



Organization of Educational and Research Activities of Educational Process Subjects as a Condition for Solving Pressing Problems of Rural Schools

Organización de actividades educativas y de investigación de los temas del proceso educativo como condición para resolver problemas apremiantes de las escuelas rurales

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ABSTRACT:

The relevance of this research is determined by the need to ensure quality education in Russian rural schools, including small ones. In the context of their amalgamation, among other things, by means of creating branch networks, the issues of efficient organization of student educational and research activities taking into consideration modern requirements and special nature of the rural educational environment have become topical. The framework of interrelated problems and peculiarities of educational process organization in branch network conditions (compliance

RESUMEN:

La relevancia de esta investigación está determinada por la necesidad de garantizar una educación de calidad en las escuelas rurales rusas, incluidas las pequeñas. En el contexto de su amalgamación, entre otras cosas, mediante la creación de redes de sucursales, las cuestiones de la organización eficiente de las actividades educativas y de investigación de los estudiantes teniendo en cuenta los requisitos modernos y la naturaleza especial de las zonas rurales el ambiente educativo se ha convertido en tópicos. Se reveló el marco de problemas y peculiaridades interrelacionadas

with social demand and, in particular, with educational standards) was revealed: orientation toward innovative nature of student educational and research activities; analysis of rural society characterized by locality, conservatism, underdeveloped infrastructure; the need to design educational and research activities based on the perspective of developing the rural educational environment. It was established that organization of educational and research activities with regard to special regional characteristics not only promotes developing research competence in pupils and teachers, but also contributes to solution of the problems associated with teaching gifted schoolchildren, organizing work with disabled children.

Keywords: rural school, educational and research activities, branch network of educational organizations, research competence

de la organización del proceso educativo en las condiciones de la red de sucursales (cumplimiento de la demanda social y, en particular, con los estándares educativos): orientación hacia la naturaleza innovadora de actividades educativas y de investigación de los estudiantes; Análisis de la sociedad rural caracterizada por localidad, conservadurismo, infraestructura subdesarrollada; la necesidad de diseñar actividades educativas y de investigación basadas en la perspectiva del desarrollo del entorno educativo rural. Se estableció que la organización de actividades educativas y de investigación en relación con las características regionales especiales no sólo promueve el desarrollo de la competencia investigadora en los alumnos y docentes, sino que también contribuye a la solución de los problemas asociados con la enseñanza de escolares dotados, organizando trabajo con niños discapacitados.

Palabras clave: escuela rural, actividades educativas y de investigación, red de sucursales de organizaciones educativas, competencia en investigación

1. Introduction

Currently, rural schools along with other Russian educational institutions are undergoing modernization process, the main aim of which is to change the level of rural education so that it complies with the requirements of both the federal state educational standards (FSES) and rural society; these requirements are oriented toward modernization of social and economic processes in the countryside, as well as among other things, toward introducing findings of modern science into agriculture. Practical experience demonstrates that meeting these requirements is extremely difficult for rural schools with a small number of pupils and organizational challenges of educating students of different age groups. A possible way to overcome these problems is to optimize school activities by means of creating various models of educational process organization (Almurzayeva et al., 2016; Fardoun et al., 2014; Raggl, 2015; Smit et al., 2015), one of which is "main school-branches" model or branch network.

In recent decades, the process of creating branch networks in rural areas has had large-scale, and to some extent, random character. We understand branch network of rural educational organizations in the Russian Federation as organizational model, which includes main school and branch (branches): main school in this model is a relatively large educational institution equipped with necessary resources; main school is a legal entity and has organizational and legal form of municipal budget institution; branch is a relatively closely located separate structural subunit that carries out all functions of main school or part of them. Main school can operate as a resource center for its branches, it can provide distance education opportunities. Operation of educational organization branch network without well-defined legislative basis, competent management, developed scientific and instructional framework, trained teaching staff makes one think about many issues requiring research (Hargreaves, 2009; Wang et al., 2017).

One of the most important purposes of school in recent years is developing creative thinking in students and engaging them in productive activities. The system and activity-based approach, forming the methodological basis of FSES for general education in the Russian Federation, defines main education outcomes as mastering the system of universal learning activities (ULA) which integrates personal and meta-subject achievements. Engaging students in systemic research and project-based activities at all stages of studying plays a special role in developing ULA. At the stage of primary education, ULA development program is aimed at forming elementary research skills in pupils (PGE FSES, 2014); the purpose of the program at the stage of basic general education is to form basic mental framework in pupils making them capable of research and project-based activities (BGE FSES, 2014); at the level of senior high school the aim is to shape in students comprehensive ideas on and experience in applying methods,

technologies and forms of organizing project-based, educational and research learning activities (SGE FSES, 2014).

Thus, the problem of training children as researchers in rural school conditions is topical; schoolchildren as researchers know modern techniques of searching and processing information; they are capable of solving various problems creatively; and ultimately, they demonstrate readiness for self-education. The solution to the problem of training children as researchers involves using in education technologies, methods and techniques that develop skills at independent acquiring of new knowledge, working with information, putting forward hypotheses, making conclusions: pupils should be "involved in research projects, creative assignments in the course of which they learn to invent, to understand and to master new things, to be open and capable of expressing their thoughts, to be able to make decisions and to help each other, to formulate their interests and to realize opportunities" (NEI RF, 2010).

In accordance with FSES for general education, the results of student participation in active project-based learning and research activities are not so much achievements in academic disciplines, but rather individual development of students, developing of their competence in terms of making research or implementing projects, developing the ability to work independently and in groups.

It was suggested, that the condition ensuring integrated approach to solving a range of problems faced by rural school branch networks while operating is as follows: to engage educational process subjects in active research activities, providing that research competences are developed in them.

The research purpose is to identify the special nature of organizing educational and research activities of educational process subjects of rural education branch network in the context of solving the problems of its functioning on the whole.

The research objectives are as follows: 1) to determine the general state of rural school branch networks; 2) to find out pressing problems of educational process organization in the conditions of rural school branch networks; 3) to reveal distinguishing features of organizing educational and research activities of educational process subjects in rural school branch networks, 4) to analyze distinguishing features of developing research competence process in students depending on teachers' research competence and professional readiness for this activity.

The concept of competence is an inconsistent and vaguely defined construct in Russian and foreign scholarship. According to linguist N. Chomsky's "Competence-performance" model, competence was predominantly regarded as universal capacity, referring only to language proficiency in the situation of communication. F. Weinert states that one of the main properties of competence in this framework is the postulate of having in-born system of rules; he argues that "competence-performance" model is not applicable in the education realm. From Weinert's perspective, the concept of competence includes not only characteristics of action but also characteristics of motivation, which taken together result in universal capacity to solve emerging problems relying on critical thinking skills (Weinert, 1999).

According to some foreign studies, professional competence (including teacher's one) is regarded as a condition for successful performance of a certain activity (Koster & Dengerink, 2008).

Having analyzed foreign scholarship, we share G. Anyh's opinion that teachers' actions, personalities, methods and competence determine the efficiency of all educational process aspects, including research domain (Anih, 2000).

FSES for secondary general education of the Russian Federation clearly assumes developing research competence in students within the framework of achieving the following learning outcomes: "mastering skills in cognitive, educational, research and project activities, as well as problem solving skills; developed ability and readiness to independently search for methods of solving practical problems, and using various learning methods "(FSES for secondary general education of the Russian Federation, 2014). It also assumes developing research competence in

teachers (tutors) as they supervise implementation of research projects in senior high school. While planning outcomes of mastering bachelor's and master's curricula for integrated group No.44.00.00 (Education and Pedagogical Studies), it is important to specify the nature and position of teachers' research competence in the list of these outcomes.

From the perspective of systems approach, teacher research competence is a component of teacher professional competence. I.A. Zimnyaya (2004) considers research competence as a component of key competence associated with human activities. According to A.V. Barannikov's classification (2002), research competence is separate kind of competence along with educational, social and personal, communicative, personal adaptability competence as well as the one in the realm of organizational activities and cooperation.

We suppose that the perspective of knowledge-operational approach on competence as a combination of knowledge and skills necessary for implementing a certain activity is limited. Competence should be regarded as synthesis of acquired combination of competences and individual qualities of person who earned a certain academic degree and in whom the following abilities were developed: "the ability to act efficiently, to achieve the result, to solve the problem effectively" (Molokova, 2006). It is exactly this synthesis that determines specialist competitiveness and mobility in the labor market.

The documents stating the content of professional education, namely FSES, do not name teacher research competence as an independent component of outcomes of mastering the curriculum. However, the need for forming and developing this competence is determined by general professional competences.

Student research competence is defined ambiguously. A.V. Khutorskoy (2003) considers research competence as an integral part of cognitive competence, which, in its turn, is a component of personal self-improvement competence aimed at mastering the ways of intellectual and spiritual self-development. He distinguishes between elements of methodological, para-disciplinary, and logical activities, as well as ways of organizing goal-setting, planning, analysis, and reflection in its structure.

A.A. Ushakov (2008) defines student research competence as the ability to fulfill student potential (knowledge, skills, experience, personal qualities, and other elements) in practical terms for successful creative activities in professional and social realms.

Zh.V. Rasskazova (2009) considers research competence to be an integral characteristic of student personalities, manifested in preparedness both to adopt active research position toward their activities and themselves as their subjects, as well as to independently and creatively solve research problems based on available knowledge and skills.

N.A. Fedotova gave a most detailed account of student research competence in terms of content (2010). The author defines this concept as an integrative personal quality that manifests itself in conscious student's readiness and ability to carry out research and includes the following content-related components: motivational component (system of motivational and axiological, as well as emotional and volitional relationships); cognitive component (knowledge that allows students to carry out research); procedural component (students' proficiency in terms of certain level of practical research skills); and reflexive component (schoolchildren's ability to realize themselves and the world in the course of making a research, as well as realizing themselves as subjects of research.

The organization of educational process, aimed at developing research competence, has its peculiar features.

First of all, teacher and student research competence can be developed only in the course of carrying out various research activities.

Secondly, special nature of developing research competence in schoolchildren is predetermined by special features of their age-related, social and cultural characteristics; forms, methods of learning, search activities and research activity per se.

As a rule, scholars focus on two distinctive features of learning and research activities:

- Perceiving its goal as developing student's personality, rather than producing objectively new outcomes comparable to the ones of world-class science.
- School research is a means of orientation in the surrounding reality (Leontovich, 2003).

Undoubtedly, outcomes of forming and developing research competence in schoolchildren are determined, first of all, by teachers' professional expertise and the degree of their research competence.

Training pupils to carry out research activities, the teacher must formulate and perform tasks in educating students in ways, principles, forms and methods of academic research, the basics of scientific knowledge and scientific cognition; in providing pupils with achieving self-fulfillment through activities, developing clear representation of final outcome of educational and research activities and methods of producing this outcome.

Therefore, in our opinion, it is incorrect to reduce teacher's research competence just to proficiency in terms of having knowledge system and using methods of carrying out research activities. In this regard, the authors support L.A. Golub's point of view (2006), according to which teachers' research competence is regarded as a characteristic of their personalities, meaning proficiency in terms of skills and methods of research activities at the technological level aimed at searching for knowledge to solve educational problems, constructing educational process in accordance with the aim of professional and educational activity – values and goals of modern education, mission of educational institution, desirable educational outcome.

It is appropriate to distinguish in operative component content of teacher research competence not only the system of skills and methods of carrying out research activities per se, but also proficiency in using techniques of educational process design, oriented towards developing research competence in schoolchildren. Thus, teachers' proficiency in terms of certain level of research competence is necessary; it can be regarded as one of educational conditions for forming and developing research competence in schoolchildren

2. Methods

Experimental research base included municipal budget general education organizations located in the rural areas of Russian regions and operating within "main school - branches" organizational model (branch network).

The authors applied questionnaire survey of educational department heads in the Russian regions; main school heads and headteachers of school branches; generalization and analysis of teaching experience in a range of educational organizations (branch networks) of Lipetsk region.

The sample of self-administered questionnaire survey included 48 educational department heads in Russian regions, 430 rural school headteachers including those in charge of 115 schools, operating according to "main school-branches" model (Table 1); the survey was conducted in March-September 2017.

Table 1

The number and geography of municipal districts in Russian regions and general education schools covered by the survey

No.	Regions of the Russian Federation	The number of managers of different levels who took part in the survey		
		District educational department heads	Headteachers of rural educational organizations	Including heads of educational organizations operating as a part of branch networks

1	Krasnodar region	7	104	3
2	Kursk Region	6	47	19
3	Lipetsk region	6	78	36
4	Primorsky Krai	8	67	0
5	Tambov Region	21	134	57

The questionnaire was designed by the authors of the present article taking into consideration customary requirements and included: introduction stating the research purpose and giving fill-in instructions; "passport" section in which respondents were asked to provide some information about themselves (region, status of educational organization, etc.) and the main section, including two-point and multiple choice questions, as well as open-ended questions.

The main section of the questionnaire can be roughly divided into three groups of questions:

- the first group is focused on collecting data on implementing models of optimizing operation of rural schools and prospects for more options to emerge (for example, "What models of optimizing operation of rural schools are introduced in the region?," "When were the first branches created?," etc.);
- the second group is concerned with studying problems of organizing educational process and receiving feedback in main school and its branches (for instance, "Could you, please, describe the status of your educational organization in the network", "How many branches does your branch network consist of?", "At what level do they carry out educational activities (preschool, primary, general or secondary education), etc.?"
- the third group is aimed at finding out administrators' perspective on the problems of organizing educational and research activities of educational process subjects in rural schools on the whole and in rural school branch networks in particular (for example, "Is there a legal framework in the school that regulates organizing educational activities in the branch network environment?", "What problems associated with performing educational activities in the conditions of branch network, in your opinion, require to develop additional legal and instructional framework? (directions/teaching guidelines)", "In your opinion, which of the following pieces of knowledge and/or skills do teachers in your educational organization lack, that prevents them from working efficiently?", "Did your school teachers undergo advanced training or participate in professional development programs on issues affecting the ways of working in branch network?", "What forms of network communication do your teachers participate in?," etc.)

Table 2 contains data on heads of educational organizations who participated in the questionnaire survey.

Table 2
Age, Gender and Employment Length of Administrators
(n = 430 people) who participated in the survey

Age	18-30	3.7 %
	31-45	51.9 %
	>45	44.4 %

Employment length	Less than 5 years	21.4 %
	From 5 to 10 years	25.0 %
	From 10 to 15 years	10.7 %
Gender	Male	14.75 %
	Female	85.25 %

Survey findings were processed using SPSS package according to Thurstone scale, i.e. the percentage of statements related to a certain scale was determined, cumulative percentages, median score, upper and lower quartiles were calculate and the effectiveness of using budgetary funds.

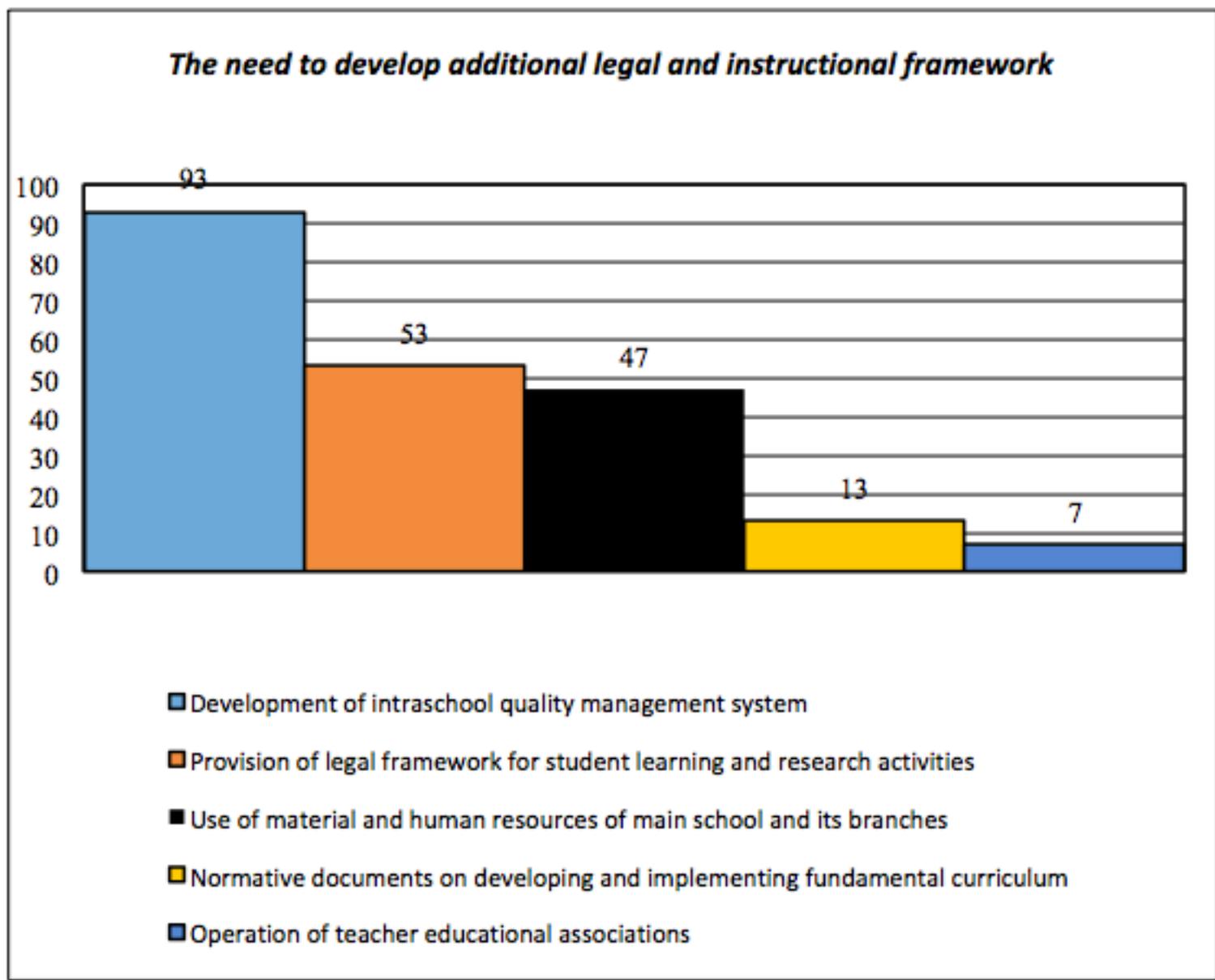
3. Results

Let us present the key findings of the study. The survey showed that generally recognized problem of rural school branch networks, mentioned by educational organizations heads, is the need to develop additional legal and instructional framework (directions/teaching guidelines) in various realms.

It should be noted that the need to develop additional legal and instructional framework in the realm of developing and implementing curricula is mentioned only by main school heads; as for the importance of educational associations of teachers – only branch headteachers named it. The first three statements are equally important for both main school heads and branch headteachers.

Figure 1

The need to develop additional legal and instructional framework

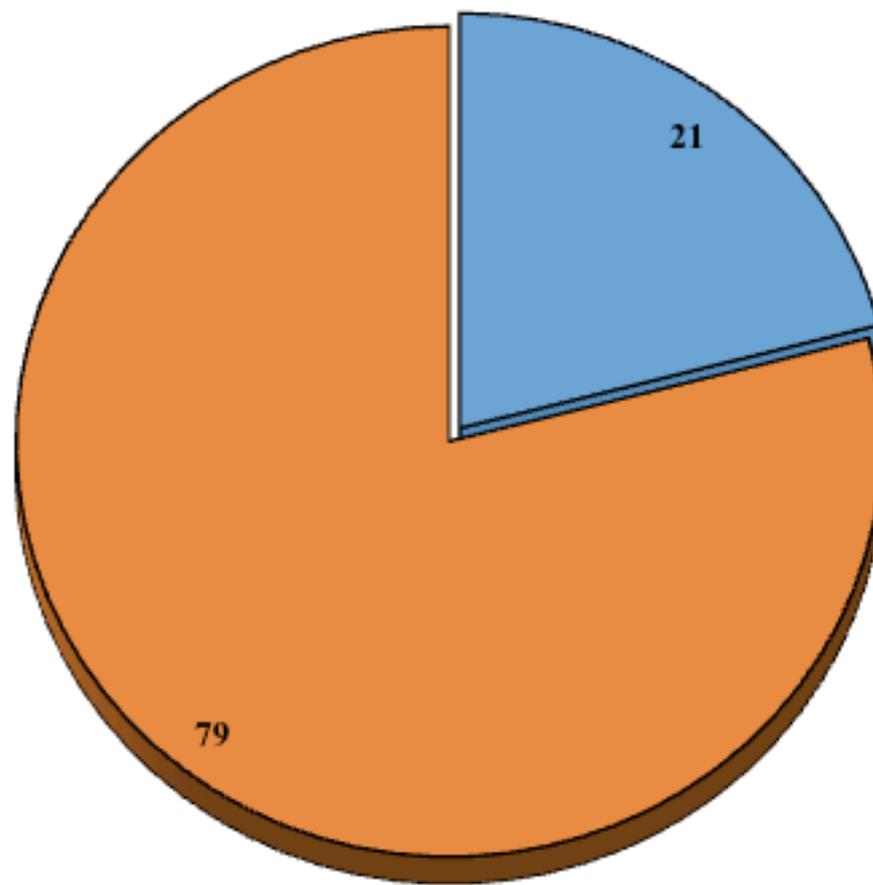


Analysis of educational institution heads' statements concerned with finding correlation of them with experience/duration of educational organization operation within the branch network allows us to make the following conclusion: development of intraschool quality management system in conditions of implementing FSES , as well as provision of legal framework for learning and research activities of schoolchildren in branches are persistent tasks of school branch networks on the whole which have not been solved during the first years of their operation (Figure 2).

Figure 2

The need to provide legal framework for student learning and research activities in school branches according to the length of operation

The need to provide legal framework for student learning and research activities in school branches according to the length of operation

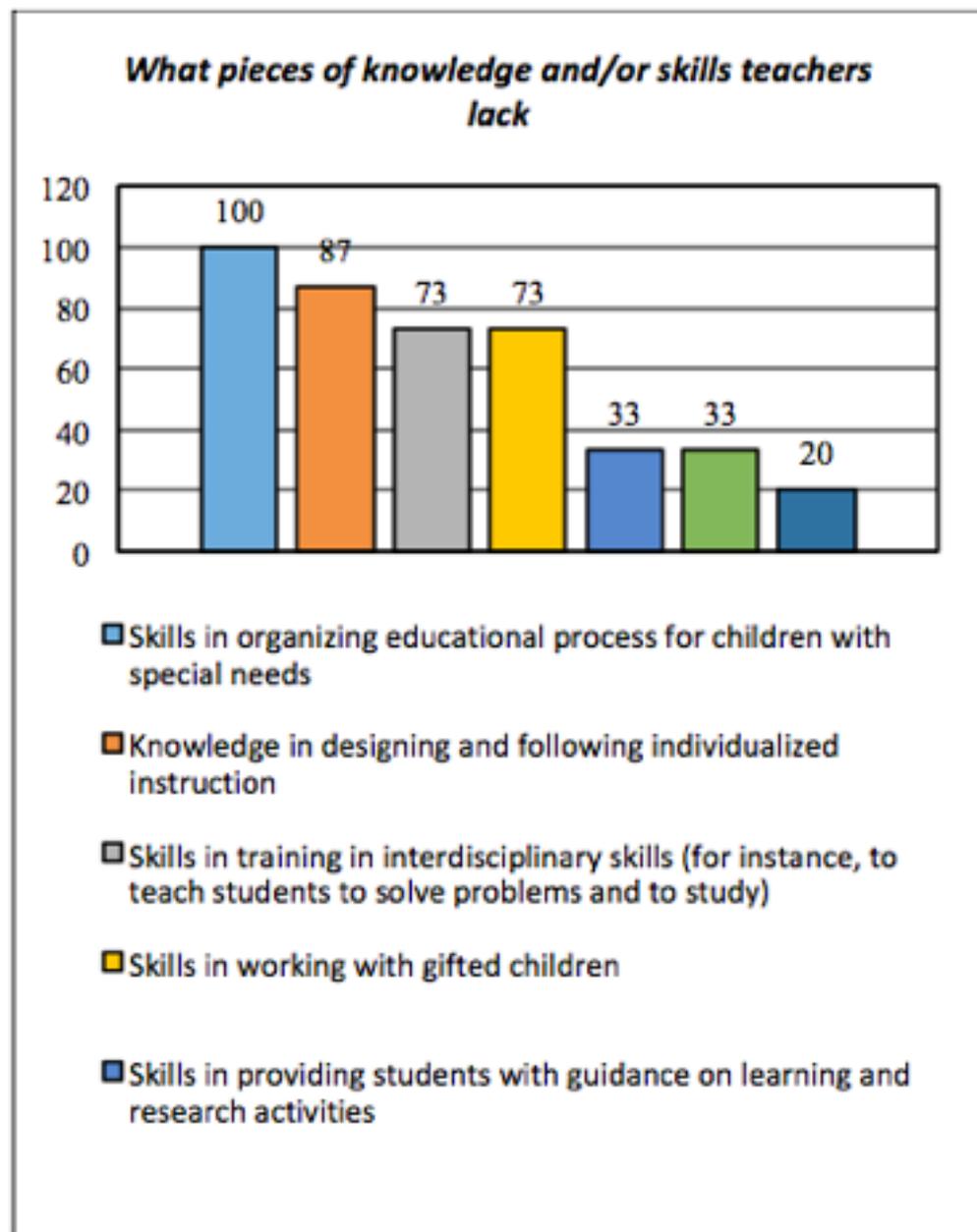


- Heads of structural units of school branch networks operating for less than 5 years
- Heads of structural units of school branch networks operating for more than 5 years

According to estimations by school heads and branch headteachers, teachers working for branch networks lack efficiency because they don't have enough knowledge and/or skills in organizing educational process for children with special needs, in designing and following individualized instruction, in working with gifted children, in providing students with guidance on learning and research activities, etc. (Figure 3).

Figure 3

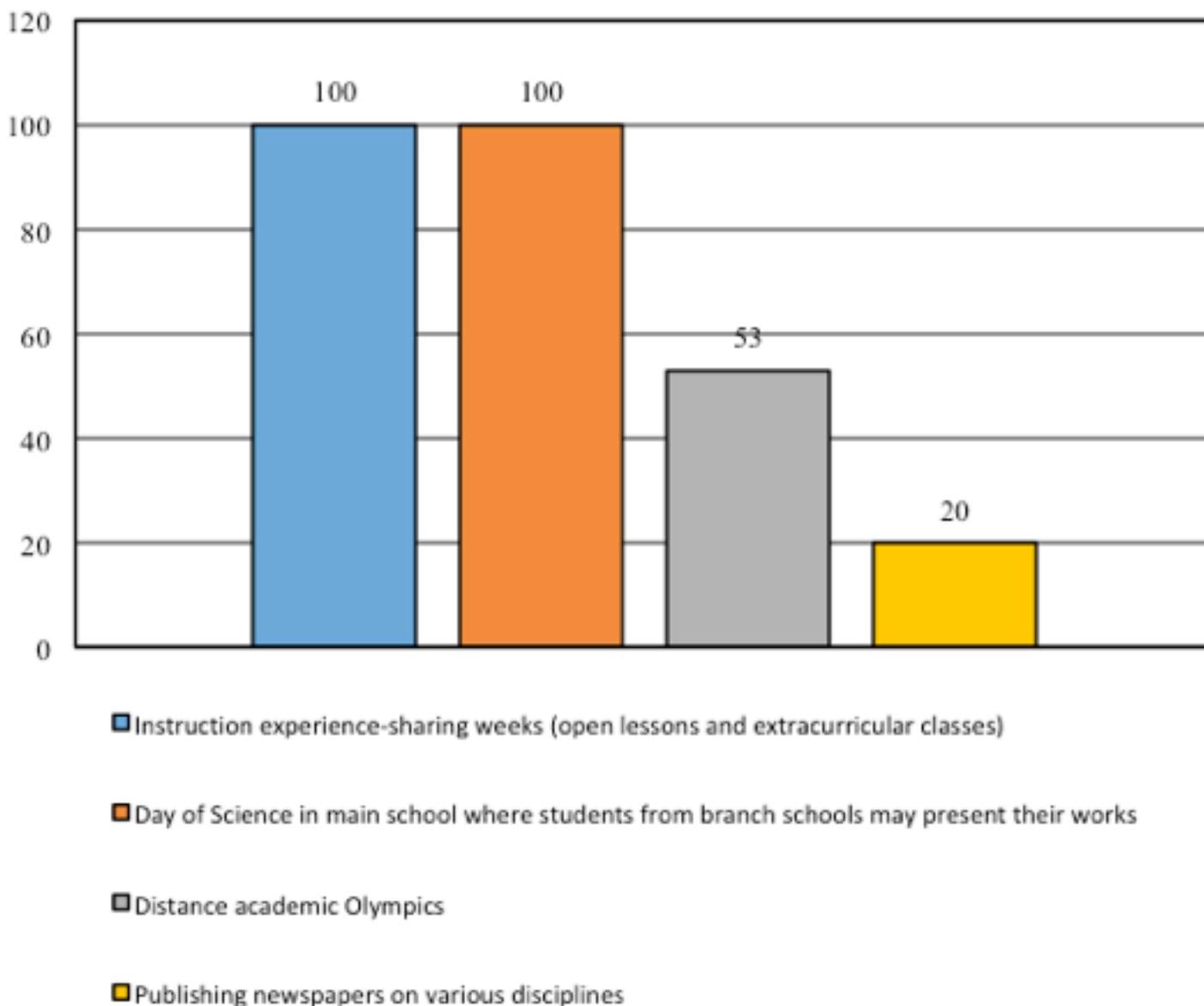
What pieces of knowledge or skills teachers lack



Comprehensive analysis of the range of survey answers allows relating 2-5 statements (figure 3) to the general problem of knowledge, skills in organizing educational and research activities. Simultaneous organization of events in main school and its branches may contribute to improving this system of knowledge and skills (Figure 4).

Figure 4
Simultaneous organization of events in the main school and its branches

Simultaneous organization of events in main school and its branches



Analysis and summary of teaching experience gained by the range of educational organizations (branch networks) in Lipetsk region demonstrated that various forms of professional communication both within branch networks and outside them contribute to developing teacher professional competence in the realm of organizing student educational and research activities. For example, teachers of comprehensive secondary school with in-depth study of some subjects in the village of Terbuny of Terbunsky municipal district in Lipetsk region conduct seminars and master classes in Regional Institute for Education Development ("Teaching Robotics as a method of organizing project activities in educational organizations", "FSES. Organizing research and project activities in class", etc.) Due to the efficiency of school work it was chosen as a venue for conducting regional seminar "Developing meta-subject competences in class and during extracurricular activities within FSES for primary general education and FSES for basic general education". During the seminar open lessons were arranged. Seminar participants could observe various forms of organizing student research activities in class and while carrying out extracurricular activities (master classes "Brotherhood of Ants" + "Ecochildren" = Friends and Protectors of nature", "Organization of environment-friendly work within the framework of extracurricular activities according to FSES for basic general education" (7-8 grades), "Performing extracurricular activities in accordance with FSES for primary general education at Robotics courses (Wedo 2.0 platform) and so on).

Functioning scientific society is an effective form of organizing research activities for

schoolchildren in conditions of school branch network. For example, in municipal budget educational institution Lyceum situated in the village of Dolgorukovo (Lipetsk region), which includes four branches; Lyceum scientific society has been operating since 2005. The key tasks of this scientific society are as follows: to create conditions for students to fulfill their intellectual potential through independent creative activity; for them to realize their capabilities and to get the feeling of belonging to world-class science. All pupils, who are members of the scientific society, select research problems themselves and study them for a long time. Teachers' key function in such work structure is academic supervision. There is a traditional scientific and educational forum at the Lyceum at the end of February each year: children make presentations on their research at various forum sections for a week. Young scientists are concerned with various problems: from environmental to political ones. Venues for the research and forum include not only classrooms and workshops of the main school and its branches, but also buildings of partner universities and companies, enabling pupils to use material and technical resources of the school branch network to the full. At the same time, presentation of research findings takes place not only within the school branch network. Members of the scientific society present their research findings at regional and all-Russian conferences. One of traditions is holding inter-municipal open conference, at which the lyceum students have the opportunity to communicate with like-minded peers and adult scholars, because participants of the conference include pupils of Lipetsk region general education organizations, scholars from universities, in particular, I.A. Bunin Yelets State University. Young researchers also participated in regional and all-Russian local history and environmental conferences; some of pupils became conference winners/prize-winners.

Comprehensive secondary school with in-depth study of some subjects in the village of Terbuny (Lipetsk region) hosts a center "Gifted child" that works as a form of research activity for children with outstanding talent; there is also a program "Giftedness environment" implying various activities in the school. The latter operates according to key provisions and content of regional and district program "Gifted Children", as well as in accordance with the school traditions developed in the course of work with gifted children and those having advanced intellectual abilities. The school practices large-scale recruitment of schoolchildren (grades 2-11) to participation in school Academic Olympics, contests, conferences; organization of consulting assistance for students aimed at their creative self-fulfillment; engaging teachers and other professionals to communicate with gifted children, to raise awareness of recent scientific advances in various fields; ensuring high level of computer literacy, information literacy, the use of information and communication technology at various classes; strengthening co-creation, building conditions for dialogue in educational process, developing research environment. The school cooperates with Junior Academy of Sciences "Intellect of the Future" (Obninsk).

Students of rural school branch network present research activity outcomes at conferences and competitions of various levels. For instance, they participate in the following regional events: interschool conference "First steps to science", district conference on regional history, regional agricultural industrial scientific and educational student Olympics, regional contest of young natural scientists "Ecoworld", regional conference "Small rivers of Lipetsk region", etc.; they also participate in the following all-Russian events: Academic Olympics "Heritage", competition "Our history" (Moscow), etc.; some pupils even took part in international competition of creative works "Chemistry is the foundation of life".

In recent years, the opportunities for distance presentation of research findings and participation in contests have been intensively used. In particular, students post their works on websites of Internet projects, the festival of research works "Portfolio", newspaper "The 1st of September"; they also take part in Internet conferences "First Steps".

On demand of consumers of educational services, training in various disciplines is conducted via distance education technologies; such practices are applied in the educational process of secondary school branch network with in-depth study of some subjects in the village of Terbuny

through the following intranet projects: "Partner School" (the basic level of chemistry in the school branches); "Subject Oriented Instruction" (teaching social science and chemistry in the 10th-11th grades in remote partner schools; "Small School" (fundamentals of computer science and ICT in remote partner schools). In order to improve the quality of school education and provide students with better vocational guidance, "Social Partner" project is implemented. Within the framework of this project basic and in-depth training in Physics, Mathematics, Foundations of Social Studies, and Economics is carried out by university teachers.

4. Discussions

In the course of making research it was determined that at present it is important to take into account two circumstances while organizing educational and research activities of students in rural school settings.

The first one is associated with the need to provide rural school students, including those attending school branches, with equal opportunities to carry out research activities not only in terms of available material resources, but also from the point of view of research problems.

The second one implies taking into account existing real opportunities of rural society and rural educational environment while selecting research problems. This circumstance is especially important for natural science disciplines. The implementation of solidity and accessibility principles in education focuses on prevalence of research topics related to agricultural production, rural way of life, modern technologies in agriculture.

Educational and research activities in the field of natural science imply mastering certain methodological skills, which, eventually, must be used by schoolchildren to make rational decisions both professionally and at home. These skills are quite clearly formulated in FSES. For example, when studying physics, students should acquire the experience of "... applying scientific learning methods, observing physical phenomena, conducting experiments, simple experimental trials, direct and indirect measurements using analog and digital measuring devices; understanding the inevitability of errors in any measurement (BGE FSES, 2014).

It is worth noting that Russian didactics has quite large potential in terms of meeting the mentioned requirements of the standard. For example, theory and methods of teaching physics make an emphasis on theory of problem-based learning (Mahmutov, 1977). The key role in this theory is played by the concept of "problem situation", which is the contradiction between available knowledge or modes of action and the ones students have to acquire. Practical experience demonstrates that classroom learning and schoolchildren's educational and research activities often lack exactly the stage of comprehending problems. Teachers themselves formulate problems, provide students with the plan for their solution; children only implement projects. In this situation, students just have to search for the data mentioned by teachers.

Developing and reinforcing research skills to a greater extent occurs exactly during extracurricular activities; therefore, such aspect as special nature of rural life should be taken into consideration. Rural educational environment is characterized by such distinctive features as locality (low density and mobility of population), patriarchy (presence of families consisting of several generations, agricultural labor on individual land plots, farming), and insufficiently developed infrastructure. Such peculiar situation can serve as a basis for research related to local history, district geography and environmental studies. Practical experience demonstrates that exactly environmental studies lies at the junction of natural science disciplines that play significant role in student educational and research activities. Environmental studies also have important ethical meaning.

However, the second aspect is also of importance: it should be taken into account while organizing educational and research activities for schoolchildren in school branch network. It is a common knowledge all over the world, that introduction of innovations both in production processes and their management is extremely important factor in the development of all sectors of economy. For example, according to L.R. Slepneva (2014), to improve the situation

in agricultural industry, to get agricultural sector back on track (to stable economic growth), the country needs modernization of organizational and economic mechanism of innovation. Innovative process as consistent fulfillment of research, scientific and technical, industrial implementation-related activities is provided through information, intellectual, financial, labor, and other resources.

In rural schools, implementation of educational and research projects aimed at familiarizing students with recent scientific advances in such fields as Biotechnology, Genetics and Selective Breeding, Biochemistry, Microbiology, can be, firstly, an important factor in vocational guidance, and secondly, a condition for forming positive attitude towards innovations in the rural society as a whole. Integration of such educational and research projects with school subjects also expands the field of natural science knowledge; it reveals the relationship between knowledge and life, which increases students' motivation for learning.

However, practical experience demonstrates that currently projects related to agriculture are often descriptive, qualitative works, which, in our opinion, hinges on underqualified training – teachers are just not ready to supervise student research activities. The experience of schools operating within “main school-branches” organizational model (branch network) and demonstrating high performance in educating schoolchildren in general and in organizing research activities, in particular, shows that a key condition for efficient organization of student educational and research activities is teachers' preparedness for applying project activities in training.

In the course of studying all subjects, students acquire experience in project activities as a special form of learning which contributes to developing self-reliance, ability to undertake fresh initiatives, responsibility, increased motivation and learning effectiveness. Project training is aimed not at memorizing learning material, but rather at independent gaining knowledge in the course of participating in activities. The main component of project-related work is research activities. Experienced teachers adopt differentiated approach while working on projects. Trying not to limit children's independence, teachers at the same time assign adequate roles to children in the group. The degree of complexity and duration of work on projects can be different. For instance, in primary schools, these are mostly mini-projects, in high school they can be long-term research projects.

Thus, research findings and conclusions correlate with the data and conclusions of foreign and Russian researchers. The list of research skills is wide enough; it is impossible to master them by carrying out a research project just once. Therefore, there is a need for organizing systematic learning activities, both class and extracurricular ones. Initial research skills in the field of natural science are developed in students in the process of observing demonstration experiments, engaging in laboratory experiences, carrying out practice exercises stipulated in curricula, that is, development of basic skills should take place through class activities when they are properly organized (Stern et al., 2017; Fedotova, 2010, Ushakov, 2008). In addition, we support the opinion, that teacher professional competence in terms of natural science knowledge affects developing students' interest in learning, and more accurately, in research activity (Anih, 2000, Golub, 2006).

School psychological services contribute to developing research competence in student. All kinds of psychodiagnostic assessment (testing, questioning, survey, interviews, etc.) are directed toward helping students to believe in their abilities, to stimulate their drive for self-improvement and overcoming negative character traits. In the course of face-to-face counseling on the results of diagnostics of students' intellect, the focus was made on developing students' drive for personality and intellectual development, as well as on

forming both self-improvement and awareness of responsibility for their own well-being. Thus, when organizing student educational and research activities at rural school branch networks of the Russian Federation, as well as at rural schools in Western European countries, it is necessary to take into consideration the following arguments:

First, while selecting research problems, one should, on the one hand, take into account recent scientific and industrial advances (NEI RF, 2010), on the other hand, have in mind the real opportunities and potential of social, cultural, and educational environment in rural areas (Slepneva, 2014);

Secondly, teachers should develop in students elementary skills in carrying out independent research and project activities in the course of active learning activities in class and at individual counseling sessions; students may also develop the above-mentioned skills through performing extra-curricular activities both under the guidance of teachers and independently (Stern et al., 2017; Fedotova 2010; Ushakov, 2008);

- Thirdly, teachers engaged in direct organization of student learning and research activities (especially in natural sciences) should not restrict themselves to only widespread project-based teaching techniques (Dewey, 1997). But rather they should also use problem-based learning (Mahmutov, 1977), differentiated and individual instruction, which are recognized in Russian and foreign Educational Studies and practice (Unt, 1990).

and the effectiveness of using budgetary funds.

5. Conclusions

The research enabled the authors to successfully accomplish the research goals, in particular:

- the research revealed that educational department heads in the Russian regions and rural school headteachers consider amalgamation of rural schools according to the model "main school - branches" carried out to optimize school operation and to ensure the required quality of education as the most promising reform of the recent decades.

- The research established that pressing problems of functioning "main school-branches" system are interrelated, are of complicated nature; for their solution Russia needs to develop organizational, legal, scientific, and instructional tools for main school headteachers, their deputies, heads of branches and their teaching staff, including in issues concerned with organizing student educational and research activities;

-The research determined the special nature of organizing educational and research activities of educational process subjects in rural school branch networks conditioned by two mutually complementary circumstances: first, provision of equal access to quality education, and secondly, recognition of special nature of rural social and cultural environment, not only in terms of organizing educational and research activities of educational process subjects, but also in terms of education content;

-The research demonstrated that the process and outcomes of developing research competence in students are conditioned by teacher research competence and professional qualification for this activity in rural settings.

The scholarly importance of the study is to substantiate that engagement of educational process subjects in systemic educational and research activities contributes to solving a package of the corresponding pressing problems of effective operation of rural school branch network through efficient use of human, material, technical and teaching resources not only of main school and its branches, but also of social and cultural environment of villages.

Research findings presented in the article will be useful for educational department heads of various levels; main school heads and headteachers of rural school branches in the Russian Federation. Developing science-based and instructional resource support for educational and research activities of educational process subjects in rural school branch networks presents prospects for further research.

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Notes

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