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Research paper

WorldSkills as means of improving quality of pedagogical staff training

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Abstract

Today the problem of identifying and developing talents in children and youth is extremely urgent. One of the priorities is the formation of a creative person who is able to freely and boldly meet any obstacles and difficulties in his path, the one who has deep, constantly updated and developing knowledge. This is especially important for graduates of educational institutions that are trained in working professions and must be competitive in the labor market. The article considers one of the most important tools in implementing a set of measures aimed at improving the vocational education system which is the participant in the WorldSkills movement. We conducted a formative experiment involving 20 students from Minin Nizhny Novgorod State Pedagogical University. The purpose of the experimental work was the system of formation and development of professional skills competitions in accordance with WorldSkills standards. Therefore, this article discusses the development of new educational programs that are effectively used in the methods and technologies of training students to enable them to participate in national and international competitions of professional skills WorldSkills, applying the technology of development of the system of teacher education with the use of the WorldSkills movement in vocational training pedagogically frames. Guided by the results of experimental work they came to the conclusion that the holding of the WorldSkills professional mastery competitions for the preparation of future technology teachers became a motivating factor in the learning process as a whole, while studying the discipline, interest in self-study, self-assessment and self-assessment of knowledge and skills are developed.

Keywords: *WorldSkills; Professional Skills; Quality of Training; Teacher-Technologies; Professional Competence.*

1. Introduction

One of the most important tasks of the vocational education system is to improve the quality of the training of teachers in accordance with the current level of development of education and the expectations of employers. The teacher of the XXI century is, first of all, a competent, creatively developed, competitive personality, a freely and actively thinking professional who predicts the results of his activities and simulates the educational process skillfully. Society needs graduates who are ready to be included in further life activities, capable of solving vital and professional problems facing them. And this largely depends not only on the knowledge, skills, and skills obtained, but also on the level of the formation of general and professional competencies, as well as professional-significant personal qualities that support the implementation of modern education goals.

One of the most important tools in implementing a set of measures aimed at improving the system of secondary vocational education is participation in the WorldSkills movement [1].

Using principles and standards WorldSkills can be considered as a tool for independent assessment of the quality of teacher education and a means of improving its quality.

Thanks to the methodological support, the development of evaluation procedures, the rules of contests, the WorldSkills movement allows to build an educational process that provides a high level of training for a middle-level specialist [2].

The system of formation and development of professional skills contests in accordance with WorldSkills standards is intended to organize the development of new educational programs, use effective methods and technologies not so much for preparing students for participation in national and international competitions for professional skills of WorldSkills, but for developing a system of secondary pedagogical education that is correlated with existing requirements presented by modern society to the level of professional training pedagogical staff [3].

The modern head of an educational organization needs specialists capable of solving professional problems facing them, the successful solution to which directly depends on the formation of general and professional competencies - qualitative entities based on knowledge, experience, values that are acquired in the process of training [4].

The competence of the teacher is an organic complex of general professional (related to pedagogical activity in general) and special (reflecting the specifics of the educational system in general and the educational institution in particular) knowledge, skills, abilities, ensuring the effectiveness of the main types of professional pedagogical activity [5].

Great importance in the formation of professionalism, competencies, and professionally significant personal qualities have practical exercises using the standards of WorldSkills. It is possible to

provide a higher level of training for mid-level specialists using the idea of the WorldSkills movement, the technology of holding contests and assessing the level of the formation of the professional competencies of future teachers in practical classes [6].
Practical training is an important component of the training program for mid-level professionals [7]. The result of training in practical classes is the formation of the general and professional competences necessary for pedagogical activity, and students when passing industrial practice in educational organizations [8] will obtain the experience of their application.
For the analysis, data were collected, systematized and summarized from open sources of information - publications in the mass media, publications on the websites of educational organizations and public authorities, local self-government bodies, scientific works Faktorovich A.A., Ogorodova L.M., Blinova V.I., Leibovich A.N. and others, materials of scientific and other conferences, seminars, exhibitions. Preparation of the analysis covers the study of the experience of five foreign countries - Brazil, South Africa, China and India, Germany, as well as 25 subjects of the Russian Federation (St. Petersburg, Moscow, Sverdlovsk, Tyumen, Moscow, Ulyanovsk, Kaluga, Yaroslavl, Volgograd, Voronezh, Belgorod, Samara, Rostov, Saratov, Chelyabinsk, Omsk, Irkutsk, Amur regions, Perm, Krasnoyarsk, Khabarovsk, Zabaikalsky Krai, Republic of Khakassia, Republic of Tatarstan, Chuvash Republic, Republic of Dagestan and Kabardino-B Alkar Republic) for the last 3 years [9].
This issue is the subject of this analytical study in which the best foreign and domestic practices of implementing joint projects and programs on interaction between scientific organizations, employers, general education organizations, higher education organizations, socially-oriented non-profit organizations, international educational centers for training and retraining skilled workers and middle-level specialists (youth, adult people with disabilities and people with disabilities) [10].
Thus, the relevance of scientific research lies in the organization of a system for the formation and development of competitions of professional skills in accordance with the WorldSkills standards in a higher education institution, exemplifying the training of the failing teachers of technology in schools.

2. Methodology

In this paper, the following stages were identified: the first stage is to give a general description of the WorldSkills movement; The second stage is to study the movement of WorldSkills in Russia; the third stage is the participation of students from Minin Nizhny Novgorod State Pedagogical University in the movement WorldSkills Russia as well as the description of the content and conduct of the WorldSkills movement from a methodical point of view and the specification of the professional competence of the teacher; the fourth stage - the sequence and justification of the results of the competition of professional skills through the organized movement WorldSkills; The fifth stage is the result of the WorldSkills movement.
Active training in WorldSkills championships involves the use of a system of methods that focuses primarily not on the teacher's presentation of the finished knowledge, their memorization and reproduction, but on the independent mastery of the students' knowledge and skills in the process of active mental and practical activity [11].
The results of the study of the professional training of highly qualified personnel were conditioned by criteria reflecting the stages of the formation of professional competencies:

- Improving the content of education for participating in WorldSkills championships;
- Introduction of new information technologies in the educational process, including WorldSkills;
- Use of active teaching methods.

In the field of development of qualitative training of students in professional activity on April 13th, 2018 closing of high school championship «Young professionals» WorldSkills was held on the basis of the Minin Nizhny Novgorod State Pedagogical University. Contestants demonstrated a high level of knowledge. A total of 15 students of Minin Nizhny Novgorod State Pedagogical University took part in the championship. They took part in one of the two directions "Teacher of Basic and Secondary School" and "Teacher of Technology" [12].
All participants independently choose to participate in such an event where they could demonstrate their professional skills in the field of their poor profession. It is important to add that the number of participants could be higher but the conditions of organization WORLDSKILLS implied the presence of 5-7 participants from the declared directions "Teacher of basic and secondary school" and "Teacher of technology".
The main essence of the experiment which is to hold a competition on the basis of the university is to help understand your mistakes, reveals your weaknesses which you should pay attention to and helps share the experience of other contestants.
In the opinion of the contest participants, while performing specific tasks you begin to see and understand your mistakes, begin to compare yourself with others, and analyze what you lack, what position you occupy and what to strive for [13].
It is very difficult to understand what you have achieved and what you still need to achieve in your usual conditions. Only in conditions of competition and struggle where all your possibilities are manifested you can understand what you are worth. You can never stop there because there will always be someone who will be better. Competitions motivate for self-improvement, for self-realization professionally and for self-development (Figure 1. Competition)

Fig. 1: Competition.

As a result of the study of the WorldSkills movement as a means of improving the quality of training of pedagogical personnel, it was diagnosed before and after the end of the experimental work. The results obtained are presented below (Table 1. Results of experimental work).

Table 1: Results of Experimental Work

Control group			Experimental group	
Evaluation score of competence (profession)	Amount in% before experiment	Amount in% after experiment	Amount in% before experiment	Amount in% after experiment
0	20	22	20	29
2	51	48	51	56
3	29	30	29	15

In our experiment, a pedagogical study was carried out professionally, which was conducted on the basis of Minin Nizhny Novgorod State Pedagogical University which is engaged in the training of qualified personnel - technology teachers. Thus, the analysis of the formation of professional competences in the field of technology at the design stage made it possible to identify the need for the WorldSkills movement as a means of improving the

quality of the training of pedagogical personnel in the field of technology. Thus, students participating in this competition mastery received the highest assessment of experts on the main stages of professional activity in the performance of certain tasks with a certain level of complexity [14].

Criteria are objective, subjective and qualifying. Objective criteria are fixed through the measured parameters: mm, grams, pieces, volts, degrees, etc. To assess the objective criteria, groups of three experts are always drawn. Everyone makes their own assessment. An estimate is chosen that falls within the range of variation from the average of these three estimates [10].

The weight of the corresponding criterion is divided into four parts (0%, 33%, 66%, 100%) and the experts put the marks from 0 to 3. The evaluation is the same as for subjective criteria.

The received evaluations are interpreted as follows: 0 - the contestant does not possess this Skill, 1- the contestant owns the skill at the level of the graduate of the educational organization, the 2nd competitor has the skill at the level of the current employee, the third competitor owns the skill at the level of the specialist and understands all the subtleties.

At the beginning of the experimental work we conducted the initial level of testing the knowledge and skills of students studying in the direction of preparation "Pedagogical Education" for the profile of preparation "Technology and Economics". All participants in the experiment were given the same tasks that determine the professional competence of the teacher. According to the results of the expert, the level of knowledge corresponded to the greater part of criteria 0 and 2. Further, to test the implementation in the process of training teachers of the WorldSkills technology, the groups were divided into experimental and control groups. In the control group, the assignment of tasks with the formation of the professional competencies of the teacher was carried out in ordinary practical work. In the experimental groups, the same assignments were carried out through the WorldSkills movement where the tasks were defined in a certain execution mode and with a specific submission of the contest content.

WorldSkills defines the knowledge, understanding and specific competencies that underlie the best international practices of technical and professional performance.

The purpose of the competency competition is to demonstrate the best international practices, as described in the WorldSkills system and to the extent that they can be implemented.

To organize the contest in Minin Nizhny Novgorod State Pedagogical University, a number of preparatory activities were held, which were responsible for the content and specific tasks for the contestants.

The content of the Competition task is the pedagogical activity of the technology teacher which is revealed during the demonstration by the contestant of psychological, pedagogical, design, methodological, practical and professional-personal competence.

Before the execution of each module of the contest the participant of the competition receives a task, its description, the order of implementation, the features of the choice of topics, the directions of technological preparation of school children, the age of the trainees, the time for preparing and demonstrating the task, the form of presentation of the final result [15].

The evaluation of the performance of the competitive task is carried out by experts using measurable and judging assessments, both with regard to the process of performing the competitive work (preparation) and the results of work in each module (demonstration).

The competition task is a series of [4] modules which in turn are divided into tasks (Table 2. Modular Competitive Tasks). The total number of tasks is [7].

Table 2: Modular Competition Tasks

Module A. Teaching technology in basic general education programs
Module B. Organization of extracurricular work of technical and technological orientation with elements of creative activity
Module C. Methodological support of teaching technology
Module D. Self-education and professional reflection

Table 3: Organization of Modular Works

№	Module name	Work time	Total time
1	Module A: Teaching technology in basic general education programs	10.00-14.00 15.00-18.00	4 hours 3 hours
2	Module B: Organization of extra-hour work of technical and technological orientation with elements of creative activity	10.00-13.00	4 hours
3	Module C: Methodological Provision of Teaching Technology	14.00-15.30 15.30-18.30	1.5 hours 3 hours
4	Module D: Self-education and professional reflection	10.00-12.00 13.00-17.00	2 hours 4 hours

The total duration of the performance and demonstration of the contest task by the participant is - 16 hours (3 days) (Table 3. Organization of modular works). In the process of speaking on modules A, B and C, the contestants are preparing for the next assignment. The competition task is carried out individually by each contestant.

3. Results and discussion

At the present time, the tendency is continuing to prepare universities for young specialists who do not meet the current needs of the labor market, who are not able to show flexibility in changing the professional and qualitative structure of the market, as well as the passive position of the education system in the sphere of youth employment.

Practical training is an important part of the professional training program for mid-level professionals. The result of training in practical classes is the formation of general and professional competencies necessary for pedagogical activity. Students will receive experience of their application when passing industrial practice in educational organizations [16].

In practical classes the following tasks are solved:

- Enriching and systematizing students' knowledge concerning issues of teaching, raising children and organizing their development in a kindergarten or school [17];
- Development of students' abilities to analyze and generalize theoretical material on the basis of psychological and methodological research;
- Development of students' abilities to determine the content and methodological methods of working with children of preschool or primary school age;
- Improvement of planning skills [18]
- Development of diagnostic, prognostic and constructive skills for students;
- Development of joint activity skills;
- Development of creative abilities of students, etc.

The development of practical exercises in accordance with WorldSkills standards involves the use of different forms of their organization and teaching methods. Master classes, trainings, role-playing and business games, quizzes, presentations, etc. can be provided. All this allows diversifying the students' learning activities in practical classes, increasing the subject's position of students creating conditions for developing their interest in problems of preschool and primary general education, forming teamwork skills and much more [19].

The content of practical classes should be correlated with the requirements of the Federal state educational standards for higher education, with the requirements of the professional standard "Teacher" as well as with the requirements for the training of highly qualified personnel of the "Young Professionals" movement [20].

Taking into account the indicated requirements it is possible to ensure in the practical classes the formation of the necessary com-

petencies and satisfy the interests of employers in terms of mastering basic and additional types of professional activity.
In the content of practical exercises, as experience shows, it is advisable to include:

- Study of normative documents and materials;
- Analysis of production documentation, work plans, abstracts, etc;
- Work with educational and methodological complexes and teaching materials [21];
- Practical familiarization with the conditions, content and organization of educational work in educational institutions, directly in the process of training practice or video recording;
- Analysis of industrial, psychological and pedagogical situations;
- The study of individual achievements of pupils and the diagnosis of students and the introduction of proposals for the organization of pedagogical work;
- Projecting and designing of the educational process (lessons, classes, extracurricular activities, etc.) for a given purpose [22];
- Solving problems of various kinds, carrying out various kinds of exercises aimed at training skills, etc. [23].

In this case an important role is given to interactive forms of practical training. These include: a problem seminar, a workshop, business and role games, the solution of pedagogical tasks, project activities, etc. Thus, for example, role play effectively teaches students to apply theoretical knowledge and practical skills for solving the pedagogical tasks in the process of imitation of pedagogical activity. Through the role-playing game, active mastering of the professional actions necessary for the teacher takes place. Such method as solution of pedagogical situation problems is considered to very significant. In the practical lesson, the students get acquainted with the pedagogical situation, analyze it and express their ideas and decisions justifying their position with the help of theoretical studies and also with the help of their own successful experience or the experience of their senior colleagues [24].
The use of these interactive technologies and forms of training in practical classes ensures the interaction of students not only with the teacher but also with each other [25-27]. It is this approach that makes it possible to make a practical lesson effective, aimed at successfully mastering the necessary competences for students to perform different types of pedagogical activity as provided for by the professional standard [28].
Practical lessons in preparation for the WorldSkills Russia Demonstration Exam and the WorldSkills Russia Championships are of particular importance.
Active introduction of the competence approach in the educational process, creation of conditions for the formation of an independent experience in the learning of the cognitive, communicative, organizational, moral and other problems form the basis for preparing students to participate in professional skills competitions and to successful independent professional activity.
After the WorldSkills Student Contest had been held, we conducted a comprehensive exam in those groups that participated in the experiment on the discipline "Training Methodology", control and experimental. (Table 4. Level of knowledge of students in the experimental and control groups).

Table 4: Level of Knowledge of Students in the Experimental and Control Groups

Level of knowledge in points	Experimental group		Control group	
	Entrance testing	Final testing	Entrance testing	Final testing
92 – 100 (excellent)	10%	50%	21%	25%
76 – 91 (good)	72%	36%	69%	24%
61 – 75 (satisfactory)	18%	14%	10%	50%
Less than 61 points	0	0	0	0

From the data given, it follows that the results of the WorldSkills movement influence the quality training of pedagogical staff, in this case the teachers of Technology.
Thus, using the ideology of the WorldSkills movement in the educational process, not only the mastering of the professional competences of the Federal state educational standards of higher education and the professional functions of professional standards occurs, but also the quality of vocational training is increased, professional and creative thinking of students develops, the experience of creative activity in professional sphere, the share of graduates who are employed is improved and expanded due to social partners, increasing prestige teaching function, and others [29].
The present study is devoted to the consideration of the use of the WorldSkills professional mastery competition in educational institutions for the training of highly qualified specialists. In Competitions on the "Teacher of Technology" competency, knowledge and understanding are checked through the evaluation of the implementation of practical work.
The technology teacher works in the general education organization and implements the programs of the subject area "Technology" in the system of primary, basic and secondary general education. The main direction of his activity is the introduction of students into the world of technology and technology, acquaintance with production and professions through the organization of practical and project activities of students, the formation of experience of labor, creative activity.
A serious renewal of the means of production and change in the nature of labor in a postindustrial society require school and, especially, technological preparation of school children to meet the requirements of modern innovative economy. The range of modern and prospective technologies (material, information, and humanitarian) studied by schoolchildren has significantly expanded and their implementation both in the process of creating products of labor, and in the process of acquaintance with modern production and mastering of professional skills (including in the field of working professions).
To this end, the technology teacher must have a serious training in natural-science and humanitarian subject (educational) areas, mathematics and know the basics of entrepreneurial activity.
The modern teacher should have a training that opens the possibility to teach students the solution of modern production and technological problems (design, engineering, technological, managerial, entrepreneurial) in the process of modeling and creating objects of labor and implementing projects.
Such a wide range of vocational training puts the teacher of technology at the task of developing self-education skills and the capacity for professional reflection.
In the process of realization of design and research work the technology teacher needs to ensure not only the observance of the technological process but also to ensure understanding and fulfillment by the students of all stages of the project activity: from the initial stage of design to the implementation of the finished product, including the development of entrepreneurial skills and abilities and innovative creativity.
Terms of work of the technology teacher are related not only to the organization of the educational process but also to the organization of the working space and working processes in the conditions of the training workshop and laboratory. Therefore, compliance with the requirements of labor protection, sanitary and hygienic standards, the organization of safe work are the components of the professional competence of the technology teacher.

4. Conclusion

One of the active ways to improve the quality of teacher training is the WorldSkills movement. As the result of the study shows, this can be obtained through the qualitative preparation of the content of such an event.

The use of competitions as the main engine for solving the tasks posed is a very effective idea. Competitions are an effective tool of comparison among themselves within the bounds of certain rules. Competitions assume a common framework - the result of a collective agreement worked out before the competition. At the second stage of the experiment we see the effectiveness of the competition, the progress of the students of the experimental group. Thus, the positive results obtained in the course of our study allow us to conclude that the WorldSkills competition is an effective tool for improving the quality of training of teaching staff. Substantiated improvements in the education of students through competitive activities in pilot work, which is confirmed by a number of indicators: the degree of mastering the study material, the strength of students' learning, the time spent on training, the time of control, the time for the teacher for monitoring with electronic a textbook, a prize in the amount of information.

In the course of the study, the WorldSkills contest on forming the professional competencies of teaching staff was considered. This movement is different from the standard practical exercises. The application of the WorldSkills movement allowed to increase interest in the subject itself, to independent work, made it possible to carry out self-assessment and self-examination of knowledge, skills and practical skills in the field of pedagogical activity. In addition, the use of active methods of education by teachers for participating in the WorldSkills championships helps to improve the quality of the educational process, develop new approaches to professional situations, and develop the creative abilities of students. The main ways of introducing the WorldSkills movement in the educational activity of universities are: continuous improvement and development of methodological support, raising the professional level of teaching staff in developing the content of the competition tasks and the criteria for evaluating the results.

In order to improve the organization of competitive events for the WorldSkills movement it is recommended to use interactive technologies and forms of training in practical classes. It is also significant to include a demonstration exam according to the standards of WorldSkills in the educational process. Based on the source materials, the authors are currently developing a methodology for organizing WorldSkills in the training of pedagogical staff in the university.

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