



## PSYCHOLOGICAL MECHANISMS OF DEVELOPING SCIENTIFIC ACTIVITY IN STUDENTS AND ADAPTATION TO THE LEARNING PROCESS

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**Abstract.** This article examines the psychological factors influencing scientific activity and adaptation to the educational process among higher education students. The study highlights the interrelationship between students' involvement in research activities, academic motivation, cognitive processes, self-regulation skills, reflective competencies, and socio-psychological adaptation. Motivational, cognitive, emotional, and communicative factors affecting the development of scientific activity are analyzed. Based on a comparative review of national and international scholarly approaches, practical recommendations are proposed to enhance students' scientific potential and improve the effectiveness of higher education.

**Keywords:** scientific activity, student personality, academic motivation, adaptation to the learning process, reflection, self-efficacy, scientific thinking, cognitive activity, self-regulation, higher education.

**Аннотация.** В данной статье проанализированы психологические факторы научной активности и адаптации к учебному процессу студентов высших учебных заведений. Освещены взаимосвязи между вовлечённостью студентов в научно-исследовательскую деятельность, академической мотивацией, познавательными процессами, навыками саморегуляции, рефлексивными компетенциями и социально-психологической адаптацией. Рассмотрены мотивационные, когнитивные, эмоциональные и коммуникативные факторы, влияющие на формирование научной активности.



На основе сравнительного анализа взглядов отечественных и зарубежных исследователей разработаны научно-практические рекомендации по развитию научного потенциала студентов и повышению эффективности образовательного процесса.

**Ключевые слова:** научная активность, личность студента, академическая мотивация, адаптация к учебному процессу, рефлексия, самоэффективность, научное мышление, познавательная активность, саморегуляция, высшее образование.

**Annotatsiya.** Mazkur maqolada oliy ta'lim talabalarida ilmiy faollik va o'quv jarayoniga moslashuvning psixologik omillari nazariy va amaliy jihatdan tahlil qilingan. Talabalarning ilmiy faoliyatga jalb etilishi, akademik motivatsiyasi, bilish jarayonlari, o'z-o'zini boshqarish qobiliyatlari, refleksiv kompetensiyalari hamda ijtimoiy-psixologik moslashuvining o'zaro bog'liqligi yoritilgan. Shuningdek, ilmiy faollikning shakllanishiga ta'sir etuvchi motivatsion, kognitiv, emotsional va kommunikativ omillar tahlil qilingan. Mahalliy va xorijiy olimlarning ilmiy qarashlari qiyosiy o'rganilib, talabalarning ilmiy salohiyatini rivojlantirish hamda ta'lim samaradorligini oshirishga qaratilgan ilmiy-amaliy tavsiyalar ishlab chiqilgan.

**Kalit so'zlar:** ilmiy faollik, talaba shaxsi, akademik motivatsiya, o'quv jarayoniga moslashuv, refleksiya, self-efficacy, ilmiy tafakkur, bilish faolligi, o'z-o'zini boshqarish, oliy ta'lim.

**Introduction.** The involvement of students in scientific activities is determined not only by individual psychological characteristics, but also by the educational environment and the socio-psychological conditions existing in it. The results of modern psychological research show that the attitude of a student to scientific research is largely related to the academic environment at the university, the quality of interaction with professors and teachers, and the opportunities to participate in



scientific teams [24; 25]. In educational institutions with a positive psychological environment, students strive to freely express their thoughts, put forward new ideas, and draw independent conclusions on scientific problems. Such conditions, in turn, create a sense of psychological security necessary for the development of scientific thinking [7].

A person's success in scientific activity is also closely related to his cognitive needs. The need for knowledge is manifested as a person's internal desire to assimilate new information, understand the essence of phenomena, and expand existing knowledge. In psychology, this need is recognized as one of the most important sources of personal activity [10; 12]. The development of the need for knowledge during student life creates a solid foundation for the formation of scientific interests. Scientific interest, in turn, forms the psychological basis of research activities. Therefore, in the process of higher education, it is of particular importance to teach students not to assimilate ready-made knowledge, but to independently search for new knowledge [3; 4].

Emotional factors also play a significant role in the development of scientific activity. The student's satisfaction with scientific research and the experience of positive emotions in the process of achieving new results have a strong motivating effect on his further activity. On the contrary, excessive anxiety about failures, negative perception of criticism or doubt in one's own abilities can lead to a decrease in scientific activity. Therefore, the development of psychological stability, emotional intelligence and stress resistance in students is one of the important factors in increasing the effectiveness of scientific activity [16; 34].

The issue of academic stress is one of the most studied problems in the study of students' adaptation to the educational process today. In the early stages of higher education, students face difficulties associated with new requirements, a large amount of independent work, forms of control and time allocation. Studies show that during the adaptation period, a normal level of stress can stimulate activity, but its



excessive increase reduces the effectiveness of academic activity [21; 22]. Especially since scientific activity is a complex intellectual process, high levels of anxiety and emotional tension have a negative impact on the effectiveness of scientific thinking [19].

Communicative competencies are also of particular importance in the formation of students' scientific activity. Scientific activity, while being an individual process, is also a social activity carried out through scientific communication. Writing scientific articles, giving lectures at conferences, participating in scientific discussions, and presenting research results require the development of communicative skills [13]. In this regard, the development of students' speech culture, skills of expressing ideas in a scientific style, and communication competencies serves to increase the effectiveness of scientific activity [5].

Today, the widespread introduction of digital technologies in the higher education system is fundamentally changing the content and forms of scientific activity. Electronic libraries, international scientific databases, scientific platforms, and artificial intelligence tools are creating new opportunities for students. However, the effective use of these opportunities requires a sufficiently developed level of information literacy and critical thinking competencies [29; 40]. The student must be able to select information available on the Internet, assess its scientific reliability, and use the information obtained in compliance with scientific ethics [23].

Another important aspect of the digital environment is that it enhances students' independent learning activities. Independent learning, in turn, requires the development of self-management, self-control, and self-evaluation skills. According to B. Zimmerman's theory of self-managed learning, a successful student clearly defines his goals, develops strategies for achieving them, and regularly analyzes the results of his activities [18]. Students with such characteristics also achieve high results in scientific activities.



Reflection plays a special role in the development of students' scientific activity. Reflection represents a person's ability to understand and evaluate his own thoughts, actions and results of his activities. Each stage of scientific activity - choosing a problem, setting goals, determining methods, analyzing results and drawing conclusions - is inextricably linked with reflective processes [11]. A student with developed reflective thinking critically approaches scientific problems, is able to see his mistakes and strives to improve his activities..

Analysis of the relationship between students' scientific activity and adaptation to the educational process shows that these two phenomena complement each other. Successful adaptation creates a favorable psychological environment for scientific activity, and scientific activity accelerates the student's integration into the academic environment [24; 25]. As a result of engaging in scientific research, a student develops such qualities as a sense of responsibility, independence, critical thinking, and professional identity [16; 17]. This increases his/her activity in the educational process and expands his/her opportunities for academic success..

Thus, scientific activity and adaptation to the educational process in higher education students are complex, multifactorial and interrelated psychological processes. Their development occurs as a result of the harmonious influence of motivational, cognitive, emotional, communicative and reflexive factors. In the modern higher education system, the development of complex psychological and pedagogical approaches aimed at developing students' scientific potential, forming research competencies and ensuring their successful adaptation to the academic environment remains an urgent task [17; 24; 25].

The effective solution of this task will serve to train specialists with developed scientific thinking, who will be able to put forward innovative ideas and make a worthy contribution to the development of society in the future.



## CONCLUSION

Summarizing the theoretical analyses and scientific views, it was found that scientific activity and adaptation to the educational process in higher education students are complex psychological phenomena that are inextricably linked to each other. A student's success in scientific activity is determined not only by his intellectual potential, but also by his academic motivation, cognitive needs, self-management skills, reflexive thinking, emotional stability, and the level of socio-psychological adaptation. During the study, it was found that internal motivation is one of the leading factors in the formation of scientific activity. The student's need for scientific knowledge, the desire to acquire new knowledge, and goals aimed at professional development increase his activity in research activities. At the same time, self-efficacy, critical and creative thinking, independent decision-making, and reflection skills are important psychological determinants that ensure the effectiveness of scientific activity.

It was also found that the successful adaptation of a student to the higher education environment creates a favorable psychological environment for scientific activity. Students who are integrated into the academic environment, are able to establish effective communication with professors and peers, and understand the essence of the educational process are more actively involved in scientific research. On the contrary, difficulties in the adaptation process, academic stress, and decreased motivation can lead to a decrease in scientific activity. Analysis of domestic and foreign studies has shown that in the development of scientific activity, along with the individual characteristics of the individual, the scientific environment created in the educational institution, the mentoring system, the activities of the scientific supervisor, and the availability of a modern information and resource base are also important. In particular, the effective use of digital educational technologies and international scientific databases serves to develop students' scientific outlook and research competencies.



Based on the above, in order to develop the scientific activity of students in higher educational institutions, it is advisable to implement comprehensive programs aimed at early involvement in scientific research activities, expanding the activities of scientific circles and projects, improving the mentoring system, supporting independent learning and reflective activity, as well as psychologically supporting the academic adaptation of students. In general, the development of scientific activity and adaptation of students to the educational process is one of the priority tasks of modern higher education, and the effective organization of these processes will serve to prepare competitive specialists with high intellectual potential, independent thinking, able to put forward innovative ideas and make a worthy contribution to the scientific and social development of the country.

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