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## ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

### USING THE PROJECT METHOD AS A MEANS OF FORMING MOTIVATION IN STUDENTS

Speciality: 5804.01 - General pedagogy, history  
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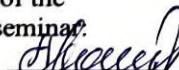
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## GENERAL CHARACTERISTICS OF THE RESEARCH

**Relevance and degree of scrutiny of the topic.** The long historical journey of humanity and the accumulated experience demonstrate that the science of pedagogy evolves in parallel with the development of the human factor, either through enrichment with new methodological forms or through the renewal of existing methods. The steps taken in this direction are mainly progressing in the context of preserving the national identity of various peoples and nations and integrating into the international educational space during an era marked by globalization and increasing demand for information and communication technologies.

The project method is a teaching and learning approach that revolves around student-centered projects. This method encompasses a process of inquiry, analysis and problem-solving, which concludes with a final product or presentation. Owing to its many advantages, it is gaining increasing popularity in higher education institutions. One of the key benefits of the project method is its ability to deepen learning. Projects require students to engage actively with complex material, apply knowledge in real-life contexts and develop critical thinking and problem-solving skills. The project method fosters the advancement of both general and individual competencies, while also enhancing motivation and effective participation in group settings. Students collaborate, communicate productively, manage time efficiently and improve their project management capabilities. Projects provide a certain degree of ownership and autonomy in the learning process, contributing to greater motivation and engagement. The project method also plays an important role in encouraging interdisciplinary connections. Projects often integrate multiple subjects, promoting a more unified understanding of knowledge. In the era of the modern market economy, the implementation of the project method in higher education institutions is a highly relevant topic. To bring the supply and demand in the employment sector to an approximately balanced level, many different project-based training approaches have been repeatedly and successfully tested in

various countries. This is because project-based learning equips students with essential skills that are valued by employers.

The main contemporary trends of global development that have led to significant changes in the educational system are as follows:

- the increasing pace of social development, which necessitates preparing graduates of secondary schools and higher education institutions for life in rapidly changing conditions
- the transition to an information society, the significant expansion of intercultural interaction and consequently, the growing importance of social engagement and tolerance
- rapid economic growth, intensified competition and the declining demand for unskilled and low-skilled labor
- profound structural changes in employment, which determine the constant need for improving and retraining professional qualifications and enhancing professional mobility of workers

The project method is adopted by modern individuals due to its applicability in various spheres of life and professional activity. Often, a person who knows how to design a project is more successful than one who does not. The phase of reflection on problems and situations to isolate and formulate the core problem, establish logical connections between problems and then determine the objective after clarification, is one of the stages of a project referred to as problem identification.

In the project method, the program is structured as a sequence of interrelated points arising from specific tasks. Students must learn to organize their activities together with their peers, to find and acquire the knowledge necessary to complete a given project, thereby learning to solve life problems, build relationships with others and understand life itself. Through this process, students acquire the ability to comprehend the realities of life, independently or in a group by engaging with dynamic and relevant material through trial and experience. The advantages of project-based technology include: motivation to work, student engagement, connection to real life,

establishing students' leading roles, scientific inquiry, the ability to work in groups, self-regulation, better reinforcement of knowledge, discipline and more.

The project method always focuses on the independent activity of students, whether individual, in pairs or in groups, carried out over a specific period of time. This approach is organically combined with cooperative learning. The project method always entails solving a particular problem, which, on the one hand, involves using various methods and, on the other hand, integrating knowledge and skills from different fields such as science, engineering, technology and creativity. Working with the project method involves not only recognizing the existence of a problem, but also the process of identifying and solving it, which includes clearly planning actions, forming an idea or hypothesis for the solution and distributing tasks accordingly.

The project method has gained significant popularity in higher education in recent times due to its numerous advantages and its compatibility with evolving educational needs. Its relevance within higher education institutions is divided into two key directions. The first is the ***improvement of learning outcomes***, which includes active learning, application in real environments and the formation of higher-level thinking potential. Projects move beyond passive knowledge consumption and promote active engagement with concepts and skills. Students actively solve problems, analyze data, collaborate and make decisions, which leads to deeper understanding and skill development. The second is the ***development of essential skills***, including communication and collaboration, project management (formation of leadership abilities), problem-solving and adaptability. Project work often involves teamwork that requires students to develop communication, collaboration and conflict resolution skills. These are crucial for success in various professional contexts. At the same time, students learn how to plan, manage time, delegate tasks and overcome challenges within project limitations. These project management skills can be transferred to various disciplines and careers.

One of the key current parameters of project work is the identification of assessment and feedback. Projects provide various opportunities for evaluation, allowing teachers to assess not only knowledge but also skills and application. This feedback can be more nuanced and informative than traditional examinations.

The project method holds major significance in higher education due to its potential to enhance learning outcomes, develop core competencies and increase student engagement. Careful examination of problems and effective implementation enable higher education institutions to benefit from the power of project-based learning and prepare students for success in the twenty-first century. The project method is a pedagogical technology aimed not at integrating factual knowledge, but at applying renewed knowledge and acquiring new knowledge through active involvement in project activity and learning new modes of action within the sociocultural environment. The project method is based on the desire to develop students' cognitive skills, build their own knowledge independently and strengthen their ability to navigate the information space, as well as foster critical and creative thinking<sup>1</sup>.

Among the specialists in the project method, the research of American educator W.H. Kilpatrick is particularly noteworthy. The method proposed by Kilpatrick was first published in the form of an article in 1918 by Columbia University<sup>2</sup>. John Dewey is also considered one of the first to contribute to this field from a theoretical and philosophical perspective<sup>3</sup>.

Since project-based learning has been applied more actively in relatively modern times, the degree of its scrutiny is also reflected in more recent research. This topic has been explored in various theoretical and practical directions across different scientific research institutes and educational institutions around the world. For example,

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<sup>1</sup> Лукина, И. Г. Организация проектной деятельности на уроке как способ раскрытия творческого потенциала учащихся [Текст]/ И.Г. Лукина // Известия РГПУ им. А.И. Герцена. – 2007. – № 43-2. – с.144-148

<sup>2</sup> <https://education-uk.org/documents/kilpatrick1918/index.html>

<sup>3</sup> <http://dewey.pragmatism.org/creed.htm>

specialists from the Engineering and Exact Sciences Department of the Federal University of Paraná in Brazil (M.F. Parisoto, M. Romani, E.Z. Godinho) have implemented various types of the project method and different computational mechanisms related to project-based learning<sup>4</sup>. Finnish specialists L. Helle, P. Tynjälä and E. Olkinuora have also conducted detailed research on this topic, identifying both its positive and negative aspects<sup>5</sup>.

Among the specialists from post-Soviet countries, research has been carried out on project-based learning and learning motivation in various scientific directions. Regarding the psychological aspects of motivation, V.N. Myasishev and A.G. Kovalyov<sup>6</sup>, A.N. Leontyev, S.L. Rubinstein, P.Y. Galperin and others have conducted studies from the perspectives of interpersonal relationships, personality orientation, behavior dynamics and other areas. In relation to motivation in educational activity, researchers such as N.A. Menchinskaya<sup>7</sup>, Y.M. Orlov, V.V. Serikov and others have conducted studies. Among Azerbaijani specialists, A. Gadirov explores certain motives created by the learning process from early ages and their development at later stages in his creative materials titled “Development of cognitive processes in children” and “Developmental psychology”.<sup>8</sup> Additionally, works such as S.G. Akhundov’s “Individual approach to students in the learning process”,<sup>9</sup> H.H. Ahmadov and N.E. Zeynalova’s textbook

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<sup>4</sup> Parisoto M.F. Project method in the education background: a review of recent literature, [Electronic resource] / — 2021. URL: [http://www.lajpe.org/mar21/15\\_1\\_02.pdf](http://www.lajpe.org/mar21/15_1_02.pdf)

<sup>5</sup> <https://www.jstor.org/stable/29734978>

<sup>6</sup> Ковалев, А. Г. Психические особенности человека. Характер, способности. Т. 1-2 / А.Г. Ковалев, В.Н. Мясищев. Москва: – 1957. – 264 с.

<sup>7</sup> Менчинская, Н.А. Вопросы методики и психологии обучения арифметике в начальных классах / Н.А. Менчинская, М. И. Морю. –Москва: Просвещение, – 1965. – 222 с.

<sup>8</sup> Qədirov, Ə. Uşaqlarda idrak proseslərinin inkişafı / Ə. Qədirov. – Bakı: Maarif, – 2002. – 386 s.

<sup>9</sup> Axundov, S.Q. Təlim prosesində Tələbələrə fərdi yanaşma / S.Q. Axundov. – Bakı: Maarif, – 1975. – 232 s.

“Pedagogy”,<sup>10</sup> M.I. Ismikhany’s “Pedagogy. Theory of teaching and education – Didactics”, N.M. Kazimov’s “Higher education pedagogy” and others also address this topic. One fact must be particularly emphasized: in the early twentieth century, Azerbaijani intellectuals, while increasing the number of secular schools, also considered conducting instruction in the mother tongue as a component of motivation.<sup>11</sup>

**Object and subject of the research.** Learning based on the project method constitutes the **object of the research**.

**The subject of the research** includes the history, essence and content of the project method, the general and modern theoretical foundations of project-based learning, its role in ensuring motivation among students and issues related to the functions of the teacher in project-based instruction.

**Objective and tasks of the research.** The main objective of the research is to investigate the possibilities of using the project method to develop motivation in students toward education and subsequent stages of development.

To achieve this objective, the following tasks have been defined:

- first, to determine the theoretical foundations, essence and content of the project method
- to identify the international standards of project-based learning (internationally known as Project Based Learning – PBL) and define the possibilities of its application in Azerbaijan
- to examine the advantages of using the project method by graduates of higher education institutions in their future professional activity

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<sup>10</sup> Əhmədov, H.H. Pedaqogika. Bakalavr hazırlığı üçün dərslik. / H.H. Əhmədov, N.E. Zeynalova – Bakı: Elm və Təhsil, – 2016. – 456 s.

<sup>11</sup> Əhmədov, H.M. Azərbaycan məktəb və pedaqoji fikir tarixi / H.M. Əhmədov. Alitəhsil müəssisələrinin bakalavriat səviyyəsində təhsil alan tələbələr üçün dərslik.– Bakı: ADPU, “Elm və təhsil”, 2014, 432 s.

- to determine the role and place of the teacher in organizing project-based instruction
- to analyze the effectiveness of using active learning elements in organizing learning motivation
- to investigate the requirements for the use of the project method with the aim of forming learning motivation
- to reveal the effectiveness of applying the project method within the unity of science, education and high technologies
- to analyze the positive and negative effects of the project method

**Research methods.** Since the dissertation is based on research related both to the historical background and the modern period, as well as on practical training, the methods of historicism, comparative analysis and system analysis have primarily been used. Additionally, the methods of generalization, problem-chronological analysis, deduction and induction were applied in the process of the work. From a theoretical perspective: theoretical analysis, description and deduction of scientific sources; from an empirical perspective: methods such as observation, comparison, analysis, generalization and synthesis were also employed.

**Main provisions for defense:**

- The use of the project method is a component of an advanced educational system that fully meets the requirements of the modern era
- The use of the project method forms the foundation of modern innovative instructional methodology
- The application of the project method within the teaching system supported by information and communication technologies will enable students to acquire more knowledge in a shorter period of time
- The significantly increasing role of teachers in project-based learning may lead to revolutionary changes in the pedagogical sphere in the future

**Scientific novelty of the research.** Project-based learning has not previously been the object of study in a standalone dissertation

within Azerbaijani pedagogical research and this topic is being systematically explored for the first time. The scientific innovations of the research include the following:

- The essence and content of project-based learning and its modern theoretical characteristics are examined within a scientific framework

- The organization of learning motivation and the functionality of instructional elements are studied in conjunction

- The requirements for using the project method in learning motivation are explored based on international experience

- The golden standards of project-based learning (core project design elements, project-based instructional practices) are scientifically substantiated

- The stages of using the project method are identified within a scientific context

- The theoretical and practical aspects of project-based learning in Azerbaijan are determined and its future perspectives are analyzed

**Theoretical and practical significance of the research.** The theoretical significance of the research lies in the fact that the results obtained during the study help to define the impact of project-based learning on higher education institutions and allow for the evaluation of its essence, which can be taken into account when considering it as a teaching method of both today and the future.

As for the practical significance of the dissertation, its materials can be used in conducting new research related to the topic, in writing academic works, in teaching and in the preparation of textbooks, subject programs, lecture materials, methodological guides and more in higher education institutions.

**Approval and application of the research.** The main scientific provisions and results put forward in the dissertation have been reflected in the author's scientific articles published both in Azerbaijan and abroad, in accordance with the recommendations of the Supreme Attestation Commission, as well as in presentations at various scientific-practical conferences. The author's articles titled

“Project-based learning methods” and “Factors influencing motivation during distance education” have been published in the journal “Azerbaijan school”. The article titled “The importance of project-based instruction in the formation of learning motivation among students” has been published in the Republic of Türkiye’s “Academic Journal of History and Thought”. In addition, the article titled “Use of Project-Based Learning in Preparation of Education Managers: Case of Post-Soviet Azerbaijan” has been published in the journal “Journal of Problem-Based Learning in Higher Education”. Along with these scientific works on the topic, the author has also published conference materials and scientific presentations.

**Name of the institution where the dissertation was carried out:** The dissertation was carried out at the Institute of Education of the Republic of Azerbaijan.

**Total volume of the dissertation** with indication of the volume of its structural sections: The introduction of the dissertation consists of 8 pages, the first chapter 33 pages, the second chapter 22 pages, the third chapter 37 pages, the conclusion 5 pages and the references section 9 pages. The dissertation comprises a total of 120 pages, with a main volume of 207,575 characters.

## MAIN CONTENT OF THE RESEARCH

The first chapter of the dissertation is titled “**General theoretical aspects of using the project method in higher education institutions**”. The chapter consists of three paragraphs. The first paragraph of the first chapter is titled “*The history of using the project method*”. This paragraph explores the historical background of the issue. The project method is an effective instructional tool that enables students to develop the knowledge and skills necessary for life in modern society. Although the project method has gained increasing popularity in recent years, it has a long history in higher education. The use of the project method dates back over a hundred years. Early applications of the project method began to emerge in a preliminary form as early as the 18th–19th centuries. In the 1700s, the project method found its initial origin in vocational

education through agricultural and industrial arts programs that integrated practical projects as a means of teaching practical skills. In the early 19th century, educational reformers such as Johann Heinrich Pestalozzi and Friedrich Froebel, emphasizing the importance of play and exploration in learning, incorporated project-based activities into their educational philosophies.

In the second half of the 19th century, the project method emerged in the United States in agricultural schools and was based on theoretical concepts known as pragmatic pedagogy, which advocated the principle of “learning by doing”. Prominent figures such as John Dewey and William Heard Kilpatrick promoted this approach as a way to engage students in active learning and to encourage them to apply their knowledge to real-life processes.

John Dewey, considered the founder of the project method, believed that learning should be connected to real life and that students should be active participants in the educational process. He developed a learning concept based on solving the problems students encounter in their daily lives.

In 1899, Dewey’s work “School and Society” was published in the United States for the first time, in which he explained in detail many of the principles underlying the project method. The book had a significant impact on the development of education both in the United States and in other countries. It was reprinted eleven times in the following few years<sup>12</sup>. In the work, children’s impulses toward their environment are described. According to Dewey, children want to communicate with others. They want to understand the nature of things. They enjoy artistic expression and love creating objects<sup>13</sup>. After describing a range of other activities at the laboratory school, he draws attention to the issue that traditional school advocates

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<sup>12</sup> Dewey J. The School and Social Progress // [Electronic resource] / Chapter one in The School and Society. Chicago: University of Chicago Press. — 1900 (1907). — s. 59-74 (19-44).

URL: [https://brocku.ca/MeadProject/Dewey/Dewey\\_1907/Dewey\\_1907a.html](https://brocku.ca/MeadProject/Dewey/Dewey_1907/Dewey_1907a.html) || <https://www.gutenberg.org/ebooks/53910>

<sup>13</sup> Yeno orada, s.59-61

viewed as the greatest “obstacle” in this approach: stimulating inquiry and interest is beneficial, but how can children acquire the necessary information and discipline on such a laboratory basis? <sup>14</sup>

In Russia, the project method began to be used in the early twentieth century. It was promoted by educators such as K.N. Venttsel, S.T. Shatsky and V.N. Soroka-Rosinsky. However, in the 1930s, the project method was declared harmful to the Soviet school and its use was banned. The prominent Russian scholar K.N. Venttsel, in his work “The liberation of the child”, addressed several important issues that encompass the fundamental principles of project-based learning. He noted that “the true ideal of education is to genuinely ensure the free development of the individual, to liberate the child from our oppression, no matter how gentle and humanistic it may appear. What we owe to our child is not advice but upbringing. We must raise the child not as our ally, enemy or guardian of our ideals, but as one who will destroy them, as the creator of the future, one who will declare war on the present. We should not view the child as our future ally. On the contrary, if we ourselves continue to progress spiritually and do not remain fixed at one point, we must prepare the child’s collaborators and supporters from among ourselves”. <sup>15</sup>

Today, the project method is used at all levels of education. It helps students develop independence, initiative, creativity, collaboration and communication skills. New teaching methods based on the achievements of experimental pedagogy from the previous century centered on the principles of self-development and individual activity are being implemented in the modern educational process. Chief among these is project-based learning.

The second paragraph of the first chapter is dedicated to the study of the essence and content of the project method. In the paragraph titled “*The essence and content of the project method*”,

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<sup>14</sup> Уенэ огада, s.69, 70

<sup>15</sup> Вентцель, К.Н. Освобождение ребенка / К.Н. Вентцель. Изд. 3-е, испр. и доп. Москва: Земля и фабрика, – 1923. – 20 с., s.8

the problem is comprehensively examined and conclusions are drawn.

The essence of the project method lies in the fact that project activities are complex in nature. In the process of working on a project, students use knowledge and skills from various fields. Additionally, project activities are directed toward solving a specific problem. The problem must be real, relevant and interesting for students. Project activities require students to be independent and creative. Students must independently define the objectives and tasks of the project, choose the methods and means of its implementation and evaluate the results.

The content of the project method includes the following stages:

*Preparation stage.* At this stage, students become familiar with the project's problem, define its objectives and tasks and select the methods and means for implementation.

*Planning stage.* At this stage, students develop a project plan that determines the sequence of actions, deadlines and division of roles.

*Implementation stage.* At this stage, students complete the project as planned.

*Presentation stage.* At this stage, students present the results of the project to an audience.

*Reflection stage.* At this stage, students analyze the results of the project, draw conclusions and determine future directions for development.

The content of the project method allows for its successful application in various fields of education, including mathematics, physics, chemistry, biology, geography, history, literature, foreign languages, informatics and others.

The third paragraph of the first chapter is titled ***“Modern theoretical characteristics of the project method in higher education institutions and analysis of psychological and pedagogical literature”***. This paragraph provides a comprehensive

study of the theoretical features of the project method in the modern era.

The project method can be used in various educational institutions including schools, colleges and universities. It can be applied in different academic subject lessons as well as in extracurricular activities. Thus, the experience of implementing active and interactive teaching methods in higher education institutions shows that one of the most effective instructional tools is project-based learning, which most accurately reflects real professional situations and enables student-centered instruction. These can be described as “a process of qualitative transformation of the learning environment for students, based on a project-based approach that promotes new means of curriculum development, instruction and learning and aims to enhance students’ independence and critical thinking skills” [55, p. 794].

The main principles of the project-based learning method are dialogism, problem-solving, integrativity and meaningfulness.

Dialogue involves the student engaging in dialogue both with their own self and with other participants in the project. This is where even personality traits become apparent.

Problem orientation initiates intense mental work triggered by the need to solve a specific situation.

Integrity and integrativity are defined by the optimal combination of well-established systems for acquiring knowledge and learning rules.

Meaningfulness (contextuality) involves developing projects close to students’ real lives and understanding their significance for society.

In studies related to the theoretical foundations of the project method, scholars define it as an open pedagogical system that includes a set of interconnected tools, methods and processes

necessary for implementing organized and purposeful pedagogical influence on student personality development<sup>16</sup>.

The project method is based on several influential educational theories:

- Progressive education: emphasizes student-centered learning, inquiry and active participation
- Constructivism: promotes the idea that students actively construct their knowledge through experience and social interaction
- Situated learning: suggests that learning is best facilitated in authentic contexts through the resolution of real-world problems

The main theoretical aspects include the following:

- Problem-centered: Projects should motivate students and provide context for learning by addressing real problems or challenges
- Student-centered: Students take ownership of their learning, planning and independent execution of the project
- Collaboration: Students work in teams to achieve common goals, developing communication and teamwork skills
- Inquiry-based: Projects encourage students to ask questions, seek information and analyze evidence to arrive at solutions
- Reflection: Students think about their learning process, evaluate their progress and identify areas for improvement
- Assessment: Projects are evaluated based on predetermined criteria with attention to both the final product and the learning process.

The next, second chapter of the dissertation titled **“Formation of learning motivation in higher education institutions”** consists of two paragraphs.

The first paragraph of the chapter is titled ***“The role of learning motivation in the formation of educational activity”***. The formation of learning motivation in higher education institutions is a

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<sup>16</sup> Lai, Y. University students’ use of mobile technology in self- directed language learning: Using the integrative model of behavior prediction / Computers and Education, — 2022. — 179 s.

decisive factor in student success. It determines students' active engagement in classes, persistence and ultimately their academic achievement.

There are various factors that influence learning motivation, both internal and external. Internal factors include personal goals and desires, self-efficacy, intrinsic interest in the subject and learning style. Students who have clear goals for their future and view education as a means to reach those goals are more motivated to learn. Those who believe in their ability to succeed are more motivated to persist in the face of challenges. Students who are naturally curious and interested in the subjects they study tend to learn more effectively. Some students learn best through traditional methods, while others prefer more active and interactive approaches. When educators address different learning styles, it can increase student motivation.

External factors include teaching methods, assessment practices, peer support and institutional climate. Teachers who use engaging and effective instructional methods can create a positive learning environment that motivates students. Fair, transparent and constructive feedback in assessment can help students stay motivated. Students with strong peer connections and a sense of support from classmates tend to be more enthusiastic about learning. Higher education institutions that foster a supportive and positive atmosphere can increase student motivation.

Setting clear and achievable goals: Helping students establish specific, measurable, attainable, relevant and time-bound goals can provide them with a sense of direction and purpose.

Creating a positive learning environment: Using active learning strategies, providing opportunities for student interaction and fostering a safe and respectful classroom climate can enhance student motivation.

Ensuring feedback: Offering regular, timely and actionable feedback can help students identify their strengths and weaknesses and stay on track.

Promoting self-efficacy: Providing students with opportunities to succeed and overcome difficulties can help them develop a sense of personal efficacy and increase motivation.

Encouraging autonomy: Allowing students to have some control over their learning and offering them choices can increase their motivation and engagement.

Building relationships: Taking time to get to know students and build connections with them can help create a sense of belonging and support that encourages learning.

The second paragraph of the second chapter, titled *“Use of active learning elements in organizing learning motivation”*, approaches the problem more deeply through the lens of motivational factors.

While it is observed that some students in educational institutions are eager to participate in lessons, engage with topics or find solutions to problems they face, others appear unmotivated during classes and prefer to avoid solving problems rather than struggle with them. One of the key factors influencing the development of this difference among students is motivation. Motivation is one of the most important factors that highlight the effectiveness of the teaching-learning process, as it energizes individuals and stimulates behavior. In university settings, motivation is one of the main sources of power that determines the direction, intensity and regulation of a student's behavior, as well as the pace of achieving desired goals in educational environments. A significant portion of learning difficulties and disciplinary issues observed in higher education and classrooms is linked to motivation. Studies show a strong positive correlation between motivation and success. Increased motivation creates opportunities for both teachers and students to enjoy the learning process more.<sup>17</sup> Two students may both be interested in and succeed in the same subject, yet their reasons may differ. One student may work due to genuine interest in

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<sup>17</sup> Öncü, H. Motivasyon. Sınıf Yönetimi / (Edit: Leyla Küçükahmet). Ankara: Nobel Yayınevi, – 2015. – 368 s., s.169

the subject, while the other studies in order to earn a high grade upon success. In this context, individual differences among students play a role. If the goal is to contribute to individuals' learning, one must understand what motivates them. Motivation can sometimes be quite negative for learning attempts. This is referred to as negative motivation. For instance, learning in order to avoid punishment at school or to escape failure in class—although it is based on the intention to avoid an unpleasant or undesirable outcome (external motivation)—is still considered a commonly used and effective learning method, even if flawed. Positive motivation, on the other hand, refers to learning for the sake of achieving a desired result or obtaining something meaningful. This is a highly powerful reason for learning to take place. Many people argue that positive motivation is more effective than negative motivation. Learning motivation is defined as a student's perception that learning activities are meaningful and valuable and that they benefit from them. The absence of motivation often leads to disengagement from lessons and a shift toward non-educational activities (such as spending time with friends, phone calls, or watching television). For a student in this situation, studying may feel like a tedious effort. There are internal and external factors that influence learning motivation. Internal factors are related to your emotional, social and physical state, such as your attitude toward learning and achievement, your interests, attention level and personality traits. You may feel tired, have a negative attitude toward the lesson you are reading or listening to, or you may have more appealing plans outside the class.

The third and final chapter of the dissertation is titled **“The practical impact of project-based learning on the formation of learning motivation in students”**.

The first paragraph of the third chapter, titled ***“Requirements for the use of the project method to form learning motivation”***, identifies the main requirements for the application of the project method.

There are several key requirements for using the project method in the instructional process. During the research process, it is

important to define a problematic task (or situation) that requires critical and comprehensive analysis to be solved. It is also essential to consider the theoretical, practical and cognitive value of the project. Furthermore, attention must be given to the organization of the student's research work (individual, paired or group), the creation of the content component of the project with the documentation of step-by-step results, the selection of research methods and the systematization of data collection and analysis. The final stage involves the discussion of the project's outcomes (presentation, publication, website, etc.), the design and presentation of results, evaluation of the project and conclusions that identify promising areas for future research<sup>18</sup>.

Local specialists regard motivation as one of the essential conditions for the systematization of the learning process. F. Sadygova notes that the absence of motivation may lead to a decline in learning success<sup>19</sup>. G. Mustafayeva includes motivation among the most important factors that guide human relationships and emphasizes that it should compel the student to think and encourage action<sup>20</sup>. J. Zeynaloghlu draws attention to the psychological aspects of the problem and emphasizes that in order to direct the instructional process toward the intended goal, the teacher must not only possess strong knowledge and pedagogical skills but also have high-level psychological preparedness<sup>21</sup>.

A number of requirements have been set for the use of the project method in order to form learning motivation:

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<sup>18</sup> Carbonell, C. Project-Based Learning as a Coordination Methodology between Subjects in a Chemical Engineering Degree: Carbonell, C., Cardona, S. C. [et al.]. INTED. — 2021. — s. 9442-9450.

<sup>19</sup> Sadıqova, F. Təhsildə Motivasiya və Özünəinamın Formalaşdırılması // Azərbaycan məktəbi. — 2021, № 3. — s. 2

<sup>20</sup> Mustafayeva, G. Tədrisdə Motivasiya və İKT-Dən İstifadənin Əhəmiyyəti // Azərbaycan məktəbi. — 2016, № 6. — s. 108-109.

<sup>21</sup> Zeynaloghlu, C. Təlim Fəaliyyətinin Psixoloji Prosesi: [Elektron resurs] / Print-S. — 2017. URL: <http://www.anl.az/el/Kitab/2017/10/cd/2017-1000.pdf>, s.82

The first requirement is the proper selection and appropriate design of the project:

**Relevance and realism:** Projects should address real-world problems or challenges and be relevant to students' lives and interests. They must connect to existing knowledge and future learning objectives.

**Clear problem definition:** The goals and tasks of the project must be clear, specific and sufficiently challenging to engage learners and encourage them to make an effort.

**Choice opportunities:** Students should have some degree of choice in the project topic and approach, helping them develop a sense of responsibility.

**Collaboration and communication:** Projects should promote teamwork, cooperation and the development of communication skills.

**Open-mindedness and creativity:** Projects should allow for creative exploration and open-ended solutions that foster critical thinking, problem-solving and innovation.

The second requirement relates to the definition of the implementation phase of the project:

**Clear expectations and tasks:** Students must have clear expectations regarding deadlines, outcomes and assessment criteria. Guidance and instructions should be provided throughout the process, but direct assistance should not involve solving the task for the student. Independence must be preserved.

**Active learning and feedback:** Active learning should be encouraged through inquiry, research and experimentation. Constructive feedback should be provided to help students improve their work and stay motivated.

The third requirement concerns the proper execution of assessment:

**Reflection and self-assessment:** Students should be encouraged to reflect on their own learning process, identify strengths and weaknesses and set goals for future improvement.

Rewarding: Students' achievements and efforts throughout the project should be acknowledged. This can be done through presentations, exhibitions, awards or other forms of recognition.

Two sub-paragraphs of the first paragraph of the third chapter explore the stages of using the project method to form learning motivation and the role and place of the teacher in project-based learning. The role of the teacher in project-based learning undergoes significant changes compared to traditional teaching methods. Teachers shift from being the sole source of information to mentors who support students on their learning journey. This shift requires a wide range of skills and responsibilities, making the teacher's role both essential and multifaceted.

Trainings based on the project method offer a unique way to realize students' creative potential and to transform their knowledge and skills into practice in a creative manner. In such trainings, students must explain the purpose of their project, whom it is designed for, demonstrate how it functions on a computer and respond to questions from commission members and peers. The projects are evaluated by the students themselves using assessment sheets prepared with criteria across several nominations (relevance of the topic, content, depth of the subject, design of the work and so on).

The second paragraph, titled ***“Analysis of experiences and generalization of results in project-based learning”***, analyzes the general parameters of the research and summarizes the outcomes. The project method is based on the development of students' cognitive abilities, their capacity to construct their own knowledge independently and their ability to navigate within the information space. These can be observed, understood and applied through real practical activities.

The project method is always aimed at students' independent activity – individual, paired or group-based work carried out over a specific period of time. In informatics lessons, students who complete projects perform algorithms of specific actions and exercises.

During the process of working on a project, there is close personal interaction between the teacher and the student based on principles of equal partnership, where communication resembles that between friends with more experience and there is no imposition from the teacher. Instead, the student is given sufficient independence. The project method engages the student in activities that lead to a result of interest to them – a result that becomes a strong motivator through work on the project.

By using the project method, a “learning through action” approach is implemented in education and instruction. In the informatics subject, clearly practice-oriented, activity-based teaching formats allow the teaching of topic-related actions during the instructional process. Objective activity refers to operations within a concrete practical task. In specialized subject instruction at the university level, the content of the informatics course is determined by the expansion and deepening of the subject matter. The teacher may define the goal of the subject as a practical outcome obtained through the use of computers, software, application packages or interfaces – something that each student can master during the learning process. This enables the activity to be structured in a way that is aimed at a result that is meaningful to the participant – a product of collective, cognitive and creative labor.

Practical knowledge becomes a purposeful and enjoyable activity. The assimilation of software and computer technologies becomes more meaningful and the students’ work becomes conscious, enthusiastic, pragmatic and cognitively motivated. At the same time, the project method in informatics serves as a way to organize group learning. The process of creative project activity and the intended group cooperation during implementation allows for the cultivation and development of key social qualities in the individual. These include the ability to work in a team, communicate, help one another and move toward a shared goal. The group collectively plans the work and evaluates everyone’s contributions and results.

Thus, based on the conducted analysis and generalizations, the following conclusions have been reached.

The modern Azerbaijani education system is moving away from the traditional presentation of learning outcomes in the form of knowledge and skill acquisition. Today, the education field is undergoing a transition to learning, during which the individual becomes capable of self-determination and self-fulfillment. Among the numerous pedagogical technologies, the project method is the most practice-oriented and its implementation involves a combination of research-based and problem-based approaches. Project-based learning is a didactic system, while the project method, as a pedagogical technology, is a component of that system. It ensures not only the integration of knowledge but also the application of renewed knowledge and the acquisition of new knowledge. Currently, educational projects are classified by researchers based on several criteria: the dominant activity of students, the content area of the topic, the nature of project coordination, the number of participants and the duration of the project. Despite differences in the classification of stages in educational project development, four main stages can be generalized: planning, implementation, presentation and assessment. Thus, for students, project-based learning is an individual or collaborative educational, cognitive, creative or game-based activity that has a clear objective, agreed-upon methods and planned outcomes. A necessary condition for creating an educational project is the final product of the activity, the design stages (developing the concept, determining the objectives and tasks of the project, identifying available and optimal resources for activity, creating plans and programs and organizing steps for implementation), as well as the execution of the project, including its comprehension and reflection on the results.

Project-based learning is gaining popularity in Azerbaijan as a promising approach for enhancing education and equipping students with essential 21st-century skills.

The traditional education system in Azerbaijan, which has focused on memorization and standardized testing, is gradually shifting toward more engaging and student-centered methods.

Project-based learning is emerging as a valuable tool in this transformation, driven by several factors:

**Government initiatives:** The Ministry of Science and Education of Azerbaijan recognizes the potential of project-based learning and actively promotes its integration into the curriculum. Pilot programs and training initiatives are being implemented to equip teachers with the necessary skills and knowledge to apply project-based learning effectively in their classrooms.

**Growing demand for 21st-century skills:** Employers increasingly seek students and graduates with well-developed personal competencies and non-standard thinking. In this context, rapid decision-making, responsible use of ICT technologies and other factors play a crucial role.

Despite the growing interest in project-based learning, some challenges still need to be addressed for its effective implementation in Azerbaijan:

**Limited teacher preparation:** Many teachers lack the training and experience needed to design and implement project-based learning effectively. There is a need for more professional development opportunities to equip teachers with the competencies required for success in this approach.

**Assessment challenges:** Traditional assessment methods often struggle to capture the full spectrum of learning outcomes associated with project-based learning. New assessment strategies that focus on students' progress in areas such as critical thinking, collaboration and problem-solving are needed.

**Resource limitations:** Implementing project-based learning often requires additional resources, such as technology, materials and opportunities for field trips.

Despite these challenges, the potential benefits of project-based learning are undeniable. By offering students opportunities to learn through practical experience and real projects, project-based learning can help prepare them for the challenges and opportunities of the 21st century. As Azerbaijan continues to embrace this innovative approach to education, it is poised to empower students

and equip them with the skills they need to thrive in a dynamic and ever-changing world. Collaborative projects that allow students to work in teams by leveraging the diverse strengths of group members should be encouraged. This not only enhances social interaction but also increases motivation through shared responsibilities and collective achievement.

**The following articles and conference papers reflecting the content, core scientific ideas and results of the dissertation have been published by the applicant:**

1. Mammadova, L. (2020). Project-based learning methods. Azerbaijan School, No. 1, pp. 27–40.  
<https://journal.edu.az/files/2020/%E2%84%961/LalaMammadova.pdf>
2. Mammadova, L. (2020). Factors influencing motivation during distance education. Azerbaijan School, No. 2 (691), pp. 25–36. <http://dx.doi.org/10.29228/edu.238>
3. Mammadova, L. (2020). Use of project-based learning in preparation of education managers: Case of post-Soviet Azerbaijan. Journal of Problem-Based Learning in Higher Education. DOI: <https://doi.org/10.5278/ojs.jpblhe.v8i2.5521>  
<https://journals.aau.dk/index.php/pbl/article/view/5521>
4. Mammadova, L. (2021). The role of project-based learning as the means of formation of student motivation. XXIV Republic conference of doctoral students and young researchers. p. 250-253.
5. Mammadova, L. (2023). The importance of project-based instruction in the formation of learning motivation among students. Academic Journal of History and Thought, 10(2), 498–507.
6. Mammadova, L. The implementation of project-based learning in higher educational institutions. “Modern Research in Science and Education”. Proceedings of the II International Scientific and Practical Conference, Chicago, USA, October 12–14, 2023, pp. 210–214.

7. Mammadova, L., Dadashova, Sh., (2023). Student motivation in project-based learning. Kurikulum, vol 16, N3, p. 80-87
8. Mammadova, L., Akhundov Sh., (2024). Contemporary methods of student motivation in math classes. Kurikulum, vol 17, N2(66), p. 60-66.
9. Mammadova L. The Role of Learning Motivation in the Formation of Learning Activity in Students. Proceedings of the 7th International Scientific and Practical Conference Experimental and theoretical research in modern science. Toronto, Canada 16-18, October, 2024, p. 68-71.

A handwritten signature in blue ink, consisting of several loops and strokes, positioned below the list of references.

The defense will be held on 24 October 2025 at 10<sup>00</sup> the meeting of the Dissertation council FD 2.40 of Supreme Attestation Commission under the President of the Republic of Azerbaijan operating at Nakhchivan Teachers Institute

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It is possible to get acquainted with the dissertation in the Library of the Nakhchivan Teachers Institute.

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