approach involves designing the learning content through the establishment of block models of competence, consisting of key qualifications selected on the basis of analysis of professional activities. This takes into account not only specifically professional, but also the socio-personal activity of a worker. The modular approach involves designing content as autonomous modular units selected and developed on the basis of the analysis of professional activity, with help of which can be formed one or more blocks of key qualifications, serving the special side of professional activity of a worker.

Within the modular approach, the possibility of formation of worker's professional qualities is implied. It can be done in the process of implementation of intermediate tasks in each modular unit. Integrating the ideas of all of the approaches, the modular approach allows to form and develop the professional competence of the trainee for all of the key qualifications and taking into account requirements of the trainee and the specifics of the enterprise, that is to form a complete professional competence of a future worker.

Research Methods

During the study the following methods were used: experimental and theoretical (analysis, synthesis, deduction and induction), diagnostic methods (analysis and diagnostics of level of formation of professional competencies

and individual's professional qualities), empirical methods (the formative pedagogical experiment, comparative pedagogical experiment), methods of mathematical statistics for the assessment of the reliability of the results and methods of graphical representation of the results of the study.

Experimental Research Base

The pilot study was conducted on the base of the personnel training center of the JSC NLMK-Ural in Revda, Russia, the Centre of additional professional education of the OJSC Kalinin Machine-Building Plant, and the personnel training center in Yekaterinburg, Russia.

Investigative Stages

The study was conducted in 5 stages:

1. The definition of the problem field of the study and selection of the research problem.
2. Review and analysis of sources of information on the research problem.
3. The formation of a complex of research methods in accordance with the set research problem.
4. The development of teaching materials for conducting the experimental works.
5. Conducting of a formative and comparative experiment, an analysis of the obtained experimental data, and an evaluation of the research results and the formation of conclusions.

RESULTS

Statement of Problem

The study task was the development and experimental testing of the system of corporate training of personnel of machine building industry in the situation of training center of the enterprise with a focus on the specifics, logistics, and corporate traditions of the company. In the course of the experimental testing, the corporate training system of workers of the machine-building industry on lathe work was developed and implemented in practice. In the experiment, the documents under the requirements of the Modular employable skills concept (MES-concept) were developed. Also the educational elements, the sequence of their study, specifications and forms of logistics as well as forms of the registration of attendance of trained workers were developed.

The System of Corporate Personnel Training

Taking into account the statements of modular and competence approaches in our study, the system of corporate personnel training in the training centers of enterprises was developed (pic. 1). The system of corporate personnel training is considered in three aspects: organizational, content, methodical and technological.

In the organizational aspect, the organization of a continuous multi-stage personnel training in enterprises is modeled. For the organization of workers training other workers in enterprises, the department of staff development is created in the structure of its HR service, the main functions of which are the organization of personnel training at the enterprise and outside of the enterprise, engineering staff training and the training of skilled workers to teach, the coordination of workers activities on self-training, and the selection of trainees. In the present study, the function of organization of training outside the workplace is not considered. A training center has been created within the department for staff development. The personnel training is performed in the training center of association of enterprises, which works in direct connection with the departments of staff development and uses in its activity the material-technical and personnel potential of the enterprises of the association.

Workers with qualifications are heading to the enterprises, but the workers without a qualification or who want to improve their qualification or to undergo a retraining for a new profession are heading to the department of staff development which forms groups of potential trainees for the training center, in which workers are trained in required professions.

The personnel raining in the training center is organized to meet the requirements of continuity and succession of training content and implemented on a multi-level program: the primary training and retraining, and the improvement of professional skills.

After completing each level of training, the learner receives the appropriate category, confirmed with a document, which allows us to speak about the openness of the system and the exclusion of dead-ends in the process of personnel training. The organization of the training is implemented by the staff of the training center in accordance with applications formed by the personnel development services of the enterprise and attracting engineering and technical personnel of enterprises, professional educators and skilled workers with the experience of mentoring.

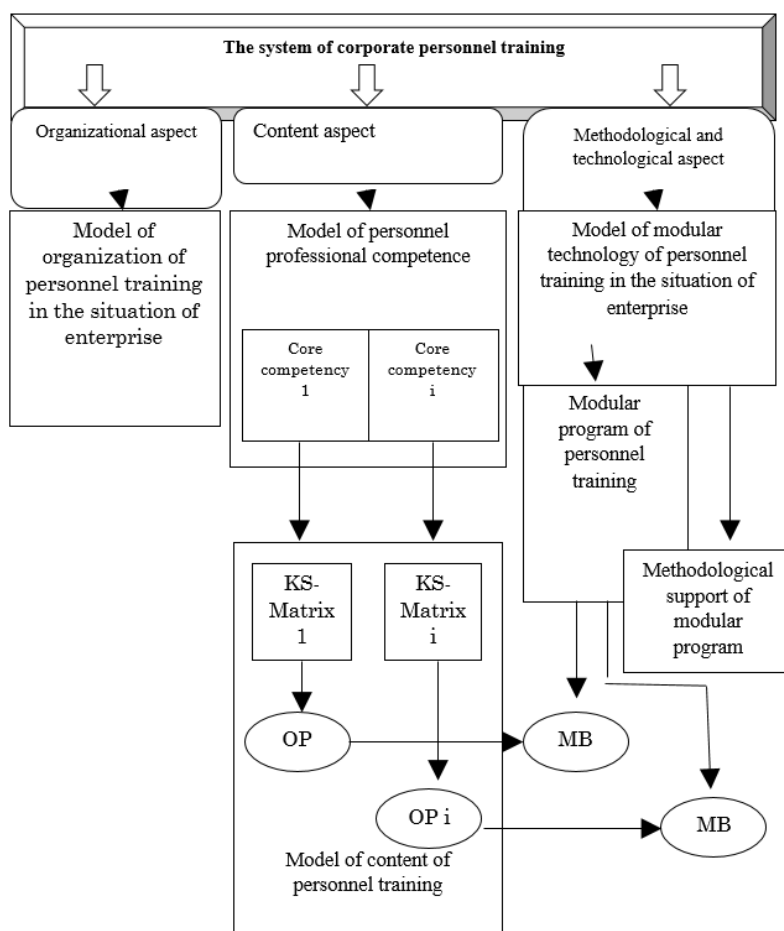


Figure 1. The system of corporate personnel training (original)

In content aspect the contents of the personnel training in the conditions of the training centers of the enterprises is modeled. In the study we are talking about a wide field of professional activities, therefore, the analysis of the professional activity of a worker of a machine building industry was made at the maximum path, while the minimal invariant basis of the activity was put into the basis. On the basis of a systematic analysis of professional activity of workers in the machine building industry, the authors developed a model of their professional competence, including core competency underlying in the basis of the worker's professional competence:

- Organizational and technical competence (the ability to efficiently and securely organize the workplace and the treatment processing process);
- Technical and technological competence (the ability to compile and analyze technical and technological documentation);
- Special competence (the ability to use technological capabilities of equipment to complete processing methods on the basis of the optimal choice of the subject and means of labour).

As well as individual's professional qualities such as:

- Professional activity (the ability for independent searching and positive performance of the tasks);
- Professional communication (the ability to accurately and correctly express and perceive professionally relevant information);
- Creativity (the ability to improve the objects of labor and means of labor);
- Creativity (the ability to improve the objects of labor and means of labor);

Every professional competence or professional quality of a personality can be formed on one of four levels: recognition level (able to perform basic operations for a given algorithm), implementation level (able to perform work of average complexity for a given algorithm), transfer level (able to perform work of high complexity based on specific algorithms and process algorithms of works for different levels of difficulty) and creative level (able to create new algorithms to perform work of any complexity).

Model of professional competence of workers of machine building industry is universal and can be applied to workers of other industries with some modifications which relate mainly to the content part of the core

competencies, because in general the structures of professional activities of workers of different industries are similar and include both the processes of the organization of work and the workplace, the processes of selection and preparation of equipment and tools, and processes of sequential execution of major works in profession in accordance with the technological documentation or known algorithms.

The modular technology of workers training in the conditions of enterprises was modeled in the methodological and technological aspect, which consists of the following steps: the entrance test; the study of training elements of module; the current control of mastering of the content of training elements; the intermediate control; and the qualifying job.

The modular technology has a block structure, and after the study of each modular unit and the successful implementation of production assignments on the studied modular unit in the context of real professional activity, the trainee can complete the training at the level of the operator. After examining of all modular units and successful completion of qualification tests, the trainee becomes a skilled worker in this field of work. The developed system of workers training is a theoretical basis for the development of modular technology of training of workers of different specialties in machine building industry.

The formation of professional qualities of workers of machine building industry is produced in the framework of the system control of the results approved in a modular technology. The system of the results control in addition to entrance, current, and intermediate testing, includes a package of practical tasks about the material of modular unit and qualification tests about the material of individual modular program. For the formation of meta-professional qualities, the content of the package practical exercises and qualification tests approved in modular technology are complemented by a complex of production tasks based on the problem tasks. On the basis of the process and the result of implementation of production tasks, the level of formation of key competences as well as professional personal qualities of the worker in machine building industry is controlled.

The developed corporate training system of the workers of the machine building industry, including the model of the educational process, the model of professional competence of workers in machine building industry, and the modular technology of formation of their professional competence, allows us to speak about possibility of its application for the formation of their professional competence in the context of specific of an enterprise with the requirements of modern production and individual characteristics of trainees. The openness of the developed system allows for adapting the content and the process of preparation of workers of machine building industry to the changing needs of enterprises.

The Organization of Training and Experimental Approval of System of Corporate Personnel Training

The experimental research work included three main phases: research, hypothesis, and formation.

In the first phase, the literary sources on the issue of testing the effectiveness of various training options were analyzed and the criteria for training effectiveness used for the formation of professional competence of workers of machine building industry were selected. In the framework of this article, by effectiveness we understand an evaluation category, characterizing the results of the pedagogical activities in terms of their suitability for a given purpose. The efficiency indicator of the the corporate training system developed in this study is the increase of level of formation of professional competence of workers of machine building industry in the context of specifics of enterprise.

In this study, the approach to the study of the effectiveness of the corporate training system for the formation of professional competence of workers of machine building industry was accepted, consisting of the comparative assessment of levels of formation of components of their professional competence before and after pedagogical influence. Empirical data to assess the effectiveness of the corporate training system was produced as a result of the formative pedagogical experiment, the object of which is the change of the volume and nature of the knowledge, abilities and skills occurring in the object under the influence of pedagogical influence. During the formative experiment, the model of the examined pedagogical process with predetermined characteristics is created, and a statement of the initial and final results of applying and their comparison was made.

As the main criterion for assessing the effectiveness of the developed system of corporate training for workers in the machine building industry in the conditions of training center of the enterprise, the level of formation of core competencies was chosen, including the organizational and technical competence, technical and technological competence and special competence. In the course of experimental testing, four levels of development of selected core competencies of workers of the machine building industry were identified.

The first level corresponds to a recognition level, i.e. the ability to work details of a simple configuration and low accuracy on already prepared and adjusted machines with the use of developed operational technological maps.

The second level corresponds to an implementation level, i.e. the ability to work details of a simple configuration on adjusted machines with the use of quality control, for the preparation and adjustment of a machine.

The third level corresponds to a transfer level, i.e. the ability to work with details of a complex configuration and high accuracy, to independently develop technological processes of manufacturing of standard parts, and to prepare and adjust a machine.

The fourth level corresponds to a creative level, i.e. the ability to work particularly complex high-accuracy parts with the use of a self-developed technological process, working with drawings and sketches, to make a special tool and production tools

The formed core competencies served as the basis for the formation of professional personal qualities of workers of machine building industry (creativity, professional mobility, professional activity, professional communication).

The formation of individual's professional qualities was made in the process of performing of production assignments, which were formulated in the form of problem tasks. The level of formation of professional qualities of workers of machine building industry was selected as an additional criterion for assessment of efficiency of the developed technology of training in the performance of turning works of workers of machine building industry in the conditions of an enterprise.

The professional qualities are complex psychological forms, therefore, the coordinate matrix was developed to differentiate the level of their formation, depending on the level of complexity of work performed: "The level of formation of individual's professional qualities – the complexity of professional actions".

Two coordinates essential for the description of the individual's professional qualities were presented on the matrix.

The coordinate of levels of complexity of professional actions, in the frame of which the individual's professional qualities are manifested (objectively-explained levels of the formulation of personal qualities), which is placed vertically and corresponds to a level of formation of core competencies. The coordinate of levels of the formulation of subjectively-explained individual's professional qualities, independent of the level of complexity of the work performed, is placed horizontally and may appear in the framework of any level of complexity.

So, the developed matrixes allow for monitoring the levels of the formation of individual's professional qualities depending on the level of formation of core competencies, relevant to a particular worker category, which allows us to assess the level of their formation more adequately.

A formative experiment was conducted over two years. Four groups of trainees, future of the workers of the machine building industry, were involved in the experiment of the performance of turning works. Each group was trained for three months. The total number of participants of the experiment was 76 people.

Entrance testing and a survey were conducted to eliminate the influence of additional variables on the results of the formation experiment. Testing was conducted with the purpose of revealing the initial level of formation of core competencies and professional qualities of trainees, and a survey - with the purpose of identifying trainees familiar with the content of certain modular units or training elements in their structure.

The following conclusions were made on the basis of the obtained results: the age of trainees refers to one age group (16-19 years old); all trainees have a general education at the level of 9 – 11 grade of a general education school; the professional structure of trainees is mixed. Out of 76 trainees, 57 people are school graduates and do not have a specialty, and 19 people have a specialty of a mechanic-repairman and study the turning works from scratch. It can be assumed that 12% of trainees have a certain level of formation of core competencies and professional qualities.

The obtained results were taken into account during the clarification of content and methods of training, as well as during the analysis and interpretation of the results of the experiment. The trainees used the same training elements, reference materials, and the same material and technical infrastructure at lessons conducted with the use of the developed modular technology. The content of the modular program and the methodology of modular training were individualized based on the analysis of results of the entrance testing and the survey.

Experimental classes were conducted by the engineering and technical personnel of the customer enterprise (theoretical training), and workers of high qualification with experience in mentoring (production training). Teachers who conducted the experimental sessions had a specific training on the use of modular technologies. Training was carried out in lectures and practical sessions in the analysis of programs, including educational-methodical and organizational-methodical documentation of the developed modular technology.

Prior to the study, introductory lectures on the basics of modular training were conducted, which allowed to the trainees to learn more about teaching methods and the content of training. After introductory lectures all the trainees saw the documentation sets including the modular programs of study, the sequence of learning of training elements, the schedules of classes and tests. Then, the entrance testing was conducted for all trainees, the purpose of which was to identify the level of basic training of the trainees, as well as a survey, the purpose of which was to

Table 1. The number of trainees having a certain level of formation of core competencies and individual's professional qualities before the training

Core competencies and individual's professional qualities	Levels of formation core competencies and individual's professional qualities				
	0	1	2	3	4
Technical and technological competence	49	20	7	-	-
Organizational and technical competence	46	30	-	-	-
Specific competence	65	11	-	-	-
Professional activity	37	33	6	-	-
Professional communicativeness	39	37	-	-	-
Creativity	49	23	4	-	-
Professional mobility	69	7	-	-	-

Table 2. The number of trainees, having a certain level of formation of core competencies and individual's professional qualities after the training

Core competencies and individual's professional qualities	Levels of formation of core competencies and individual's professional qualities				
	0	1	2	3	4
Technical and technological competence	-	-	40	36	-
Organizational and technical competence	-	12	26	38	-
Special competence	-	-	27	49	-
Professional activity	-	23	30	16	7
Professional communicativeness	-	11	24	32	9
Creativity	-	22	30	24	-
Professional mobility	-	3	53	20	-

identify the modular units and learning elements known to the trainees. According to the results of the entrance testing, it was revealed that 63 people do not meet the requirements set out in document "The work description". To equalize the entry level, they were given instructive study cards; after studying them, the trainees successfully passed the entrance exam. The analysis of the results of the entrance testing and the survey allowed us to individualize the modular programs. After successful completion of the entrance testing the trainees began to study the individual modular programs in a predetermined sequence of studying of modular units and learning elements. After studying each training element, the current control with the help of tests was conducted, and after the studying of each modular unit - intermediate control and implementation of a production task. The training was conducted in the context of conditions of real professional activity on the analysis of working drawings of parts, adjustment of machines, work and the control of accuracy of a manufactured part.

For each group of trainees, the forming experiment lasted for three months. Theoretical training was carried out in the classroom, and a practical in the conditions of real professional activity was conducted at workplaces under the guidance of mentors. In the final part of a forming experiment, all trainees passed qualification tests, by the results of which assessment of the levels of formation of core competencies and individual's professional qualities was conducted. Qualification tests included two parts. At the first part, the trainees performed qualifying work manufacturing the stepped shafts, and at the second - manufacturing of parts, different in functioning from type parts, studied in the framework of modular technology (disks, bushings, threaded parts or eccentric parts).

The method of expert evaluations, assessing the quality of performance qualification tests by trainees, was used to assess the level of formation of core competencies and individual's professional qualities.

The group of experts consisted of seven representatives of the customer-enterprise (engineering and technical personnel (2 people), management personnel (2 people), representatives of the department of personnel development (1 person) and the staff of the training center (2 people), having a special training in the area of machining and in the area of assessment of the formation of professional competencies with the help of pie charts. The group of experts used the rating system, corresponding to the levels of the formation of professional competence.

In the experiment, the double assessment of the levels of the formation of core competencies and individual's professional qualities was foreseen by the trainees during the entrance exam (before the training) and after the training in the form of the analysis of the process and the result of performance of qualification tests.

Experimental data on the levels of formation of core competencies and individual's professional qualities before the training are in the **Table 1**. Experimental data on the levels of formation core competencies and individual's professional qualities after the training are in the **Table 2**.

According to the results of ascertaining experiment we can see that the dominant number of trainees (up to 90 %) before the training showed a low (zero – first) level of formation of core competencies and individual's professional qualities. After the training, according to the results of qualification tests, most of the trainees (up to 90 %) showed the second – third level of formation of core competencies and individual's professional qualities.

The distribution of the levels formation of core competencies and individual's professional qualities after the training is due to the fact that the evaluation was performed according to the results of the implementation of the qualification tests, including problems related to the working of parts, differentiated by the method of working from the standard parts, studied in the framework of modular technology.

Based on the results of experimental work, it can be argued that the integration of the developed system of corporate training into the process of preparation of workers of machine building industry allows for the formation of core competencies and individual's professional qualities in the context of the specifics of the enterprise, which proves the main hypothesis of the experiment.

Therefore, it can be stated that the developed training system of workers in the machine building industry, on the base of which modular technology of formation of professional competence of workers in the machine building industry was created when implemented in the conditions of training centers of the enterprises in the framework of organization and implementation of corporate training allows the formation in the specific context of the enterprise, taking into account the corporate tradition and the material-technical base of the enterprise, the core competencies of workers in the machine building industry and each individual's professional qualities on a steadily high level, confirming the effectiveness of the development of corporate personnel training systems.

DISCUSSION

The trend of development of the processes of organization and implementation of personnel training in educational organizations of secondary vocational education and additional professional education, theoretical and methodological principles of personnel training as well as historical aspects of personnel training in Russia were considered in the works by S. Ja. Batyshev [11], V. A. Bolotov & E. L. Isaev [15], Y. M. Dorozhkin & Y. Y. Shcherbina [29], E. M. Dorozhkin & N. K. Chapaev [30]; V. A. Fedorov & N. V. Tretyakova [31], Fedorov V. A. & Tretyakova N. V. [19]; B. S. Gershunskij [1], D. G. Miroshin [32], G. M. Romantsev [14], N. V. Ronzhina et al. [33], A. Shelten [13], I.P. Smirnov & E. V. Tkachenko [3].

The problems of the organization and implementation of contextual training were considered in the works by A. A. Verbitsky [4], and the peculiarities of adult training - in the works by В. S. I. Zmeev [34].

The issues of the training organization in the conditions of the training centres of enterprises were considered in the works by S. Ja. Batyshev [11], B. C. Badmaev [12], A. M. Novikov [2], A. Shelten [13], V. A. Fedorov & S. V. Vasiliev [35]; V. A. Fedorov & N. V. Tretyakova [19].

The peculiarities of personnel training in the educational organizations of professional education, the structure of their training and the applied technologies and methods were considered in the studies by T. L. Aleksandrova, G. E. Zborovskij & B. Lempert [5], A. G. Bermus [6], B. S. Gershunskij [1], A. P. Gorshkov [7], V. A. Kalnej, V. M. Kuznecov & Yu. M. Rogovskij [8], V. A. Korytov [9], A. M. Novikov [2], E. Pavel [10], I. P. Smirnov & E. V. Tkachenko [3], E. F. Zeer & A. V. Streltsov [36], Yu. A. Vlasova & S. A. Vetoshkin [37]; V. A. Fedorov & N. V. Tretyakova [19], etc.

Particular aspects of the problem of personnel training for industrial enterprises and, especially, the issues of the training organization on the basis of an active approach, problems of evaluation of personnel qualification were considered in the works by P. Ja. Galperin & N. F. Talyzina [38]; A. A. Ivanov [16]; S. Yu. Chernoglazkin [27]; A. N. Kochetov [26]; A. F. Kiselev [39]; E. M. Lokotnikova [28]; A. Ja. Najn [40]; E. M. Dorozhkin & E. F. Zeer, [41]; E. F. Zeer & I. V. Bragina [17]; E.F. Zeer, E. V. Lebedeva & M. V. Zinnatova [42], etc.

The essence of professional competence, the structure of the professional competence, peculiarities of formation and evaluation of core competencies and individual's professional qualities were considered in the works by V. A. Kalnej & S. E. Shishov [20], R. A. Valeeva & I. R. Gafurov [43], A. E. Okuneva [44], A. K. Markova [45], E. M. Dorozhkin et al. [46], A. V. Kazakov, V. G. Zakirova & J. Bírová [47], N. V. Gorbunova & E. G. Sabirova [48], A. V. Konyshva & E. N. Ibragimova [49], T. V. Shushara & A. N. Khuziakhmetov [50], Cherdymova et al. [51].

Peculiarities of application of modular technologies of training, based on the systemically-active approach, the principles of organization of educational work, content and structure of the methodological support, under the concept of "Modular employable skills", were considered in the works by E. Crochet [21], P. A. Juceviciene [22], N. V. Borodina & N. E. Erganova [23], N. G. Kalashnikova & M. V. Borzov [24], V. A. Degterev [25].

However, we note that the problem of systematization of the processes of the organization and implementation of personnel training for the enterprises in the machine building industry through the use of modular technologies of training and methodological support – training elements, created on the basis of the modular approach, unveiled

in the concept of modular training “Modular employable skills”, developed by The international labour organization in previous studies, was not comprehensively considered .

In this article, a comprehensive description the system of corporate personnel training was presented, revealed by three subsystems: organizational, content and methodological and technological. Each subsystem simulates various aspects of the organization and implementation of personnel training in enterprises. In the article was described the invariant model of professional competence of workers of machine building profile, moderating the content aspect of the system, as well as a modular training technology, which is modeling also a methodological and technological aspect of the system. Also, a pedagogical experiment and its results was described, which can be extrapolated for any other industry direction in personnel training in the situation of enterprise during the implementation of the developed system of corporate personnel training or its separate subsystems.

CONCLUSION

Analysis of the results of experimental work suggests that the formation of professional competence of personnel in the situation of training centers of the enterprises with the help of modular technology developed in accordance with the system of corporate training and the complex methodological support will be effective if the training center established in the structure of the modern enterprise will carry out the personnel training and retraining with a focus on the specifics of the enterprise and will use in its activity its personnel potential and logistics capacity, the HR potential and logistics capacity.

The content of personnel training will be selected on the basis of a systematic analysis of professional activity and will be presented as a model of professional competence having a flexible structure, which opens a spectrum of core competencies. The personnel training will be carried out through the use of modular technologies of training, the structure and content of which will be projected in accordance with the model of the professional competency.

The complex of methodological support of training of workers of the machine building profile and machining specialties includes a modular program, the set of training elements for the formation of knowledge and skills underlying in the selected core qualifications, test packages, complicated production assignments and assignments for competency tests.

Therefore, it is possible to think that the use of the developed modular technology, reflected in the methodology of training and methodological support for corporate personnel training allows us to focus the training process on the specifics of the enterprise and to prepare workers, ready for immediate inclusion in the professional activity of the enterprise (without a period of professional adaptation).

Implications and Recommendations

Extrapolating the results of the experiment on the processes of the organization and the implementation of corporate personnel training in other branches of industry, it can be assumed that the developed system also will work effectively in the field of metallurgy, chemical industry, etc., because characteristics of the main workers of any production reflect a generalized functional-operational nature of professional activity of a worker, which opens with a spectrum of the same competencies and individual’s professional qualities of a worker. One of the problems of the following studies is the problem of the organization interaction training centres of enterprises and educational organizations of secondary and additional professional education in an aspect of continuity of the content and continuity of personnel training in the context of the specifics of the enterprises-customers of the personnel.

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