



Project management in educational systems

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The article discusses the problems of the modern textbooks and teaching aids on pedagogy, where the solution of management problems is the content of the chapter, which is often called "Management of educational systems". Then authors define, that in scientific papers devoted to the problems of pedagogical management, the view of his specific object and subject is substantiated. So, it is considered that pedagogical management as a science of management of educational systems and processes is a branch of pedagogy, the subject of which is the organization of management in the field of education and in educational institutions. The structure of pedagogical management includes the following levels: a. management of the teaching staff; b. teacher activity management; c. student activity management. The authors believe that in pedagogical management there are two levels of management: the head of the educational institution and the teacher. The activity of the head is aimed at creating conditions for the effective functioning and development of the entire educational system of the institution; the task of the teacher-manager is the organization of educational work with the aim of developing cognitive activity and the formation of the student's personality.

According to the authors, project management is among the "young" and most demanded areas of scientific knowledge and practice. Development of it over the past 50-60 years has gone from its understanding as a technological scheme for organizing work on the implementation of individual projects to the idea of project management as a methodology for system changes, which carried out in organizations, firms, corporations, territorial entities, across the country and interstate associations.

The article also reviewed the most diverse areas of scientific knowledge. It is the project culture. We think that it is institutionally manifested in project activities, although it does not boil down to it. All of the above gives grounds for identifying historical and cultural sources of project management as a person's ability, an independent type of professional activity and, finally, a cultural phenomenon.

The authors think that in modern management concepts, there are two types of management - process (management of recurring activities in fundamentally unchanged external conditions) and project management (change management of the managed system). The latter is precisely the subject of research in the field of scientific knowledge and practice, called "project management" and the subject of one of the branches of management science - project management.

In conclusion, the authors define the methodological foundations of project management in pedagogical management are system-activity, process, and resource approaches, which, being internally consistent, set the fundamental methodological orientation of research in the considered field of scientific pedagogical knowledge.

Keywords: project management; education; project work; matrix.

Introduction

In modern textbooks and teaching aids on pedagogy, the solution of management problems is the content of the chapter, which is often called "management of educational systems". For example, this title has a chapter in a textbook edited by Professor E. Baratashvili, in which pedagogical management is considered as one of the aspects of managing an educational system. It should result in bringing the educational system to a state of functioning that achieves goals that meet the requirements of educational standards and programs tailored to the individual characteristics and needs of the individual (Education Management, 2014).

In scientific papers devoted to the problems of pedagogical management, the view of his specific object and subject is substantiated. It is considered that pedagogical management as a science of management of educational systems and processes is a branch of pedagogy, the subject of which is the organization of management in the field of education and in educational institutions. The structure of pedagogical management includes the following levels:

1. Management of the teaching staff;
2. Teacher activity management;
3. Student activity management. (Cobb, 2005).

In pedagogical management there are two levels of management: the head of the educational institution and the teacher. The activity of the head is aimed at creating conditions for the effective functioning and development of the entire educational system of the institution; the task of the teacher-manager is the organization of educational work with the aim of developing cognitive activity and the formation of the student's personality.

In the 1990s, the management of the educational institution began to be considered in two aspects: the management of the functioning and the management of development. The latter implied a part of the ongoing management activities, in which, through planning, organizing, directing and controlling development and development processes, the focus and organization of the educational institution's staff on building educational potential, increasing its use and, as a result, obtaining qualitatively new results is ensured.

In modern literature, the development of educational organizations are considered from the standpoint of strategic management in the context of solving the problems of managing changes in these organizations, changing the elements, connections, and relationships.

In modern education management, the problems of development management (change) and, accordingly, project management are not considered, although in management practice projects are increasingly used to solve these problems.

In this regard, for the management of education as a branch of pedagogical knowledge, it is important to identify sources, methodological grounds and conceptual apparatus of project management.

Sources and Development of Ideas of Project Management in Education. Project management is among the young and most demanded areas of scientific knowledge and practice. The development of it over the past 50-60 years has gone from its understanding as a technological scheme for organizing work on the implementation of

individual projects to the idea of project management as a methodology for system changes, which carried out in organizations, firms, corporations, territorial entities, across the country and interstate associations. In educational practice, the formation of ideas, concepts, theoretical foundations of project management began at the turn of the XX and XXI centuries. from the use of cultural, historical, socio-pedagogical, methodological and conventional sources. (Ajani, 2002).

The term "project management" in modern science and practice refers to the process of managing activities aimed at developing and implementing projects. In the literature, it is most often used as a synonym for the term "project management". A project in its general meaning is a plan, a plan for building something, a preliminary text, and its development is denoted by the word "design" of a Latin "projectus" in progress - "thrown forward". The ability to represent the future product of its activities and ways of its "production", arose and improved along with human development. It reflected its fundamental difference as a social being from other biological organisms, based on such a property of man as consciousness.

The emergence of the first large-scale plans and the "great construction projects" of the states of the ancient world required, in modern language, the project management to create numerous objects of the material and spiritual culture of mankind. In the XVII - XVIII centuries. It began in the XIX century, completed the formation of the design as an independent activity. It was formed initially in architecture, and then in other areas of production of material objects of a homogeneous nature, and received in science the name of traditional (classical, prototypical) design (Education Management, 2014).

In the 50s and especially in the 60s of the twentieth century a new type of design was formed. Terms such as systemic, unconventional, non-prototypical design began to be used, representing an owl interdisciplinary methodology for solving design problems of complex systems, taking into account the interaction and the interrelation of their components both among themselves and with the external environment, taking into account the integration links of the designed system with other objects of the surrounding reality. The system design owes its birth to design, since its basis has become the integration of industrial production and art.

Systems engineering needed a new methodology, because it's increasing number of scientists and practitioners who began to understand the fact that the solution of many problems of project activities in particular types of design "rests" on the insufficient development of the methodology of its new type. This type based on the idea, that all modern culture is inherently project-based, since the creative activity of a human being that constitutes its basis is impossible without an ideal, an image, a preliminary design, the ability to transfer this idea into actual practice.

The active study of the phenomenon of project culture began in the 80s of the last century, when philosophers, cultural scientists, and sociologists concluded that project human activity is not only a product, but also a mechanism for the development of culture, since creative activity constituting its basis is impossible without a plan and implementation plan. We believe that culture is a kind of

“proto-project” of any design in a given culture, in other words, a project with a social and ontological status.

The subject of the study representatives of the most diverse areas of scientific knowledge was the project culture. We think that it is institutionally manifested in project activities, although it does not boil down to it. All of the above gives grounds for identifying historical and cultural sources of project management as a person’s ability, an independent type of professional activity and, finally, a cultural phenomenon.

In the field of education, the use of the terms “project” and “design” begins in the 18th century, when it began to be used in the names of works and documents reflecting the search for new ways of solving social problems by pedagogical means. So, Jean-Jacques Rousseau wrote the “Project for the education of de Saint-Marre” and the technocratic project “Venus”; M. Lomonosov drafted a document entitled “Draft Regulations of Moscow Gymnasiums”, prepared drafts of the Charter and a number of other documents of Moscow University; J.A. Condorcet and L.M. Lepeleté developed projects for the reorganization of public education in France.

In the first third of the twentieth century, the terms “design” and “project” became widely used in pedagogical science and practice. The idea of using the project as a means of solving problems that are understandable and meaningful for a child, taken from real life, was developed by J. DeWey. His student W. Kilpatrick laid the foundation for the formation of a theory of project education, focusing on the issues of maintenance and organization of a set of interrelated projects, developing and implementing which children learned to solve certain life tasks. In Russian pedagogical science, the ideas of project education and methods of developing the autonomy and activity of children who are inherently close to the method of projects were developed and implemented under the guidance of J.Gogebashvili and others. (Education Management, 2014).

The use of design as a means of technologization of education was influenced by the ideas of system design. Interestingly, the process of forming a system design concept in domestic science is reflected in the work of a group of researchers led by N. Vasadze who were engaged in the 1960s in solving theoretical design problems in the laboratory of general theoretical problems of the Pushkin State Pedagogical Institute. Scientists drew attention to the need to allocate the space of action of thought and the specifics of its relationship with the space of practical activities of the design subjects.

On the basis of the developed methodological foundations of system design and the view of design as a special type of thought activity, Georgian scientists expressed a number of promising ideas about design activities in education. They thought that in order to restructure the existing system of training and education or build a new one you need to have a project for the upcoming product of this system - a concrete and multilateral description of the person of the future society.

Simultaneously with the methodology of system design in the 1950-1960-ies. A project management methodology begins to take shape, although its initial foundations are already discovered in the 1930s. At the very end of the

1950s, a systematic approach to project management by life cycle stages was first applied.

This approach has so far been fundamental in the project management methodology and the basis for developing a variety of project-type methods and organizational structures. At the same time, the scale of the practical application of project management methods, their distribution in various areas of the country's development, the level of use of information technology and other indicators.

The term “project” in the pedagogical literature of managerial issues began to be used since the 1990s. Further, detailed plans are developed for the implementation of a future education project and a set of “control points” (intermediate goals) is created to enable timely detection of threats to the achievement of final results). Another group of sources of project management in education should be called conventional. The term “conventional” (from the Latin “conventionalis”) means conditional, generally accepted, compliant with the norms, conditions, contract. It is used in various fields of knowledge and carries an ambiguous meaning. For example, in psychology, the concept of “conventional norms” is encountered as a set of generally accepted rules and requirements in a given community that play the role of the most important means of regulating the behavior of its members, the nature of their interrelationship, interaction and communication. The source of conventional norms is the stakeholders of project management, that is, persons interested in its success, as well as organizations representing the best (best) practices of project management. (Meredith, Mantel, 2005)

Thus, we can talk about four groups of sources of project management in education management:

1. Cultural and historical sources demonstrate the cultural patterns of project activities that have been formed in history, the experience of developing the projective capacity of a person in various types of his productive work, the diverse public practice of developing and implementing project ideas, etc.

2. Socio-pedagogical sources constitute ideas, concepts, practical experience in solving social and pedagogical problems of education by means of project activities;

3. Theoretical and methodological sources give an idea of the general methodological grounds; patterns inherent in projects in all areas of activity; methods and tools that are successfully used for the design and implementation of projects of various types and types;

4. Conventional sources are formed on the basis of reaching an agreement, assessing the community of project subjects regarding a set of rules, requirements, norms, content, logic of means of its regulation.

The study and use of these sources creates the basis for the definition of methodological approaches to the study of problems of project management in pedagogical management.

Methodological foundations of project management.

In modern management concepts, there are two types of management - process (management of recurring activities in fundamentally unchanged external conditions) and project management (change management of the managed system). The latter is precisely the subject of research in the field of scientific knowledge and practice, called “project

management” and the subject of one of the branches of management science - project management.

The management of an educational organization as a subject area of education management should take into account the obvious fact of its striving, on the one hand, to preserve stability and optimal functioning, and on the other hand, to development and change. Achieving stability through development and development on the basis of stability is an ideal model of the life of an educational organization, the implementation of which in practice always faces external and internal challenges and risks. It is not by chance that the tendency in theory and practice reflects in its relationship the management of the functioning and development of an educational organization, stability and change, current operations and projects. (Campbell, 2006).

Management of changes in the educational organization can be carried out on the basis of a different set of principal installations, certain methods, techniques, means of influencing the control systems on the managed one. Priority among them is the focus on the process of change or on their result. When focusing on the process, attention focuses on the development and implementation of innovations that lead to changes in the organization, but without a clear idea of what final results they will lead to. With result-based management, its content is initially determined, and then innovations are selected or developed to enable it. Such an approach to management, as already mentioned, was called program-targeted. In a broad sense, it can be argued that all education management today should be program-targeted, i.e. performance management.

Attention should be paid to the fact that in recent years, long-term comprehensive targeted programs for the development of education and, accordingly, programs for the development of educational organizations have gradually lost the significance that they played at the end of the past and the beginning of this century. Many of them do not live to see their completion, they are constantly being adjusted, or even replaced by new ones. In this regard, development programs are often becoming a means of expressing ideology, concepts, strategies, main directions of development, a way to bundle projects that are designed to ensure the achievement of specific results. (Chapman, Ward, 2003).

In this area of research, for most problems, the tradition is to show the difference between project management as change management and management of the organization. It is logical that this approach can be used in the management of education. However, most likely due to the established traditions, this does not happen, although such attempts have been repeatedly made.

The reasons why the potential of project management in the management of education is not fully utilized are due to the fact that the development of the methodology began only in recent years. The project approach is considered as a section of the theory of management of educational systems, studying the effective forms, methods, means and mechanisms for managing changes in it. The project approach in education is analyzed in the context of the implementation of general laws and methods of project management, examines the mechanisms for initiating and integrating projects into the activities of the educational

system, ways of planning and implementing projects, their personnel and financial and economic support.

The definition of the term “methodology” in monographs and dissertation research on project management in the field of economics and management is more pragmatic. In them, under the methodology refers to a common system for project management and a set of methods, the sequence of use of which ensures the achievement of the desired result with restrictions in time and resources. Using a systematic approach as a methodological basis for project management is generally recognized, from its position, the project is considered as a set of its interrelated components.

Along with the system widespread in the theory of project management is a process approach, which begins to be used in project management in education. The significance of this approach is that the complex, integrated nature of project management is described through processes and their interrelationships. In this case, the processes are understood actions and procedures associated with the implementation of management functions.

The process approach underlies all international and domestic standards for project management. Its characteristic features are:

1. The division of management processes in the project into two categories: project management processes and processes management of its products;
2. Definition and designation of project management process groups;
3. Isolation and designation of groups of processes by areas of knowledge of project management;
4. Forming the idea of a holistic set of processes that characterize the entire field of practical project management activities;
5. A description of a certain way structured management processes through input data, methods and tools, outputs. (Lewis, 2006).

There is no generally accepted idea of the composition and designation of project management processes, however, the standards for project management, the positions of foreign and domestic authors in this matter are very close. The world's largest non-profit association of professional project managers - Project Management Institute - PMI (Project Management Institute), currently applies the fifth edition of the project management standard (PMBOK Guide). It uses the following names: the initiation process group, the planning process group, the execution process group, the monitoring and control process group, the completion process group. Through these processes, in accordance with the specified standard, the content of the project is managed; project timing management; project cost management; project risk management; project human resource management; project procurement management; quality management in the project; project communication management; project integration management.

A distinctive feature of project management is the focus on the organization of work with resources, which makes it important to use the resource approach. Nevertheless, in the theory of project management, the problem of the formation and use of resources has been little studied, and in pedagogy the resource approach is only beginning to be denoted. All this necessitates a somewhat more detailed explanation of the resource approach as the methodological basis for the

project management of an educational organization. Under the resources most often understand the stocks, sources, funds used as needed. The term "resource approach" was first used in works devoted to the strategic analysis of activities and the development of competitive strategies for the development of a company. From the standpoint of this approach, any organization is considered as a certain set of resources, among which are key resources that can become the source of its sustainable competitive advantage.

In modern literature, at least three groups of resources are allocated: human resources (knowledge, competencies, experience, relationships of managers and employees of the company), material resources (technologies, equipment, premises), organizational resources (organizational structure, management system, informal communications in organizations, etc.). In modern strategic management, there are five groups of resources: people, money, raw materials and supplies, equipment and other means of production, information and technology. In recent years, time is called a special resource.

In pedagogical science, the term "resource" is most often used in the context of a set of sources, means of developing an educational system, organizing educational activities, and ensuring the implementation of an educational program. In this case, regulatory documents most often refer to such types of resource provision as regulatory, personnel, scientific and methodological, organizational and pedagogical, financial and economic, educational and material, information, etc. In the studies of Georgian scientists (Baratashvili E., Kutateladze R., Vasadze N., Partskhalaya N., etc.) five types of resources of the educational project are allocated:

1. Human resources of developers and project implementers (teachers, students, their parents, social partners, etc.);
2. Educational resources of the project, which include the programs used at its various stages, curricula, textbooks, methodological recommendations, etc.;
3. Project support resources (regulatory, organizational, informational, material and technical);
4. Financial resources received by project participants mainly from an external or internal customer;
5. Time as a special resource for project activities.

Educational resources can be presented in print and electronic form. The latter make it possible to structure them in databases and form an electronic information environment of educational projects, which, through information and telecommunication networks, can, if necessary, ensure at a distance effective interaction of subjects in an educational project.

Experience in organizing research and project management practices. The authors of this article have accumulated some experience in organizing research into the practice of project management. Its methodological basis constituted the system-activity, process and resource approaches, which formed the basis of both its own and research doctoral activities. Taken together, the studies provide a holistic view of project management as an integral part of the management activities carried out related to the preparation and implementation of a set of projects aimed at changing the educational system, increasing its innovative potential, increasing its efficiency and, as a result, obtaining

qualitatively new educational outcomes. However, analyzing the experience of project management accumulated at the Georgian Technical University from the standpoint of today, it becomes clear the importance of identifying both the relationship and distinguishing the educational and pedagogical project by object, subject, functions, content, etc.

The interrelationship of these types of projects was shown by the dissertation research of doctoral students, which was led by one of the authors of this article, working in public institutions of higher education and the second author, who worked for a long time in the government administration of education and science. Projects have become a way of organizing innovation, which required systematization and structuring of all university resources, the creation of a fundamentally new software and hardware for the educational process, the full implementation of computer technologies, and the expansion of interdisciplinary connections. The implementation of the project provided an opportunity for each students in their personal office to view the presentation lectures of teachers, perform tasks for independent work, form a portfolio, work in the electronic library of the academy, and undergo trial testing. The Faculty of Business Technologies has created fundamentally new conditions for the information and methodological support of university teachers, their academic and scientific work. The open information-educational environment of the university has acquired special significance for students with disabilities; students with young children; being in long trips; as well as students enrolled in individual curricula.

The project management technology "Electronic Faculty" was defined by a specially designed matrix in the form of a rectangular table. There are five groups of management processes (initiation, planning, implementation, control, completion) horizontally and eight project management areas - vertically: project integration management, project content management; project timing management; project quality management; project cost management; project resource management; project communication management; project risk management. At the intersection of the rows and columns they formed the matrix denote the processes that together form the entire project management space. In total, the matrix reflected 40 processes in the management system of the named project and became a kind of technological map for its preparation and implementation.

The project "Electronic Faculty" contained certain risks and some could not be avoided. Nevertheless, it has become one of the largest and most effective innovations, organically combining the merits of educational and pedagogical design. In the 2017-2018 school year, all teachers and 92% of students worked at the Electronic Faculty.

Experience has convincingly shown that an educational project aimed at qualitative changes in an educational organization cannot be fully implemented without implementing new pedagogical projects for managing students' activities. At the same time, pedagogical projects are able to initiate the development and implementation of educational projects.

Analysis of the progress and results of the "Electronic Faculty" project shows that the effectiveness of project management depends crucially on the readiness of university managers and faculty members to develop and

implement educational and pedagogical projects, which prompted us to develop an additional professional educational program "General and Project management in education "(being developed now).

The program includes six models:

- 1) General management (24 hours),
- 2) Project management (24 hours),
- 3) Project management in educational institutions of higher education (12 hours),
- 4) Workshop on the initiation of projects in the Kirov State Medical University (12 hours);
- 5) Group work with teams and individual work with project managers (120 hours).

As an example, we give the name and content of the part of the topics of the workshop on the initiation of projects:

- theme, problem, idea of the project, its innovativeness;
- expected results of the project;
- project participants;
- resource support of the project (budget and sources of its financing);
- project risks (financial, competitive, personnel, organizational) and ways to overcome them;
- the hierarchical structure of the project activities (Structuring the project activities, developing the main activities of each section of work, their planning);
- assessment and self-assessment of the project (meaningful characteristics of the assessment and self-assessment of the project, parameters of the evaluation and self-assessment of the project, evaluation sheets and self-evaluation of the project).

The generalization of the experience of studying and practicing project management in management of educational systems is presented by the authors in several publications. However, the study of the problems of project

management in pedagogical management is far from complete.

Conclusion

Project management in educational system is a part of the management activities of its leaders and teachers in an educational organization in which, through the initiation, planning, implementation, monitoring and completion of projects, the focus and organization of the teaching staff's activities, teachers' activities and students' activities to build their educational potential is ensured, increase the level of its use and, as a result, obtaining high quality new results for a certain period of time.

The ideas of project management are formed and developed in education management based on cultural, historical, social, pedagogical, theoretical, methodological and conventional sources, the development of concepts of program-oriented management of an educational organization in a new situation, when priority projects and complexes of interrelated projects can provide changes, time and resource constraints, achieving unique results improving overall performance and managing in education.

The methodological foundations of project management in pedagogical management are system-activity, process, and resource approaches, which, being internally consistent, set the fundamental methodological orientation of research in the considered field of scientific pedagogical knowledge.

One of the priority scientific tasks is the formation of the conceptual apparatus of project management in the system of categories of pedagogical management as an area of pedagogical knowledge. To a decisive extent, this is due to a broader view of project activities in education in its universal, functional and organizational contexts.

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