

ACADEMIC INTEGRITY AMONG NATURAL SCIENCES STUDENTS IN PRESENT CONDITIONS

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Summary

The article is devoted to the study of academic integrity in the context of scientific research conducted by students of natural science disciplines. It analyzes the current state of formation and implementation of academic integrity principles in student research activities, which are an essential part of the educational process and aim to develop practical skills necessary for future professional practice. The study identifies factors that contribute to violations of academic integrity, as well as opportunities to uphold its principles under challenging learning conditions.

Various types of student research activities were examined to determine where breaches of academic integrity and instances of plagiarism are most commonly observed. It was found that the highest number of violations occur during the preparation of written term papers. Key reasons for students' dishonest behavior include the mistaken belief that "plagiarism is not a problem" and the lack of understanding that academic misconduct harms both personal development and the future of the country.

The article emphasizes the importance of introducing academic integrity concepts at the school level by explaining the consequences of violations, and of actively promoting the culture of academic honesty throughout all types of student activities in higher education institutions.

The findings show that a well-structured, consistent, and step-by-step educational process that adheres to the norms and standards of academic practice significantly reduces the likelihood of academic integrity violations among students of natural sciences.

Key words: academic integrity, plagiarism, research work, natural sciences.

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1. Introduction

Scientific research holds a critical place in the academic training of students pursuing natural science disciplines, serving as a cornerstone for cultivating high-level professional competence. Through research engagement, students acquire essential practical skills, enhance their creative thinking, and integrate cutting-edge scientific and technological developments into their learning. Amid the ongoing full-scale war in Ukraine, the educational landscape has significantly shifted, prompting a reevaluation of the feasibility of upholding academic integrity in such extraordinary learning environments.

Within the academic community, academic integrity is broadly acknowledged as a fundamental pillar of quality education. A coherent, methodically structured educational framework that aligns with the standards of academic programs promotes ethical conduct in all aspects of learning. It supports the internalization of values such as responsible academic behavior, originality, and strict adherence to intellectual honesty.

Undergraduate curricula and academic programs require students to engage in research activities as a means of mastering their chosen disciplines. These tasks progressively increase

in complexity throughout the learning journey, deepening their theoretical understanding and facilitating the effective application of knowledge in future professional practice.

In this context, adherence to academic integrity becomes particularly vital in student research. This underscores the need for comprehensive exploration into the mechanisms through which academic honesty is cultivated and sustained within the research practices of students in the natural sciences.

Analysis of current research. The issue of academic integrity has become the subject of active scholarly inquiry in both national and international academic contexts. Contemporary researchers view academic integrity as a crucial component of quality education and the sustainable development of educational institutions. In particular, the legal aspects of academic integrity are addressed in the works of (*Nedohibchenko Ye., 2017*) and (*Maslova N.H., 2017*).

The challenges of implementing integrity principles in higher education and their role as a foundation for the sustainable functioning of universities are explored in the studies of (*Finikova, T.V., Artyukhova, A.E. Takson, 2016*), and (*Dobko T., 2008*), (*Satsyk V., 2017*), (*Feketa Ir., Slavyk R., 2022*) investigates academic integrity as a tool for ensuring educational quality.

A separate line of research focuses on analyzing international experience in the implementation of academic integrity. (*Batechko N., Durdas A., 2019*), and (*Soroka, N. I., 2017*) have contributed to this area.

Given that professional competencies of students in natural sciences include sustainable development, environmental reasoning, the ability to forecast natural processes, and analyze the state of the environment, there is a growing need to examine academic integrity in the context of student research activities. This enables academic integrity to be seen not only as an educational component, but also as a mechanism for shaping a responsible scientific mindset among future professionals.

The aim of the study is to explore the process of forming academic integrity among students of natural science disciplines during the completion of research tasks, which are viewed as a fundamental element of both educational and scientific activity in higher education institutions.

The research methodology involves the application of analysis, systematization, and comparison of data from scientific and pedagogical literature, regulatory frameworks, and legislative documents. A content analysis of various types of student research activities was also conducted in the context of compliance with the principles of academic integrity.

2. Main part

According to the Law of Ukraine "On Higher Education," higher education is defined as an integrated system of knowledge, skills, competencies, modes of thinking, professional and civic qualities, ethical values, and other attributes acquired at higher education institutions in a specific field of study at a level exceeding that of secondary education (*Zakon Ukrainy Pro osvitu, 2017*). The Law "On Education" further defines academic integrity as a set of ethical principles and established rules to be followed by all participants in the educational process during teaching, learning, and research, to ensure trust in learning outcomes and scientific achievements (*Zakon Ukrainy «Pro vyshchu osvitu», 2014*).

In accordance with Article 42 of the Law of Ukraine on Higher Education, all higher education institutions are taking measures to prevent breaches of academic integrity. These include the development of institutional policies, codes of ethics, the creation of quality assurance

centers, participation in educational seminars, and more. Such actions contribute to building a strong foundation of academic integrity within the university environment (*Kodeks akademich-noi dobrochesnosti natsionalnoho ahentstva iz zabezpechennia yakosti vyshchoi osvity*, 2021).

The educational and research level of higher education involves acquiring knowledge and competencies necessary for generating new ideas, solving complex professional and scientific problems, mastering scientific methodology, and conducting original research with theoretical and practical significance.

Students must develop research skills throughout their academic journey. These skills ensure quality professional training and help students adapt to current labor market demands, especially in terms of applying innovative technologies and approaches in professional practice while upholding academic integrity, as stipulated by the Law on Higher Education (*Zakon Ukrainy «Pro vyshchu osvitu»*, 2014).

For students in natural science disciplines, research activity holds particular significance as it involves exploring natural environments through experiments, modeling, mapping, forecasting, and other methods. Mastery of research methods enables students to apply scientific achievements in the rational use of natural resources, analyze environmental changes, and contribute to addressing environmental and economic challenges.

Student research activities should align with the content of educational programs. Students must acquire proficiency in methods of both field and theoretical investigations, including comparative geographical analysis, cartography, systems analysis, synthesis, and cluster analysis.

One of the key forms of student research is the laboratory work conducted within academic disciplines. These sessions are designed to verify theoretical concepts through hands-on experimentation. The independent completion of lab tasks, reporting, and oral defense promotes individual responsibility and prevents violations of academic integrity. Final grades for laboratory work contribute to overall course assessments, making this format clear, transparent, and accountability-driven.

Academic integrity should also be evident during the preparation of essays and term papers. However, plagiarism often occurs in these types of tasks. Contributing factors include habits formed during secondary education, low motivation, and a lack of understanding of the consequences of dishonest behavior. To mitigate this, educators should propose modern, engaging topics that spark student interest and encourage original thinking.

The preparation of term papers within natural sciences typically forms part of the general training cycle, covering both mandatory and elective components. Therefore, academic integrity must be fostered throughout the entire educational process, from general to professional training.

Scientific research in professional fields is closely integrated with academic and industrial internships. Theoretical knowledge acquired during coursework is reinforced during practice at research institutions, environmental organizations, government agencies, tourism institutions, and more. Students develop fieldwork skills and master analytical methods for environmental assessment. Practice also cultivates values aligned with the preservation of scientific, cultural, and ethical achievements, as outlined in educational standards.

At the end of each internship, students prepare and defend a report based on their observations and analysis. Motivation for maintaining academic integrity during internships is typically high, as these experiences are directly tied to the students' professional growth. Such forms of academic activity rarely provoke dishonest behavior.

Outside the formal curriculum, student research includes participation in scientific clubs, conferences, contests, seminars, forums, and specialized programs. These activities attract

motivated students with scientific curiosity and analytical thinking, fostering step-by-step research development. Their collaboration with academic mentors strengthens the foundation of academic integrity in natural science disciplines.

The most common violations of academic integrity occur during the writing of course papers and qualification theses. To detect plagiarism, certified tools approved by the Ministry of Education and Science of Ukraine—such as Unicheck, StrikePlagiarism, and Plagin—are widely used (*StrikePlagiarism.com Plagiat.pl. [Software StrikePlagiarism.com Plagiat.pl.]*). These tools are effective in reducing instances of academic dishonesty.

Dishonest behavior may result from several factors. First, students often retain the belief, developed in secondary school, that "plagiarism is not a problem" and that it will go unnoticed. Second, a lack of confidence in their knowledge undermines their ability to produce original work. Third, students may not fully realize that violating academic integrity harms both their personal future and the broader society.

To prevent such violations among natural science students, these issues must be addressed at the root. It is essential to integrate academic integrity education at the school level, emphasizing the consequences of violations, and to maintain active promotion of academic honesty across all forms of student activity in higher education institutions.

3. Conclusions

The analysis of academic integrity formation during the research activities of students in natural science disciplines leads to the conclusion that a consistently structured and step-by-step educational process—conducted in accordance with the established norms and principles of the academic and scientific environment—significantly minimizes or eliminates the risk of academic dishonesty. Key factors contributing to academic misconduct include falsification of research results, irresponsible attitudes toward learning, and inadequate assessment of students' knowledge and performance.

Among the various forms of student research activity, the highest incidence of academic integrity violations occurs during the writing of term papers and qualification theses. This highlights the need for enhanced oversight, methodological support, and student motivation aimed at encouraging independent and honest academic work.

At the same time, a positive trend is emerging: an increasing number of students are recognizing the value of knowledge as a strategic asset for personal development, professional growth, and contributing to the advancement and rebuilding of Ukraine—particularly in the current context of war and societal transformation.

Further research directions should focus on an in-depth exploration of students' motivational factors for maintaining academic integrity, the development of effective educational strategies for preventing misconduct, and comparative analysis of international practices in fostering a culture of academic honesty.

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