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PROJECT-RESEARCH ACTIVITIES BY MEANS OF A CONTEST MOVEMENT IN THE EDUCATIONAL SPACE

ACTIVIDADES DE PROYECTO-INVESTIGACIÓN MEDIANTE MOVIMIENTO DE CONCURSO EN EL ESPACIO EDUCATIVO

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ABSTRACT

The article examines the specific characteristics of the development of students' professional com-petencies as part of project-research activities through contest movement in the educational space. The goal of the presented study is to disclose the effectiveness of project-research activities through contests in the educational process. The materials for the study include scientific works on the methodology of project-research activities and studies on the organization of contests. The employed research method is comparative analysis. The processing of empirical data is presented according to the results of experimental work based on the federal innovation site of a college in the city of Solikamsk, Russia. The study conducted in the educational space demonstrates that the contest movement technology can be used to improve the effectiveness of the quality of the edu-cational paradigm. The potential of contests in contemporary educational space as part of project-research activities is examined and demonstrated. Contest activities create a special educational environment within the educational process. Project-research activities by means of contests result in the interdisciplinary integration of knowledge and a generalized system of skills and abilities in solving competitive tasks in atypical conditions.

Keywords:

Educational space, project-research activities, contest movement, professional competence.

RESUMEN

El artículo examina las características específicas del desarrollo de las competencias profesionales de los estudiantes como parte de las actividades de investigación de proyectos a través del movi-miento de concursos en el espacio educativo. El objetivo del estudio presentado es dar a conocer la efectividad de las actividades de investigación de proyectos a través de concursos en el proceso educativo. Los materiales para el estudio incluyen trabajos cien-tíficos sobre la metodología de las actividades de investigación de proyectos y estudios sobre la orga-nización de concursos. El método de investigación empleado es el análisis comparativo. El procesa-miento de datos empíricos se pre-senta de acuerdo con los resultados de un trabajo experimental basa-do en el sitio de innovación federal de una univer-sidad en la ciudad de Solikamsk, Rusia. El estudio realizado en el espacio edu-cativo demuestra que la tecnología del movimiento de concursos se puede utilizar para mejorar la efectividad de la calidad del paradigma educativo. Se examina y demuestra el potencial de los con-cursos en el espacio educativo contemporáneo como parte de las actividades de investigación de proyectos. Las actividades del con-curso crean un ambiente educativo especial dentro del proceso educativo. Las actividades de investi-gación de proyectos mediante concursos dan como resultado la integración interdisciplinar de conoci-mientos y un sistema generalizado de habilidades y destrezas en la resolución de tareas competitivas en condiciones atípicas.

Palabras clave:

Educational space, project-research activities, con-test movement, professional competence.

INTRODUCTION

The global competitiveness of Russian education is ensured, among other things, by the adopted digitalization strategy. In the sphere of education, the digital transformation presupposes several directions: 1) the introduction of new communication channels for active use of educational materials in the digital form; 2) the creation, testing, and development of educational and methodical programs in the digital form, particularly through machine learning technologies; 3) the development of online formats of the educational process; 4) timely advancement of teachers' skills in the sphere of digital technology; 5) advancement of students' knowledge in the sphere of digital technology, their active use of various digital formats in the study of different academic disciplines (Safuanov, 2019).

In the process of digital transformation of the education sphere, the very process and structure of learning will be transforming due to the introduction of new forms of learning based on the use of new information and communication technologies.

Of special significance is the introduction of the information educational environment as a comprehensive space that ensures the development of digital forms of learning and interaction within the educational process. The development of an information educational environment within an educational institution implies the creation and use of modern digital platforms, which provide both a basis for the development of educational and methodical materials and a platform for posting and completing online courses, as well as a space for the study of academic disciplines and training one's skills in the digital format. The implemented technologies will considerably affect the labor market, where a specialist's competencies in the sphere of information technologies are about to occupy one of the key positions.

The indicated transformation processes in the sphere of education are aimed at improving the quality of education and the level of knowledge and skills of graduates of educational institutions.

The Presidential Decree No. 294 (May 7, 2018) outlines the course for the development of the educational system as a goal to ensure the global competitiveness of Russian education. In this, great significance is attributed to the modernization of vocational education, since the system of secondary vocational education (SVE) provides the country's economy with new personnel. Of considerable importance in this regard is also the issue of advanced development of education, as it is the educational institutions that must produce professionals with the most advanced methods, techniques, technologies, and skills to work with the most modern materials to further the development of a particular industry.

The Decree signifies that the system of professional training needs to be guided by the best world practices and develop in accordance with the modern global standards. In this, the main criterion of the quality of vocational education is considered to be the level of development of competencies in SVE graduates (Bogacheva, 2011).

The theory of professional competence is developed by such Russian scientists as Davydov (1986); Zimniaia (2010); Leontiev (2012). Among the noteworthy foreign researchers is Raven (2002), who understands competence not only as knowledge, abilities, skills, and the way of thinking specific for the given profession but also taking responsibility for one's actions. We define competence as the complex of knowledge, abilities, and skills allowing a person to independently resolve professional tasks with sufficiently high efficiency.

Bogacheva (2011), argues that the main social meanings of the modern SVE system are associated with the fact that students have to acquire the competencies that meet the needs of the state, society, modern employers, as well as each student's own needs for the development of personal potential. Thus, professional competencies must meet the requirements of the current moment.

At present, the objectives of improving the quality of education are addressed as part of the project "Young Professionals (Improving the Competitiveness of Vocational Education)", which gives all grounds for improving the quality of professional training. Among the most important results of the project is the organization of professional mastery contests. We will proceed to examine this form of work with students as one of the most promising. The importance of contest activity as part of SVE is directly linked to the activation of students' potential since this form of work implies high motivation of the contestants who are interested in receiving the prize and recognition from other students and the teaching staff, as well as in their best qualities, abilities, and level of knowledge (Diachenko, et al., 2020).

In the course of preparation for and participation in professional mastery championships, students find themselves having to not only show their creative and personal qualities but also demonstrate the level of their professional competencies (Lukina, et al., 2017). Another noteworthy aspect is that in professional contests, students can learn about the position and requirements of potential employers, as well as enter communication with the representatives of the professional community. This offers them opportunities for the development of professional

self-awareness, ensures the rise of interest in the chosen specialty, and gives motivation for professional development (Shakirova, et al., 2018).

Moreover, through participation in contests, students advance their knowledge in the sphere of digital technology due to the fact that modern contests often present the results in electronic formats (presentations, websites) and involve digital data exchange and communication. Contests and Olympiads held in an online format are beginning to play an increasingly important role. This provides for improving the level of knowledge and skills in the field of information and communication technologies and forming the competencies that are in demand in the modern world.

Considering participation in Federal and International championships, their participants can learn about the world practices and enter the International professional environment, which will have a positive effect on their future career and find its reflection in the student's portfolio.

Overall, we can consider the contest movement as a special phenomenon that creates a unique educational space for students that ensures the acquisition of professional competencies and increased motivation for their development (Table 1).

Table 1. Development of students' professional competencies in participation in the contest movement.

contest type	contest example	skills developing as part of this type of contest	corresponding types of competencies
professional (individual)	«Professionalnye proby» [«Professional tryouts»], «Uchitel goda» [«Teacher of the Year»], WorldSkills	- skills of independent problem-solving in creating a lesson plan and conducting it, developing effective assignments on various topics; - self-presentation skills;	- readiness for teaching; - the ability to design educational programs;
professional (group)	«Luchshie v professii» [«Best in the Profession»], «My – komanda» [«We are a Team»]	- communication skills; - organizational skills; - the skills of collective problem-solving in creating the plan of lessons and extra-curricular activities;	- readiness for teaching; - readiness for interaction with participants in the educational process; - the ability to organize students' cooperation;
creative (individual)	Contest of essays, drawings, posters on current themes	- self-presentation skills; - creative abilities;	- the ability to design educational programs;
creative (group)	Competition of presentations, theatrical productions	- communication skills; - creative abilities; - leadership and organizational skills.	- readiness for interaction with participants in the educational process; - the ability to organize students' cooperation.

As part of the contest movement in the educational space, a program of the contest movement was tested among students from the first to the fourth year of study.

In the *1st year,* students are involved in team contests (held between groups of the educational institution). The purpose of this type of contest is to develop teamwork skills, as well as to further develop competitiveness skills for successful participation in more serious contests in the upcoming years of study. As part of the project-research contest, students try their hand at creating projects and writing research papers. In this case, the objectives include the expansion and consolidation of students' key knowledge and the development of their creative thinking and intellectual abilities, determining their level of knowledge of scientific research methods in supra-professional and professional spheres of activity. The result of students' activity within this type of contest is a creative product, which requires presentation and defense. It should be noted that the use of the project method in the educational process contributes to the development of students' independence and the manifestation of their creative abilities.

In the *2nd year,* students start to participate in in-person contests in the chosen profession. These competitions include specific tasks followed by evaluation of the quality, timing of the task, and other criteria. As a result, students develop more confident, in-depth knowledge in the professional sphere, the ability to act in situations approximated to real work situations, and responsibility for their actions. For example, students of the Faculty of Education participate in the professional skills contests for the specialty "Elementary School Teacher" (institutional level), including the "Best Teacher" contest. As part of the contest, students show their abilities and skills in creating a lesson on a given topic, implementing their idea, the ability to interact with the audience, conveying new information to them, and monitoring the results of learning.

Contest activity in the *3rd year* focuses on the professional development of future specialists. As a result of this contest movement, students acquire the ability to independently make decisions in challenging (atypical) situations (a professional competency vital for professional activity),

goal-orientedness, communicability, professional motivation (seeing one's opportunities in the profession more clearly), and psychological and emotional stability.

Table 2. Organization of project-research activities in an educational institution through an innovative practice (contest activities) within the framework of developing students' research skills.

1st year			
internal individual contests	internal group contests	external individual contests	external group contests
– Institutional Olympiad movement on the core subjects; – Institutional expressive reading contest «Moia malaia Rodina» [«My Small Motherland»]; – Regional Distance Heuristic Olympiad «Alkhimik» [«Alchemist»]; – All-Russian distance Olympiad on information technology for SVE «TekhnologiUm»; – International creative contest of educational and research activities «Doroga k zvezdam» [«The Road to the Stars»];	– Institutional contest for athletic achievements within and between college groups «My – zdorovoe pokolenie» [«We are the healthy generation»]; – Institutional computer telecommunications quiz contest «Kliuch» [«Key»]; – All-Russian creative, project, and research contest «# Vmestelarche»; – International creative contest «Pedagogicheskaia otkrytka» [«Pedagogical card»];	– Individual sports contest in SVE «V zdorovom tele – zdorovyi dukh!» [Healthy body – healthy mind!]; – Regional distance Olympiad on the core subjects «Umnik i umnitsa»; – Regional project contest «Sdelaem nash gorod chishche» [«Make our city cleaner»]; – All-Russian contest on databases with the use of programming tools «SPO@UM»; – International scientific research contest «Luchshaia studencheskaia statia» [«Best student article»];	– Municipal contest on a computer telecommunications quiz «Infoznaika»; – Regional contest in literary criticism «Literaturnoe tvorchestvo USPO» [«Literary Creativity of the SVEI»]; – All-Russian professional contest «Pervye shagi v professii» [«First Steps in the Profession»];
2nd year			
internal individual contests	internal group contests	external individual contests	external group contests
– Institutional essay contest «Moi vybor - profobrazovanie» [«My choice – professional education»]; – Institutional professional contest «Smena ProfessiUm»; – Institutional professional contest «Luchshii vospitatel» [«Best Educator»]; – Institutional professional contest «Mladshaia medsestra» [«Nurse Assistant»]; – Institutional contest «Olimpiiskaia nadezhda SPO» [«Olympic hope for SVE»]; – Institutional professional contest «Professionalnye proby» [«Professional tryouts»]; – Contest «Luchshii proekt studenta» [«Best student project»];	– Institutional creative works contest «Ia zdes uchus, i eto mne nravitsia!» [«I study here and I like it!»]; – Institutional contest «Molodye professionaly WORLDSKILLS RUSSIA» [«Young professionals WORLDSKILLS RUSSIA»]; – Contest «Luchshii sotsialnyi plakat» [«Best Social Poster»]; – Contest of educational and research activities «Luchshie tvorcheskie i issledovatelskie raboty SPO» [«Best Creative and Research Works in SVE»];	– Regional contest as part of the SVE forum campaign «Ia – lider» [«I Am a Leader»]; – Regional distance olympiad in information technology for SVE; – All-Russian distance olympiad «Kulturnoe bogatstvo Rossii» [«Russia's Cultural Wealth»]; – All-Russian contest of the distance olympiad «OlimpikUm»; – All-Russian professional contest of vocational guidance photos «Profkadr»;	– Municipal professional contest «ProfOlimp»; – Regional Internet contest «Molodezh – media» [«Youth – Media»]; – All-Russian contest of multimedia presentations in a foreign language «Strany izuchaemogo iazyka – vchera, segodnia, zavtra» [«Countries of the studied language – yesterday, today, tomorrow»];
3rd year			
internal individual contests	internal group contests	external individual contests	external group contests
– Institutional project contest «Strana professionalnoi deiatelnosti» [«The country of professional activity»]; – Institutional contest of scientific research works in SVE «Ia – Profi» [I Am a Pro]; – Institutional contest of research works «Luchshaia kursovaia rabota» [«Best Term Paper»]; – Institutional contest «Molodye professionaly WORLDSKILLS RUSSIA» [«Young professionals WORLDSKILLS RUSSIA»]; – Institutional professional contest «Professionalnye proby» [«Professional tryouts»]; – Contest «Luchshii proekt studenta» [«Best student project»];	– Institutional contest «My – zdorovoe pokolenie» [«We are the healthy generation»]; – Institutional contest of creative projects «My patrioty svoei storony» [«We are patriots of our country»]; – Contest «Talantlivye liudi» [«Talented people»];	– Contest of project-oriented projects «Moi rodnoi gorod» [«My Hometown»]; – Regional contest «Student SPO» [«SVE Student»]; – Regional contest (national championship) «Molodye professionaly WORLDSKILLS RUSSIA» [«Young professionals WORLDSKILLS RUSSIA»]; – All-Russian Olympiad in professional mastery; – International contest of research works in SVE «Studencheskie nauchnye dostizheniia» [«Students' scientific achievements»];	– Regional creative contest «Moi kolledzh – zalog professionalnogo rosta» [«My College is the Key to Professional Growth»]; – All-Russian Contest of Best Mentoring Practices in SPO «Ot pokoleniia k pokoleniiu» [«From Generation to Generation»]; – All-Russian contest «Luchshii media-proekt 'Gotov k trudu i oborone'» [«The Best Media Project 'Ready for Labor and Defense'»]; – Municipal contest «Shkola bezopasnosti» [«School of Safety»];

4th year			
internal individual contests	internal group contests	external individual contests	external group contests
- Institutional contest of research projects «Dni nauki» [«Science Days»]; – Institutional contest «Luchshii elektronnyi obrazovatelnyi resurs» [«Best electornic educational resource»]; – Institutional contest «Moia pedagogicheskaia filosofiia» [«My pedagogical philosophy»]; – Contest «Student goda» [«Student of the year»]; – Portfolio contest «Professionaly v sisteme obrazovaniia» [«Professionals in the education system»]; – Contest «Moia professiia – moe budushchee» [«My profession – my future»].	–Institutional contest «Nezavisimye professionaly» [«Independent professionals»]; – Creative contest «Studencheskaia vesna» [«Student spring»]; – Institutional contest – relay «Professionaly» [«Professionals»]; – Team relay «Prostye pravila» [«Simple Rules»] (on life safety).	– Contest «Stupeni professionalnogo masterstva» [«Steps of professional mastery»]; – Contest of publications on professional topics; – Municipal contest «ProfOlimp»; – Regional distance contest «Student SPO» [«SVE Student»]; – Regional accreditation contest; – All-Russian contest «Portfolio studenta professionalnogo obrazovaniia» [«Portfolio of a student in vocational educaiton»]; – International contest «Moe professionalnoe kredo» [«My professional credo»].	– Regional Spartakiada Games among SVE students; – Municipal contest among SVE students "Erudit"; – All-Russian contest in professional mastery "Sovremennoe professionalnoe obrazovanie" ["Modern vocational education"]; –Regional programming olympiad.

The 4th year pursues the goal of identifying students' abilities for the development of professional orientation and distinguishing the most talented and motivated learners striving to obtain knowledge in the professional sphere. The outcome of this stage of contest activity is a competitive graduate.

The organization of project-research activities in an educational institution through the contest movement presupposes holding contest events (Table 2), carrying out preparatory activities (teaching the basics of competition in a special course), organizing psychological support for participants in the contest movement (both within and outside of the educational process), as well as developing regulations for various types of contests competitions of various types (Appendix 1).

The project of the innovative practice (contest movement) has a cyclical nature: in each new year of study, students can demonstrate their skills and abilities gained earlier, as well as develop new ones in the held contests. After gaining experience participating in a contest, students in the next year of study join in new forms of project-research activities being more prepared and more confident.

1st year

In the 1st year, project-research activity within the framework of the innovative practice (contest activity) is designed for the development and actualization of knowledge, as well as for maintaining activity on certain requirements of the contest task. The main goal and purpose of this activity is the development of students' thinking in the educational environment of the institution. This type of activity allows to:

1. activate students' thinking on the resolution of real problems;

2. develop their creative self-realization potential with professional orientation;

3. encourage the student's desire for personal development;

4. exercise their scientific potential and creative thinking in atypical situations;

5. develop students' self-expression and individuality;

6. form the motivational sphere of personality.

In light of the above, in the present study, the project activity of 1st-year students is represented by several consecutive stages, the implementation of which is a mandatory condition for ensuring:

- *goal-orientedness* – the effective development of the educational environment is determined by reinforcement of a certain process (creativity of thinking, the promptness of action in response to an external influence);

- *integrity* – the identification of the object of study as a systemic comprehensive formation focused on the interaction of all its elements;

- *the interdependence of activity and relationships* – within the framework of activity, the relationship between contests is defined as a type of learning activity and should provide a tendency of increasing professional motivation.

Each type of competition movement conducted in the 1st year is filled with specific contest tasks realized as part of the established goal.

2nd year

A specific feature of the 2nd year of study is that students still lack real ideas about their capabilities in the chosen profession. It is at this moment that the foundation is laid for a deeper understanding of the future specialty,

conscious interest in it arises, and an understanding of one's capabilities as a future professional is reached.

The peculiarities of this year of study are also due to increased complexity and seriousness: already having basic ideas about the profession and more in-depth knowledge of the core disciplines, students reach the level of professional mastery contests. In this, 2nd-year students can first test themselves as aspiring professionals, realize their connection to the profession.

This type of activity is expressed in the following:

– improved quality of learning and knowledge through the development of motivation;

– development of self-organization and goal-orientedness in general and professional activity, which provide efficiency in the project;

– regulation of the emotional and psychological stability of a person and self-activation of potential capabilities.

Students in the 2nd year more actively develop their portfolio as part of project-research activity and start to show a more conscious attitude to their future profession.

3d year

Students in the 3rd year are actively involved in the innovative practice. During this period, both professional and research skills are developed and improved: the ability to express and articulate the creative idea and design and bring the idea to fruition. The communicative competency is laid down: the mastery of all kinds of speech activity, oral and written speech, skills and abilities to use creative thinking of oral speech in atypical situations, self-organization of student's activity, as well as the development of purposefulness and communicativeness within the framework of supra-professional and professional activity. Students also have the opportunity to communicate with trained students from other educational institutions, to exchange experiences and knowledge.

This type of activity is expressed in the following:

– The expansion of personal interaction.

– Self-organization for continuous learning.

– Reflection on the completed work.

Thus, 3rd-year students' orientation in the educational and professional activities provides for the development of communicative abilities, which significantly increases the effectiveness of the project developed in this study.

4th year

Students in the 4th year are actively engaged in the final stage of the innovative practice through the formation of independence in professional activity in the contest setting. At this stage, students demonstrate all their competencies in the professional field, universal knowledge, practice-oriented skills in their chosen specialty.

The result of this stage of the activity:

– Allows listening to a lot of speeches in a short time, which is undoubtedly important in an educational environment.

- Diagnoses the level of knowledge of scientific research methods in supra-professional and professional activity.

- Allows forming a certain level of creativity of students' thinking in project activities by means of using general and specialized knowledge, which form the basis for research activity.

- Determines the degree of development of personal psychological and emotional stability, adaptability to the constantly changing conditions of professional activity.

A specific feature of this year of study is the orientation on the end of studies and the start of professional activity, the maximum development of independence. This is a critical stage in the life of any student as it focuses on maximum development of professional qualities and knowledge, as well as the ability to successfully use them in professional practice. 4th-year students already have a certain range of professional skills and abilities, they have already taken part in the Olympiad movement and professional contests, that is, they typically already possess developed research skills. The outcome of studies in the 4th year is the formation of a young specialist ready for professional activity.

The proposed organization of project-research activities in an educational institution through the innovative practice (contest activities) allows each student to experience the development of professional skills, creativity, and communication abilities as part of the formation of research skills.

MATERIALS AND METHODS

The study conducted in a vocational education organization involves retrospective analysis. The study attempts to develop students' research skills through an innovative practice (contest activity) in the educational institution.

The work employs theoretical and empirical research methods including scientific research analysis and an experiment. The selected diagnostic methods include a survey, W. Stephenson's Q-sort Technique, A.A. Leontiev's communicative skills assessment test, L.N. Kabardov's professional readiness test, E. Zharikov's test

questionnaire, R. Amthauer's test questionnaire (intelligence structure), V.A. Andreeva's method, a method modified by T.V. Rumiantseva, Milman's personal motivation structure diagnostics, and the Motivational Personality Profile method by S. Ritchie and P. Martin.

RESULTS AND DISCUSSION

As a result of the *ascertaining experiment* (2016) conducted on a sample of 101 respondents, we following data are obtained (Figure 1):

– 13.8% of the respondents (insufficient level) note the complete lack of professional motivation, adaptability to the constantly changing conditions, and personal psychological and emotional stability in activating their potential capabilities, as well as the lack of goal-orientedness in supra-professional and professional activities.

– 55.5% of the respondents (low level) show low adaptability to the constantly changing conditions of the professional environment, as well as low psychological and emotional stability in activating their potential. Interest in the chosen professional activity is expressed insufficiently.

– 24.4% of the respondents (average level) are interested in the profession while showing low adaptability to the constantly changing conditions of the professional environment. They demonstrate unstable psychological and emotional stability in activating their potential abilities. A stable interest in the chosen profession is demonstrated.

– 6.3% of the respondents (high level) exhibit high professional motivation, the presence of a deep inner need for professional development. High adaptability to the constantly changing conditions of the professional environment and stable psychological and emotional stability in activating their potential capabilities is observed. There is an interest in the chosen profession expressed in the continuous acquisition of key skills and abilities.
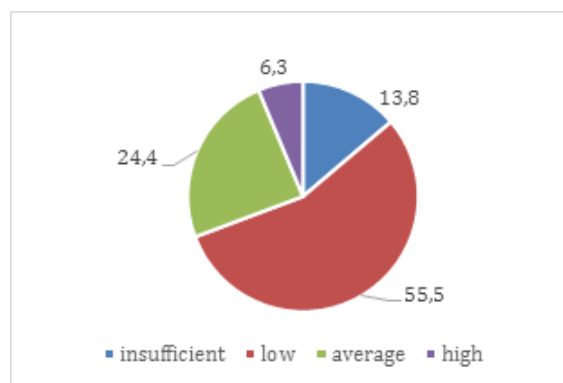

Figure 1. Results of the ascertaining experiment (average values).

One of the objects of traditional monitoring at the ascertaining stage is a questionnaire, which is presented in more detail in Table 3. In the course of the empirical study, at the diagnostic stage, the respondents are asked to determine the motivational, intellectual, and emotional components to the object under study through the survey: disagree – 3 points, not sure – 2 points, agree – 1 point. The survey includes nine questions aimed at collecting information about the facts of objective reality describing the present state of affairs in the educational space of SVE.

Table 3. Results of monitoring at the ascertaining stage.

№	statement	disagree	not sure	agree
1	I experience difficulties, lack of confidence, and anxiety when formulating the project topic	27%	23%	50%
2	I have difficulties when completing the project	26%	28%	46%
3	Working as part of a team on a project assignment gives me confidence	10%	10%	80%
4	Projects are a necessary part of my future professional work	0%	10%	90%
5	I show analytical and creative thinking when completing project assignments	15%	23%	62%
6	I always have a lot of ideas	24%	56%	20%
7	Project activities give me a great interest in research knowledge	17%	27%	56%
8	I lose interest and motivation for projects if I don't get something right	35%	35%	30%
9	Working on a project alone means productivity	30%	32%	38%

Results of the survey reflect the situation in 2016. Overall, it shows that the students can understand the empathic component, in particular, they report difficulties (46%) in working on project activities. Yet at the same time, the students point out the positive aspect – the presence of interest (56%), which, in turn, gives an impetus to the development of creative abilities and the creativity of thinking (62%); the perspectives of the project in future professional activities are recognized (90%).

Based on the results of the ascertaining stage, it can be concluded that the respondents demonstrate low and average levels, which cannot be considered a good indicator for the modern education system. As part of testing the proposed hypothesis, we proposed to approbate and implement an innovative practice (contest activities).

The next stage, in accordance with the purpose of the study, is carrying out the *formative experiment* (2016-2020) directly associated with the implementation of the structural and functional model in obtaining and analyzing the results. The empirical study includes 96 respondents from the State Budgetary Vocational Educational Institution "A.P. Ramensky Solikamsk Socio-Pedagogical College" (71 students in the experimental group (EG), 25 students in the control group (CG). *The objective of the pedagogical experiment* is to introduce into the pedagogical process new pedagogical conditions that can provide evidence and scientific objectivity of the proposed experimental hypothesis. As part of the experiment, it is necessary to compare the indicators of the level of the students involved in contest activity – the EG, and the students whose professional development took place with the use of traditional forms of training – the CG. The use of the proposed pedagogical conditions is associated with the need to ensure effective implementation of the innovative practice (contest activity).

According to the developed diagnostic instruments, the results of the pedagogical experiment are assessed by three criteria: the cognitive, the activity, and the motivational-volitional (Table 4). The employed system of indicators observed in the process of the formative experiment allows us to systemically describe them and monitor the development of students in the educational institution.

Table 4. Criteria and indicators.

criterion	indicators
Cognitive criterion (determines the level of mastery of new knowledge in a particular professional and supra-professional area, the creativity of thinking)	level of knowledge in general education disciplines; level of expertise in the professional sphere.
Activity criterion (determines the level of conscious choice of the professional path, the practical application of professional knowledge, goals, and means of activity in professional self-realization)	1)level of professional skills development; 2)level of communication skills development; 3)the ability to make effective decisions in atypical situations;
Motivational-volitional criterion (determines the level of personal qualities and value orientations)	level of willpower; level of adaptivity; creativity; the level of psychological and emotional stability of the individual; level of motivation for professional activity.

The ranking of the observed empirical criteria is conducted using mathematical transformations for statistical analysis of the obtained pedagogical information, namely, the "insufficient," "low," "average," and "high" levels (Table 5).

Table 5. Generalized characteristics of the levels.

level	indicators
high	A high level of general and specialized knowledge forming the basis for the formation and development of activity. Sufficiently high level of knowledge of scientific research methods in the professional and supra-professional sphere. Developed ability for information synthesis. High level of creativity in contest activity.
average	The average level of general and specialized knowledge forming the basis for the formation and development of competitiveness. Sufficiently developed level of knowledge of scientific research methods in the professional and supra-professional sphere. Sufficient ability for information synthesis. Average level of creativity in contest activity.
low	A low level of general and specialized knowledge forming the basis for the formation and development of activity. Not quite well-developed level of knowledge of scientific research methods in the professional and supra-professional sphere. Sufficient ability for information synthesis. Low level of creativity in contest activity.
insufficient	A low level of general and specialized knowledge forming the basis for the formation and development of activity. Underdeveloped knowledge of scientific research methods in the professional and supra-professional sphere. Lack of ability for information synthesis. Complete absence of creativity in contest activity.

The next stage of the study is:

1. Experimental approbation of project-research activity in the form of the innovative practice (competition movement) within the framework of a structural and functional model. The observed empirical changes are characterized in Table 6. As mathematical indicators in quantitative assessment can be random, their statistical significance in the EG and CG is tested using Pearson's chi-squared criterion.

Table 6. Empirical values of chi-squared for EG and CG (average values).

	CG_{start}	EG_{start}	CG_{end}	EG_{end}
CG_{start}	0	**0.255**	0.381	7.672
EG_{start}	0.255	0	1.120	6.780
CG_{end}	0.381	1.120	0	**8.486**
EG_{end}	7.672	6.780	8.486	0

As a result of comparing the results in the EG (average value) and CG with = 7.82 after the end of the experiment, , since "the reliability of the difference between the characteristics of the EG and CG after the end of the experiment is 95%." The states of the EG and CG match at the beginning of the formative experiment and differ at the end of it. This indicates the effectiveness of the introduced innovative practice (the contest movement) determined by the positive dynamic and the organization of project-research activities in the educational process.

The conclusions are formulated based on the obtained quantitative results: the absolute mean score (MS) and efficiency coefficient (EC) (Figure 2).
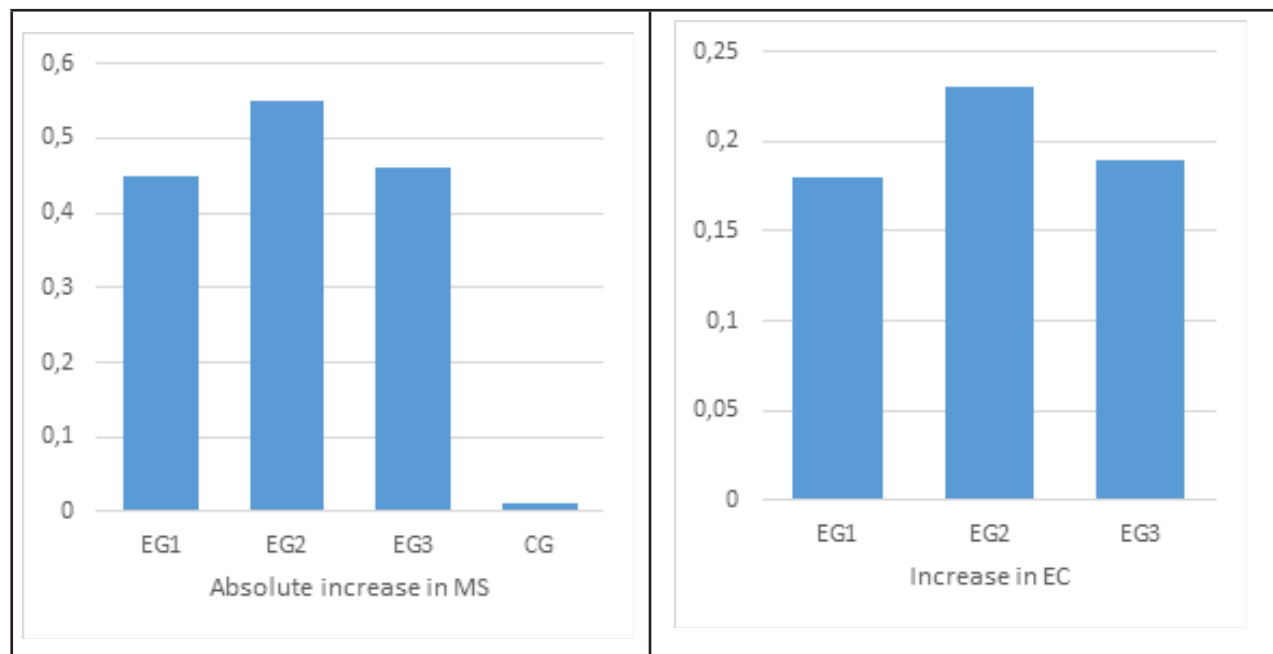

Figure 2. The increase in the absolute mean score (MS) and the efficiency coefficient (EC) in students of the State Budgetary Vocational Educational Institution "A.P. Ramensky Solikamsk Socio-Pedagogical College".

According to the graphically presented results, the absolute increase in MS is observed in EG2 – 0.55, while in EG3 and EG1, it equals 0.46 and 0.45, respectively. This statistical indicator shows the coefficient of effectiveness of the use of the innovative practices of contest activities in the experimental work.

The results obtained in the pedagogical experiment empirically confirm the effectiveness of the described pedagogical conditions in the organization of project-research activities in an educational organization through an innovative practice (contest activities) as part of the created structural and functional model since a positive dynamic is observed across all criteria in the EG. Thus, analysis of the results of experimental work in the study confirms the proposed research hypothesis.

The contest movement helps to improve the skills of independent and effective resolution of contest tasks in supra-professional and professional activities, form a high level of professional orientation of students in atypical situations, and develop the critical thinking of students graduating from SVE.

 The level of development of professional competencies through the contest movement in the State Budgetary Vocational Educational Institution "A.P. Ramensky Solikamsk Socio-Pedagogical College" in the period from 2016 (start) to 2020 (end) depicted in Figure 3 visually demonstrates the dynamic in the level of students' knowledge and skills as a result of contest events:

- accreditation (AC – 60 respondents in the "Nursing" and "Medicine" specialties);

- demonstration exam (DE – 100 respondents);

- public defense of the graduate qualification work (GQW – 100 respondents).
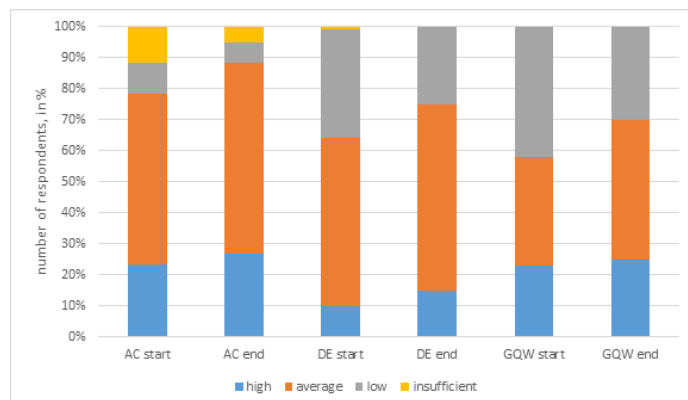
Figure 3. Dynamics of the formation of professional competencies through the competitive movement in the period from 2016 to 2020.

Analysis of the presented statistical data indicates that at the start of 2016, most students demonstrate average and low levels of development of professional competencies. By means of the testing and realization of the contest movement, a dynamic of developed professional competencies (the average by all three indicators) was achieved by the end of 2020 from the 1st to the 4th year at the educational organization, specifically:

- The number of graduation year students at the high level increased by 3%.

- The number of graduation year students at the average level increased up to 6.7%.

- The number of graduation year students at the low level reduced down to 8%.

- The number of graduation year students at the insufficient level lowered to 3%.

CONCLUSIONS

Based on the above, it can be concluded that the phenomenon of project-research activity through contest movement as part of professional competencies of SVE allows forming students' interest in the chosen specialty, improving their professional self-awareness, and developing their intentions for self-learning in the constantly changing pedagogical process of an educational organization.

The materials can be used by the representatives of SVE engaged in monitoring the quality of education of SVE specialists, as well as practice-oriented teachers in the process of organizing project-research activity by means of contest movements for training competitive specialists. The discussion of the study results is tested at round tables among SVE teachers and shows the need for further study of this issue in the modern educational space.

A list of professional skills and corresponding competencies within the framework of participation in contest activities is formed. It is established that the effectiveness of project-research activities through contests should be accompanied by a teacher in the modern educational space both as part of the educational process and outside of it. The realization of the indicated problem is effective when ensuring the conditions of consistency, cyclicity, and variability.

Practical significance. The materials of the article can be recommended to be used in the educational process of SVE in organizing project-research activities through contests depending on the profile of education and the employers' demand.

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APPENDIXS

Appendix 1. An example of the rules (regulations) of a contest (contest movement).

purpose of the provision/regulation	content of the contest/contest movement		
contest title	specified in accordance with the given contest movement		
location	the physical address of the educational organization with an indication of the classroom and the time of the event;		
target audience	the students' profile and level of education;		
organization of preparation	-selection of the most competent teachers from the educational organization in the number of at least five people to conduct the contest; -students familiarize themselves with the rules of the contest and apply for participation; -providing pedagogical support at the stage of students' preparation for the contest movement (the development of participation tactics, critical thinking in the supra-professional and professional sphere when performing a contest task in non-standard conditions, the selection of means and methods of solving the contest task, students' ability to defend their work publicly and independently); -familiarization with the technical structure (occupational safety and health); -informing about the contest within the framework of contest activities three days in advance.		
event organization	№	event title	responsible for carrying out
	1	registration, submission of materials for the contest	contestants independently, the organizing committee, the methodological department of the general education organization
	2	conducting the preparatory stage of the contest	Dean, Head of Department
	3	work on allocating a classroom for the contest	schedule manager
	4	opening ceremony	Dean, Head of Department
	5	conducting the contest phase: -arranging the participants at the site of the contest; -handing out the tasks; -organizing comfortable work on the tasks; -monitoring contestants' independent work; -presenting the result of the contest task;	Dean, Head of Department, teachers
	6	drawing the results of the contest: -filling out the participant sheets and the protocol; -drawing conclusions on the results of participation in the contest;	the organizing committee
	7	awarding ceremony for the winners and participants in the contest	the organizing committee, the methodological department of the general education organization
	8	forming the fund of results	the organizing committee, the methodological department of the general education organization
	9	publication of the contest results on the website	the organizing committee, the methodological department of the general education organization

reflection	ASSESSMENT SHEET CONTEST_____ Name of the jury_____ Name of the contestant_____ Instructions for scoring from 0 to 10 points: 0-3 points – unsatisfactory level; 4-6 points – satisfactory level; 7-9 points – sufficient level; 10 points – high level. Maximum score – 70 points.