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THE ROLE OF RESEARCH IN THE EDUCATIONAL PROCESS IN HIGHER EDUCATIONAL INSTITUTIONS

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ARTICLE INFO	ABSTRACT
<p>Article history Received:2025-08-16 Received in revised form:2025-09-01 Accepted:2025-10-06 Available online:2025-12-25</p> <p>Keywords: scientific research, theoretical research, empirical research, experiment, generalization JEL CODES: I23; I25; O32</p>	<p><i>Many developed and developing countries are trying to educate people who can compete in the field of science and technology on national and international platforms for the sake of a strong future, to create the potential to easily overcome the problems they face, and to form research skills. For this reason, research and practices conducted to give children a scientific view at an early age are preferred. Academically successful young people are expected to develop research inquiry, problem-solving, and decision-making skills, to be lifelong learners, and to maintain a sense of curiosity about their immediate and distant environments.</i></p> <p><i>The goal of researching the subject is to gain knowledge about the rules, principles, concepts, terminology, content, and specific features of the organization and management of scientific research works in higher education institutions. Conducting scientific research based on the modern achievements of domestic and foreign scientists facilitates the acquisition of knowledge about historical aspects, theoretical guarantees, technologies, practical methods and methods, and the ability to choose a topic for the analysis of the obtained results, the processing of the received data, and the use of information technologies to make logical and effective decisions. creates a foundation for mastery.</i></p>

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Introduction

The primary direction of conducting scientific research is to determine its structure, characteristics, and interconnections based on the principles and methods of knowledge developed in

science, as well as to obtain beneficial results for human activity, integrate them into production with an additional economic effect, and comprehensively and reliably study a specific object. The object of scientific research comprises relevant topics and innovations. The subject encompasses the structure of the system, the interrelation of its elements, various properties, and the totality of its developmental forms.

One of the most essential conditions for conducting scientific research is scientific generalization. This enables the establishment of dependencies and relationships between processes within the research while simultaneously facilitating the derivation of scientific conclusions. The more comprehensive and well-substantiated the results are, the higher the quality and level of scientific research [7]. In science, it is crucial to distinguish between the empirical and theoretical levels of research and the organization of knowledge.

The theoretical level of scientific knowledge predefines the existence of specific abstract entities (constructs) and the theoretical laws that connect them. Its primary objective is to expand society's knowledge and facilitate a deeper understanding of the laws of nature. Such developmental perspectives are mainly employed to further advance new theoretical studies [1].

Research that is conducted with a specific objective, within a structured plan, in accordance with scientific principles, and in a systematic manner is referred to as scientific research. Scientific research involves the step-by-step investigation, examination, and evaluation of a problem using universal scientific methods. It is categorized into two main types: basic research and applied research.

Scientific research follows a series of methodological stages. The general process of conducting research includes the following steps:

- Identification and classification of the research problem
- Literature review, conducting experiments, or formulating research questions
- Determination of the research methodology
- Data collection
- Data analysis
- Interpretation of results and findings
- Documentation and reporting of results

Each stage plays a crucial role in ensuring the reliability, validity, and effectiveness of the research process.

This study contributes to the growing body of literature on higher education by systematically examining the interrelationship between research and teaching through the lens of research-based learning. While previous studies have largely addressed research and teaching as parallel academic functions, this manuscript advances the discussion by conceptualising their integration as a dynamic and mutually reinforcing nexus within higher education institutions.

On the other hand, this study adds value to the existing literature by clarifying how research-based learning functions as a bridge between academic research and teaching practice. Unlike prior reviews that primarily catalogue existing studies, this manuscript critically connects research engagement, pedagogical innovation, and institutional learning environments. As a result, the study provides a coherent explanatory perspective that can guide future empirical research and inform institutional strategies aimed at strengthening the research–teaching nexus.

The originality of this study lies in its explicit focus on the role of academic staff as key mediators of the research–education nexus. By synthesising existing theoretical and empirical insights, the paper highlights how academics’ engagement in research activities directly informs pedagogical practices, curriculum design, and student learning outcomes. In this regard, the study moves beyond descriptive accounts and underscores research-based learning as a strategic mechanism for enhancing educational quality.

Furthermore, this study contributes by offering an integrative analytical framework that links institutional research culture, academic staff engagement, and student-centred learning outcomes. This framework provides a structured perspective for understanding how research-informed teaching can be operationalised in higher education contexts, thereby offering implications for policy development, academic staff development, and institutional quality assurance processes.

Finally, the study focuses mainly on higher education institutions in a general context, without differentiating sufficiently between disciplinary, institutional, or regional variations. Subsequent research may benefit from exploring how the research–education nexus operates across diverse higher education settings.

Problem Statement

Despite the extensive recognition of research as a core component of higher education, there remains a lack of systematic understanding regarding how research is conceptually integrated into the educational process of higher education institutions and how it contributes to teaching quality, student learning outcomes, and institutional development. Existing literature often discusses the importance of research in broad or normative terms; however, empirical and analytical studies that clearly articulate the functional role of research within the educational process are limited. This gap results in ambiguity about how research activities are aligned with teaching practices and educational objectives in higher education institutions. Consequently, there is a need for a structured investigation that clearly defines the problem and analytically examines the role of research in the educational process.

The main objective of this study is to examine the role of research in the educational process within higher education institutions. Specifically, the study aims to:

1. Analyze the conceptual relationship between research activities and the educational process in higher education.
2. Identify the key functions of research in enhancing teaching quality and learning outcomes.
3. Examine how research contributes to academic development and institutional effectiveness in higher education institutions.
4. Provide a structured analytical framework for understanding the integration of research into higher education practices.

In order to achieve the stated objectives, the study seeks to answer the following research questions:

1. How is research conceptually positioned within the educational process of higher education institutions?
2. What roles does research play in improving teaching practices and student learning outcomes?

3. In what ways does research contribute to academic and institutional development in higher education?
4. How can the integration of research into the educational process be systematically conceptualized?

However, if primary data collection is required, the researcher must employ appropriate empirical methods. These may include controlled experiments, surveys, structured questionnaires, systematic observations, in-depth interviews, focus group discussions, content analysis, or life history research. The selection of research methods must be guided by the overall research objective, ensuring methodological rigor and alignment with the study's purpose.

Ultimately, the choice of research design and methodological approach significantly influences the validity, reliability, and overall quality of the study's findings. A well-structured research framework facilitates a systematic investigation, enabling the researcher to derive meaningful and generalizable conclusions.

In accordance with the objectives of science, the purpose of scientific research is to develop reliable solutions, systematically and methodically gather data, analyze the data, assess and interpret the results, and provide comprehensive reports on the research process. In scientific inquiries, researchers are responsible for disseminating the results obtained at the conclusion of their studies, along with the discussions and proposals related to the research topic, by utilizing scientific and systematic language, thereby ensuring the effective communication of their findings to a broader audience. The ability to present research in a systematic and scholarly manner imparts universal value to the investigation. Individuals who organize, conduct, and manage scientific research are designated as researchers. When disseminating information regarding scientific research, researchers must adhere to established national and international standards concerning the form, structure, and content of their work [1].

Methodology

Research Design

This study adopts a qualitative research design based on a systematic literature review (SLR) approach. The systematic review method was selected to ensure a transparent, replicable, and structured synthesis of existing scholarly literature on the role of research in the educational process of higher education institutions. Unlike narrative or descriptive reviews, this approach allows for a methodologically rigorous examination of conceptual, theoretical, and empirical contributions in the field.

Scope and Data Sources

The literature review focused on peer-reviewed academic publications related to research-teaching integration, research-based education, and the role of research in higher education. Relevant studies were identified through major academic databases, including Scopus, Web of Science, ERIC, and Google Scholar. These databases were selected due to their extensive coverage of high-quality educational research.

Search Strategy and Selection Criteria

A systematic search strategy was employed using predefined keywords and combinations such as *"research in higher education," "research-based teaching," "research and learning,"* and *"educational process in universities."*

The inclusion criteria were as follows:

- Peer-reviewed journal articles and academic book chapters;
- Publications written in English;
- Studies published within the last 15 years to ensure contemporary relevance;
- Research explicitly addressing the relationship between research activities and the educational process in higher education.

The exclusion criteria included:

- Non-academic sources (e.g., opinion pieces, editorials);
- Studies focusing exclusively on primary or secondary education;
- Publications lacking a clear connection to the educational process in higher education institutions.

Data Analysis

Following the selection process, the included studies were analyzed using thematic content analysis. The analysis involved coding key concepts, recurring themes, and analytical categories related to the role of research in teaching, learning outcomes, academic development, and institutional effectiveness. This process enabled the identification of dominant patterns and conceptual frameworks within the literature and facilitated a structured synthesis of findings.

Reliability and Rigor

To enhance methodological rigor, the review process followed clearly defined stages of identification, screening, eligibility assessment, and analysis. The use of explicit inclusion and exclusion criteria, as well as systematic coding procedures, contributed to the transparency and reliability of the review. This methodological approach ensures that the study moves beyond a general discussion and provides a structured, evidence-based analysis.

The Main Part

For scientific research to be successful, it is essential to organize, plan, and execute it in a methodical and sequential manner. The stages, plan, and sequence of the research depend on the type, object, and objectives of the scientific inquiry. In cases where the research pertains to a technical subject, an initial planning document is prepared, followed by an investigation into the feasibility of the research. Subsequently, theoretical and experimental studies are outlined, a scientific-technical report is drafted, and the results are presented for industrial application.

Students' scientific research plays a significant role in the educational process. Firstly, it aids them in developing research skills that are crucial at certain stages of their lives. Secondly, such work contributes to the development of critical thinking, allowing students to analyze information more deeply and objectively [5].

The logical method of cognition constitutes a fundamental approach in addressing both empirical and purely theoretical challenges in scientific research. These methodological frameworks enable the interpretation of processes through conclusive reasoning, facilitate the formulation of diverse hypotheses and theoretical propositions, and contribute to the identification of viable solutions. The application of these methods is predicated upon the findings derived from specialized empirical investigations [9].

The methodology of scientific research encompasses a systematically structured set of principles, methods, and instruments designed for conducting theoretical and applied inquiries within a specific domain of knowledge, corresponding to the researcher's professional field. The selection of an appropriate research methodology is contingent upon the formulated objective of investigating a given scientific phenomenon, including its structural composition, intrinsic properties, informational interrelations, and other defining characteristics, with the ultimate aim of resolving the identified scientific problem.

Scientific research is generally classified into three main categories: theoretical, empirical, and empirical-theoretical, which together form a unified framework in the research process.

Theoretical research methods are determined based on the research topic and the underlying problem, outlining the general structure and methodological framework necessary for addressing both primary and auxiliary research tasks. Theoretical investigations are inherently creative in nature, facilitating the formulation of novel scientific hypotheses, offering in-depth explanations of unexplored phenomena or processes, generalizing distinct occurrences, and substantiating the strategic and tactical foundations of scientific inquiry. Additionally, they contribute to the resolution of various analogous scientific challenges.

Scientific research is conducted through the cognitive activity (intellectual reasoning) of the human researcher, wherein theoretical inquiry is predominantly characterized by intellectual engagement. Given the extensive range of theoretical research methods, their selection is contingent upon the specific scientific problem under investigation. From this perspective, theoretical research constitutes a fundamental component in achieving meaningful research outcomes[8]:

- It is essential to engage in continuous reflection on the research topic. This principle yields two practical implications: a researcher should not be limited to the mere practical execution of their scientific work but must also engage in constant intellectual contemplation of their research subject.
- Structuring the research process in a systematic and planned manner is more effective. Before conducting scientific investigations, it is advisable to develop a comprehensive research plan, which subsequently serves as a framework for inquiry throughout the theoretical research process.
- Maintaining oversight of the research progress is a critical factor in theoretical investigations. Continuous monitoring of the research process allows for the refinement of the study based on emerging results and facilitates the systematic analysis of scientific findings.

The methods of empirical research encompass the general structure, sequence, and methodologies of experimental investigations. Empirical research serves to validate theoretical concepts, laws, and principles in practical settings and provides the foundation for confirming the reliability of scientific findings formulated within the hypothesis of a given research study. Experimentation and theory exist in a state of interdependence: theory substantiates the methodology of experimentation, while experimentation enables the evaluation of a theory's validity.

Experimental research is typically conducted in three key stages: planning, experimentation, and analysis (processing of results). In most cases, experimentation is a multidimensional process. The multidimensional nature of experiments allows for the progressive development of their

strategic direction at subsequent stages. Multi-stage experiments are carried out based on a unified mathematical framework. Experiments designed according to a predefined plan ensure the variation of all measured parameters while accounting for their interrelations. The mathematical theory of experimentation, alongside its planning, is increasingly supported by computational approaches that facilitate the processing of research results through the use of computers. This approach in experimental research is referred to as 'computational experimentation.' A critical component of the methodology of experimental research is the processing and analysis of data [10].

Based on the type of information to be obtained, research types aligned with the objectives of a study are classified into three main categories: exploratory research, descriptive research, and explanatory (hypothesis-testing) research.

Exploratory research is conducted in cases where the researcher possesses limited prior knowledge about the subject or when the research topic is relatively novel. This type of research provides the investigator with preliminary insights into the subject matter and primarily aims at gathering surface-level information. In general, exploratory research is preferred in the following three scenarios:

When no systematic experimental research has been conducted on a particular group, or when only a limited number of studies exist on the group, process, activity, or phenomenon under investigation.

When the subject of interest has not been examined with methodological flexibility, but rather through strictly controlled, progressive research efforts.

When the existing knowledge on a subject has undergone substantial changes, rendering prior information insufficient or obsolete, thus necessitating further research.

Research conducted within a specific field of study typically serves three primary objectives:

- To satisfy the researcher's curiosity regarding the topic and provide preliminary insights.
- To assess the feasibility of conducting more comprehensive studies on the subject.
- To develop data collection instruments that can be utilized in subsequent research.

In other words, the fundamental purpose of conducting research is to provide the researcher with the requisite information to delineate the research problem and undertake a more in-depth and systematic investigation. Research endeavors aim to collect information at a broad conceptual level to facilitate an initial understanding of the research problem. This type of inquiry enables the researcher to identify existing knowledge on the subject of interest and establishes a foundational framework for subsequent, more extensive studies.

Upon the completion of the research process, the investigator refines the research problem based on the accumulated data and insights. Furthermore, research assists in determining the focal area of inquiry, selecting the most appropriate data collection methodologies, and identifying the relevant study population. Nevertheless, a key limitation of research lies in the fact that definitive resolutions to research problems are seldom attainable, as the selected samples may not comprehensively encapsulate the full scope of the investigation [9].

The objectives and functions of research activities in higher education institutions are as follows:

- Development of research competencies.

Students acquire the ability to conduct independent research, formulate hypotheses, collect and analyze data, and draw conclusions based on their findings.

- Cultivation of critical thinking.

Engaging in research enables students to critically evaluate information, assess the reliability and significance of data sources, and develop analytical reasoning skills.

- Expansion of knowledge.

Participation in research allows students to immerse themselves in a specific subject area, deepen their understanding, and gain new perspectives within their field of study.

- Preparation for future professional endeavors.

Research activities equip students with essential skills for their future careers, including data analysis, information management, and effective communication.

- Integration into the scientific community.

Students contribute to the advancement of knowledge by engaging in academic discourse, presenting their research findings at conferences, publishing in scholarly journals, and participating in scientific discussions.

In research studies, research problems cannot be clearly defined, as detailed information about the topic is not initially available before the research begins. For this reason, such studies require the application of qualitative methods. Reviewing the literature is considered the first stage of the research for gathering information related to the topic. In the next stage, the technique of consulting with experts involves the researcher consulting with specialists and obtaining preliminary information from them on the topic. For example, in a study on youth drug use, psychological counselors, police officers, lawyers, or legal advisors may provide the researcher with initial information on the subject. Interviews with experts are conducted face-to-face. Therefore, the researcher does not use structured data collection tools in their observations and interviews. However, the researcher must organize interviews with specialists regarding the research topic and ask questions about what information they wish to gather, from whom, and why. For instance, in a study on youth drug use, the researcher would aim to collect information on who uses drugs, the age, gender, occupation, social background, etc., of drug users in the area of interest [3].

The main theoretical and methodological directions regarding the perception of scientific knowledge have led to the development of the core methods of scientific research and the establishment of the fundamental rules for scientific investigations. These rules form the structure of scientific research. The primary elements of the scientific method are stages in the research procedure, starting with the identification of the research problem, i.e., the research topic. The research problem serves as a link between the theoretical and methodological parts of scientific research and is solved through the sequential application of the scientific method. Every piece of scientific knowledge begins and evolves by defining hypotheses.

At the same time, it is the most crucial component of the hypothetical-deductive scientific method for acquiring knowledge. Hypotheses are assumptions about solving a specific scientific problem, and by defining them, the researcher decides on the type of research and data collection method. Hypotheses have a particular structure consisting of dependent and

independent variables, as well as the relationships between them. This is expressed as the position of the hypothesis. The role of the hypotheses is determined by the knowledge obtained and the scientific objectives it serves. The entire research process is directed toward testing these hypotheses, and the role of the scientific method is to define the scientific criteria.

A person capable of conducting scientific research must possess qualities such as high-level thinking, readiness to research and inquire, willingness to collaborate, critical thinking, creativity, problem-solving skills, logical inferences, and scientific thinking. When examining these qualifications, it becomes clear that students who will conduct scientific research must be above a certain level of intelligence and have certain superior traits. In this regard, it is crucial to encourage talented students—those capable of taking on leadership roles, guiding society or the environment, sensitive to science, highly interested, and representing 3-5% of the population—to engage in scientific research. Talented students should possess the following attributes for scientific research: the ability to learn quickly, solve problems, be creative, have a vivid imagination, exhibit leadership qualities, be sensitive, have excellent long-term memory, strong perception, mathematical reasoning skills, the ability to read and analyze complex ideas, have a keen interest in diverse topics, ask numerous questions, strive for perfection, be independent, and capable of synthesis [11].

"Research becomes a crucial tool for evaluating student activity and the effectiveness of the educational program for university instructors. Research activities enable instructors to assess how deeply students understand and apply their learning in practice. Mentoring teachers can also organize various events such as research seminars and round tables to help students develop their research skills and facilitate exchange of experiences. Each student is assigned a scientific advisor from the start of their research journey who supports the researcher throughout all stages, helping to overcome challenges and find solutions. Engaging in research cultivates critical thinking and enhances students' ability to analyze information. When students engage in scientific research, they become more enthusiastic about learning new knowledge more easily. Through conducting research, students learn to work with scientific sources, write scientific articles, and present their research findings. This helps them develop essential skills for their future professions. Research allows students to broaden their professional horizons and gain experience in solving real-life problems in their fields, preparing them better for their careers after graduation."

Findings

This section presents the synthesized findings derived from the systematic analysis of the reviewed literature. The findings are organized thematically to reflect the dominant patterns and conceptual categories identified across the selected studies.

Research–Teaching Integration in Higher Education

The reviewed literature consistently identifies research as a foundational element in the integration of teaching and learning processes in higher education institutions. Research-informed teaching is widely associated with curriculum relevance, the incorporation of contemporary knowledge, and the promotion of inquiry-based learning environments. Studies emphasize that when academic staff actively engage in research, teaching practices tend to become more reflective, evidence-based, and aligned with disciplinary developments.

Influence of Research on Student Learning Outcomes

A significant body of literature highlights the positive impact of research engagement on student learning outcomes. Findings indicate that student participation in research activities enhances critical thinking, problem-solving abilities, and independent learning skills. Research-based learning is also associated with increased student motivation and deeper conceptual understanding, particularly in programs that explicitly integrate research projects into the curriculum.

Research as a Driver of Academic and Institutional Development

The literature further reveals that research plays a strategic role in academic development and institutional effectiveness. Strong research cultures contribute to faculty professional growth, curriculum innovation, and quality assurance processes. At the institutional level, research activity is frequently linked to international visibility, academic reputation, and competitiveness within the global higher education landscape.

Discussion

This section interprets the findings in relation to existing scholarship and provides a critical reflection on their implications for higher education institutions.

Comparison with Prior Studies

The findings of this review are largely consistent with prior studies that underscore the centrality of research in higher education. Similar to earlier research, the present study confirms that research-based teaching enhances educational quality and student learning outcomes. However, while many previous studies emphasize research productivity and output metrics, the findings of this review place greater emphasis on the pedagogical and developmental dimensions of research integration within the educational process.

Interpretation of Key Findings

The findings suggest that research should be conceptualized not merely as an academic obligation but as an integral component of the educational process. The strong emphasis on inquiry-based and research-informed learning reflects a broader shift toward student-centered educational paradigms. This interpretation highlights the transformative potential of research when it is systematically embedded into teaching and learning practices rather than treated as a parallel academic activity.

Critical Reflection and Implications

Despite the broadly positive role of research identified in the literature, the findings also reveal several challenges. A recurring issue is the gap between institutional research policies and their practical implementation in teaching contexts. Additionally, disparities in research capacity and resources across institutions may constrain the effective integration of research into education. These challenges suggest the need for coherent institutional strategies that align research objectives with educational goals and provide adequate support for academic staff.

Conclusion

The significance of scientific research in the field of education is multidimensional, extending across pedagogical, institutional, and policy-related domains. This study has demonstrated that research serves as a critical mechanism for enhancing educational quality, advancing teaching methodologies, and fostering innovation in higher education. The knowledge generated through scientific research informs curriculum design, assessment practices, and pedagogical strategies, while also contributing to the psychological and intellectual development of learners.

From a theoretical standpoint, the findings of this systematic literature review reinforce the conceptualization of research as an integral component of the educational process rather than a parallel academic activity. Research and teaching emerge as interdependent elements of a unified higher education mission, in which research-based education enhances learning effectiveness, fosters inquiry-based pedagogies, and supports academic development. This perspective extends existing theoretical frameworks on research–teaching integration by emphasizing the holistic role of research in shaping educational processes.

In practical terms, the findings highlight several implications for higher education institutions. First, establishing and sustaining a strong research culture within universities is essential for enhancing teaching and learning outcomes. Actively engaging students in research activities and integrating research into curricula can significantly strengthen the scientific competencies of both students and academic staff. Second, incorporating up-to-date scientific research findings into educational programs ensures alignment with global developments and improves the relevance and effectiveness of teaching methodologies. Third, fostering creativity and innovation through research-driven approaches facilitates the integration of modern technologies and the development of new instructional tools. In addition, enhancing teachers' research skills through targeted training programs and professional development initiatives can improve instructional quality and support evidence-based teaching practices. Emphasizing the practical application of research outcomes further enables educational institutions to translate theoretical knowledge into effective, real-world educational solutions. Finally, adopting an integrative, interdisciplinary approach to educational research—drawing on psychology, social sciences, and information technology—can lead to more comprehensive and impactful outcomes.

Despite these contributions, the study also points to important directions for future research. Further empirical studies are needed to examine how research-based education is implemented across different institutional contexts and higher education systems. Comparative and longitudinal research designs could provide deeper insights into the long-term effects of research integration on student learning outcomes, teaching quality, and institutional performance. Future research may also explore the mechanisms through which research culture influences educational innovation and policy development.

In conclusion, this study underscores the central role of scientific research in advancing the educational process in higher education institutions. By systematically integrating research into teaching, learning, and institutional strategies, higher education institutions can enhance educational quality, foster innovation, and respond more effectively to the evolving demands of contemporary education.

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