

**SCTCMG 2021**  
**International Scientific Conference «Social and Cultural Transformations in the Context of**  
**Modern Globalism»**

**PROBLEMS OF TEACHER TRAINING FOR PROJECT ACTIVITY**  
**ON THE EXAMPLE OF ROSTOV**

Tatyana Igorevna Zagorodnyuk (a)\*  
\*Corresponding author

(a) Academy of Pedagogy and Psychology, SFU, apt. 2, 11, Belyaeva St., Rostov-on-Don, Russia, ktu1989@mail.ru

**Abstract**

The need to implement project-based learning within the framework of a modern school is based on the requirements of federal state educational standards and the request of the economy to prepare graduates with certain competencies, in particular, capable of making independent decisions, working in a team and acting in conditions of uncertainty. However, the introduction of project-based learning rests on a number of difficulties and restrictions. The paper presents the results of the questionnaire of teachers and students of Rostov region, which made it possible to establish the main difficulties they encounter while creating educational projects. Besides, it is determined what support teachers need to successfully conduct project activities, and how project-based learning participants interact with the external environment (public, private enterprises and institutions). The survey is based on the analysis of the work of researchers on the problem of introducing project-based learning into the educational process. According to the survey of teachers and students concerning the level of project-based technology in the educational process, 42 % of students noted that they do not implement project-based activities, while 96 % of teachers perform various educational projects. Besides, the main way of forming the project competence of teachers is self-education with their emphasized urgent need for methodological and educational support. As part of the work, the main difficulties that teachers and students face while implementing educational projects were also studied. The results of the study will become the basis for the program of additional professional education.

2357-1330 © 2021 Published by European Publisher.

*Keywords:* Professional education, lifelong learning, project-based activity, project competence, mentoring



## 1. Introduction

The 20s of the 21st century should become the era of the development of additional professional educational programs, since it is additional education that meets the requirements set in the opinion of Peskov (2020) for the professional education of the future: high speed of development of educational programs, maximum compliance with labor market requirements. According to the Federal State Education Standard of basic general education, the continuity of professional development of teachers is ensured by the acquisition of additional professional programs in pedagogical activities by the employees of an educational organization at least once every three years. The biggest challenge for universities is to find tools that will help ensure competition of universities in the field of additional education, since work in the field of additional education requires other teaching competencies and skills (Peskov, 2020).

An important area of additional educational programs for teachers is programs aimed at developing soft skills and project competencies. Project-based learning requires a teacher to have competencies different from those of a teacher in traditional training. When working with projects, the teacher should give students more freedom of action: it is important for him to change his working style – from vertical to horizontal; from instruction and transmission – to participation (Yatsin, 2017) In order to create and implement high-quality programs of additional education aimed at obtaining project competencies by teachers, the study determines the level of implementation of project-based learning in the activities of schools in Rostov Region, the readiness of teachers to work with such projects and restrictions that inhibit the introduction and development of group project-based learning.

## 2. Problem Statement

The introduction of project-based learning is considered as one of the components of the modernization of the Russian educational system, which contributes to practical consolidation of knowledge and skills of project-based, research and organizational-management activities on the example of the design of innovative projects for the creation of devices, systems or software products aimed at their further commercial use (Boyakova et al., 2010). This would also help to solve a number of difficulties using the example of the Colombian Universidad de Los Andes, which would contribute to the introduction of project-based learning, in particular: concentration of education in engineering sciences and technical courses without integrating knowledge into practice; lack of practical development experience of future engineers, lack of communication skills and team work experience among graduates; practical experience; awareness of social, environmental, economic and legal issues (Ballesteros et al., 2019), and will allow synthesizing work and training experience, instilling communication skills, the ability to work in a group (Bersenev & Musabirov, 2011).

However, agreeing with the importance and significance of the project-based activity, researchers and educators note a number of restrictions (difficulties) associated with its implementation: at the level of general education: lack of explanation as to whether all the courses and all or only individual students should carry out the project, how many project works in the subject per year each student should perform; lack of certain project topics in existing textbooks, which is problematic for the teacher; lack of methodological recommendations for the implementation of project-based activities (Marina et al., 2014);

lack of qualified teachers, lack of individualized project methods, significant time spent on the implementation of projects, difficulty in assessing the personal contribution of individual participants to the project and lack of skills among students (Kolev, 2018); difficulty for teachers to combine several roles necessary for the successful implementation of project-based learning (from the role of a lecturer and training manager to resource provider and training participant; from expert to advisor, facilitator (Bielefeldt et al., 2010). Besides, the introduction of project-based learning by teachers with a low level of project competence and knowledge in the field of STEM showed a negative rate of growth in the level of education of students in comparison with traditional education (Yalvac, 2015).

At the level of higher education, Christopher Watson considers the topic of difficulties in implementing educational and scientific projects through the lens of possible interaction between Russian and foreign researchers in the framework of project-based activities and highlights the following number of collaboration problems: lack of business plans written according to Western standards; difficulties in finding co-financing; high time input; difficulties of postal, courier communication between the parties; language barrier; small experience of Russian scientists in the field of business; underdevelopment of a tradition of delegation of authority in commercial organizations of Russia; absence of some established commercial procedures in Russia, which are typical for the West; few successful examples of venture capital investment; large regional differences (Dobrot, 2014). Besides, self-organized training, i.e. project-based learning, cannot be fully transferred to a student, this is a difficult task, a long-term process initially more managed by a teacher (Heilbrunn, 2012), which requires additional abnormal time inputs from the latter one.

Thus, declaring the significance of project-based learning, Russian and foreign researchers determine a number of difficulties of barriers that prevent its full-fledged introduction into the educational process, the identification of which allows creating an additional educational program for training mentors of educational project teams that meet the requirements of teachers.

### 3. Research Questions

The study considered the following issues:

- What is the level of introduction of educational projects into the activities of educational organizations in Rostov Region?
- Are teachers ready for educational projects?
- What are the limitations and difficulties in implementing educational projects?
- Are external representatives involved in educational projects?

The level of introduction of educational projects into the activities of educational organizations of Rostov Region is determined by a number of indicators:

- prevalence of educational projects among educators;
- prevalence of educational projects in the student environment;
- variety of forms of educational projects among teachers;
- variety of forms of educational projects in the student environment;
- variety of forms of evaluation of educational projects.

Teacher readiness for educational projects includes the following indicators:

- diversity of projects implemented by teachers;
- variety of projects implemented by students;
- real and desired diversity of project competencies;
- level of teachers' need for methodological, educational support.

Limitations and difficulties in the implementation of educational projects are expressed through the following indicators:

- stages of project activity causing the greatest difficulties for teachers;
- stages of project activity causing the greatest difficulties for students.

The criterion "*Involvement of representatives of the external environment in the implementation of educational projects*" was determined on the basis of such indicators as:

- real involvement of the representatives of external environment in educational activities;
- desired involvement of the representatives of external environment in educational activities.

#### **4. Purpose of the Study**

The purpose of the study was to identify the level of introduction of project-based learning into the educational process of secondary educational institutions of Rostov Region, as well as difficulties and restrictions that teachers face in implementing educational projects.

#### **5. Research Methods**

The main method of research is a questionnaire, which includes a survey of teachers of Rostov Region on the current state and difficulties of implementing project-based activities and a survey of 1–2-year students of Platov South-Russian State Polytechnic University (NPI) dedicated to the motivation of students and their attitude to project-based activities within the school. The present study used a sample questionnaire (Novikova, 2006).

The questionnaire was conducted in an electronic version (remote questionnaire) using Google Forms.

Understanding the importance of any pedagogical creativity, we shall nevertheless approach it differently, be able to assess its social significance, novelty and depth. These differential measures are considered the levels. We will use a three-level system: low, medium, high level of distribution of the phenomenon (Ponomareva, 2009). The low level of distribution means that the phenomenon covers less than 50 % of students (teachers), its forms of implementation are uniform, one type of implementation prevails, and teachers do not have the minimum necessary resources to carry out the studied activity. The medium level of distribution implies that the phenomenon covers more than half of students (teachers), but there is a possibility of expanding coverage, teachers have minimal resources for the implementation of the studied activities, but have insufficient competence, the phenomenon manifests itself in 2–3 forms. High level of distribution means that the phenomenon covers more than 75 % of students (teachers), expansion opportunities are minimal, teachers have sufficient resources and competencies to implement the studied activities, the phenomenon manifests itself in a variety of ways (more than 4 forms).

## 6. Findings

The level of distribution of project-based activities in educational organizations of Rostov Region is assessed differently by teachers and students. The level of distribution of project activities among teachers: did not participate in project activities – 6 %, organized individual project activity – 45 %, organized group project activity – 24 %, was among the winners of educational project competitions – 24 %, personally designed projects – 18 %, was one of the participants in competitions of educational projects – 18 %, participated in the expert evaluation of competitive projects – 15 %, has experience in mentoring the competitive project team of students – 15 %.

The level of distribution of project activities among students: did not participate in project activities – 42 %, participated in the design of individual projects at school – 34 %, participated in the design of team projects at school – 24 %, participated in competitions of educational projects at school – 32 %.

As part of the study, the variety of topics of projects implemented by teachers and students was analyzed. Projects implemented by teachers: educational (during the training period) – 45.7 %, subject-based (according to the subject taught) – 45.7 %, career-based – 25.7 %, methodological – 14.3 %, socio-cultural – 8.6 %, special-order (with a real customer) – 0 %. Projects implemented by students: subject-based – 71.4 %, socio-cultural – 22.9 %, career-based – 22.9 %, environmental – 8.60 %, economic – 0 %.

A significant problem in the implementation of project-based learning is the public assessment of project activities of students, one of the main options of which is project defense. Formats of project defense: reporting to the collegiate jury of teachers (competition) – 28.6 %, reporting to peers and a teacher – 65.7 %, projects are not defended – 5.7 %.

Below are the methods for the development of the project competence of teachers in Rostov Region in comparison with the desired options for this competence. Real options for forming the project competence of teachers of Rostov Region: independent study of books (electronic resources) – 89 %, studied project activities within the framework of the university (college) program – 33 %, studied at on-line courses – 18 %, studied at off-line courses – 15 %, did not study project-based activities – 3 %. The desired options for the development of the project-based competence of teachers: within the framework of professional training – 52.8 %, within the framework of additional education – 50 %, self-education – 32 %.

The needs of teachers for support from the administration of educational institutions necessary for successful implementation of educational projects are as follows: methodological support – 51.4 %, organizational support (allocation of space for the implementation of project-based activities, additional time) – 31.4 %, technical support (advice on the use of information technologies in the implementation of project-based learning) – 31.4 %, educational assistance (conducting educational courses on the basis of project-based activities for schoolchildren and (or) teachers) – 31.4 %, material support – 22.9 %.

The difficulties faced by teachers and students in working with projects are also evaluated differently by the participants in project-based learning. Difficulties of teachers: difficulties in substantiating the novelty of the topic – 28.6 %, difficulties in using information technologies when implementing project-based learning – 20 %, difficulties in forming the project team – 20 %, lack of understanding of the project by students – 20 %, lack of project reflection – 14 %, difficulties in choosing

a topic by students – 11 %, difficulties in substantiating the relevance of the project topic – 11 %, difficulties in preparing the project documentation – 11 %, difficulties in presenting the project to the jury – 3 %.

For the implementation of projects close to real production tasks, as well as for an objective assessment of projects, it is required to engage the participants into the external environment (public and private organizations (institutions)). Below is the relationship between the real and desired options for implementing the interaction of educational organizations with the external environment. Participants in external cooperation involved in the implementation of projects: state (municipal) institutions (libraries, museums, etc.) – 54 %, additional educational establishments – 20 %, universities – 40 %, private companies – 3 %, non-profit organizations – 5 %, do not ensure external interaction – 23 %. The desired option for the development of external interaction: to attract universities to organize career-based projects – 37 %, to attract third-party companies to implement educational or career-based projects – 14 %, to attract museums (libraries) to implement educational projects – 22 %, to attract universities to implement joint projects in mixed teams “schoolchildren-students” unrelated to career – 37 %, to organize the participation of the school team in the university project – 40 %, to attract third-party customers from among private enterprises – 31 %, do not plan to expand external cooperation – 9 %.

## 7. Conclusion

The study showed that the level of distribution educational projects among teachers of Rostov Region is quite high (94 %), however, 42 % of students were not involved in the project-based learning, which indicates that the project activity in their environment is not sufficient.

The teachers of Rostov Region do not have sufficient competencies to work with educational projects, since the main way to form their project competence is self-education (89 %), in addition, many of them face an urgent need for methodological (51.4 %) and educational (30.4 %) support of project-based learning, which indicates a lack of knowledge and skills to work with educational projects in the pedagogical environment.

The demand of teachers for additional educational programs dedicated to the basics of project activities is also high, which is confirmed by the desire of 50 % of respondents to develop their project competencies through advanced training programs.

The basis of the future program of additional professional education will include topics identified by teachers and students as the most difficult to implement within the framework of project-based learning, including: project, its concept; project relevance, practical relevance and novelty; goals and objectives of educational projects; design stages; peculiarities of working with design teams; project documentation: its types and rules of compilation; project defense and preparation; team reflection.

The level of dissemination of relations between educational organizations and the external environment in the process of implementing project activities is high, since 77 % of teachers implement external interaction when creating educational projects, but only 3 % of teachers involve private companies in working with educational projects, which does not allow creating project products close to the requirements of real modern commercial projects.

The survey also opens up new horizons of research, since it leaves the issues of interaction of teachers and students with the external environment in the process of implementing educational projects not fully resolved: it is necessary to study the readiness of non-governmental organizations and private companies to participate in joint projects, possible options for such interaction and its limitations.

## References

- Ballesteros, M. A., DazaJuan, M. A., Reyes, P., & Valdés Nicolás Ratkovich Luis, H. (2019). Applying PBL methodologies to the chemical engineering courses: Unit operations and modeling and simulation, using a joint course project. *Education for Chemical Engineers*, 27, 35–42
- Bersenev, M. V., & Musabirov, I. L. (2011). Assistance center for students with disabilities as a project office: basic practices and recommendations. *Bulletin of Tomsk State University*, 3, 188–192.
- Bielefeldt, F. R., Paterson, K. G., & Swan, Ch. W. (2010). Measuring the Value Added from Service Learning in Project-Based Engineering Education. *International Journal of Engineering Education*, 1, 535–546.
- Boyakova, T. A., Golovenko, E. A., Panteleev, V. I., & Pervushin, V. A. (2010). Modernization of the educational system is one of the key factors in the development of the Russian economy. *Siberian Journal of Science and Technology*, 1, 69–73.
- Drobot, P. N., Watson, K., Lindholdm, P., Melchenko, E. D., & Melchenko, S. V. (2014). Commercialization of university technologies: opinions of Russian and foreign experts. *Innovation*, 8, 93–99.
- Heilbrunn, B. (2012). *Projektarbeit – ein Unterrichtskonzept selbstgesteuerten Lernens?* Klinkhardt.
- Kolyev, A. A. (2018). Use of project technologies in training cadets. *Penitentiary science*, 2, 119–127.
- Marina, A. V., Trifonova, S. N., & Malafeeva, E. F. (2014). New approaches to the organization of research activities of students in the context of the transition of schools to the implementation of FSES of general education. *Volga Scientific Bulletin*, 1, 18–23.
- Novikova, S. S., & Soloviev, A. V. (2006). *Sociological and psychological methods in social work* (2nd ed.). Academic Project.
- Peskov, D. N. (2020). *Higher school in the twenties*. [https://www.youtube.com/watch?v=nOATH-NN5VM&feature=youtu.be&utm\\_source=facebook.com&utm\\_medium=social&utm\\_campaign=1ektsiya-dmitriya-peskova-vyshshaya-shkola-v-e](https://www.youtube.com/watch?v=nOATH-NN5VM&feature=youtu.be&utm_source=facebook.com&utm_medium=social&utm_campaign=1ektsiya-dmitriya-peskova-vyshshaya-shkola-v-e)
- Ponomareva, E. A. (2009). Criteria and indicators for assessing pedagogical activity. *Innovative projects and programs*, 5, 44–47.
- Sharov, V. S. (2009). Distance learning: form, technology, tool. *News of the Russian State Pedagogical University named after A.I. Herzen*, 94, 236–240.
- Timchenko, S., Lazichev, A., & Gurakov, A. (2007). Group project-based learning. *Higher education in Russia*, 4, 25–31.
- Yalvac, B., Capraro, M. M., & Capraro, R. M. (2015). Aggie In-service Teachers' Implementation and Understanding of STEM Project. *Eurasia Journal of Mathematics, Science & Technology Education*, 11(1), 63–76.
- Yatsin, A. (2017). *Guidelines for project management mentors*. KPK.