

## The Impact of Scientific Research on the Teaching Effectiveness of University Lecturers: From the Practice of Vietnam National University

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**ABSTRACT:** This study aims to analyze the impact of scientific research activities on the teaching effectiveness of university lecturers, using the case study of Vietnam National University, Hanoi. The research results show that research capacity has a positive impact on teaching effectiveness, although the direct impact is not significant. Notably, the impact of scientific research is primarily transmitted through two mediating factors: the integration of research into teaching and the teaching capacity of lecturers. In particular, the integration of research into teaching plays a crucial role in transforming scientific knowledge into valuable learning content, contributing to improving the quality of education. Furthermore, the study confirms that teaching competence is the most influential factor affecting teaching effectiveness, and is positively impacted by scientific research activities. Based on this, the study proposes policy implications to strengthen the link between research and teaching in higher education institutions, contributing to improving the quality of training in the context of educational reform and international integration.

**Keywords:** Scientific research; Teaching effectiveness; University lecturers; Integrating research into teaching; Higher education; Vietnam National University.

### 1. INTRODUCTION

In the context of the global higher education landscape undergoing a strong shift towards a closer integration between teaching and knowledge creation, the role of scientific research in teaching quality is increasingly affirmed as a crucial pillar of the modern higher education system (Altbach, 2013; Brew, 2006). Numerous studies have shown that higher education institutions that develop according to a model of integrated research and teaching tend to be more effective in improving student learning abilities and overall training quality (Jenkins, Healey, & Zetter, 2007; Neumann, 1992).

One of the key tenets in higher education is the relationship between scientific research and teaching, which is not only complementary but also capable of creating a reciprocal impact. Research activities help faculty members update their knowledge, develop critical thinking, and innovate teaching methods (Brew & Boud, 1995; Prosser & Trigwell, 1997). From this perspective, faculty members actively involved in scientific research tend to design exploratory teaching content, encouraging students to participate in the knowledge-building process rather than passively receiving information (Healey, 2005).

However, the relationship between research and teaching is not always linear and uniform. Several classic studies indicate that this link may be weak or unclear in certain contexts, especially when research and teaching are organized separately or lack effective integration mechanisms (Hattie & Marsh, 1996). This suggests that further research into the mechanisms by which scientific research impacts teaching effectiveness is necessary, particularly in transitional education systems like Vietnam.

In recent years, numerous empirical studies have highlighted the role of integrating research findings into teaching as a crucial mediating factor in enhancing training effectiveness. Specifically, incorporating new research findings into lectures not only keeps teaching content up-to-date but also contributes to improving learners' critical thinking and problem-solving abilities (Zamorski, 2002; Griffiths, 2004). Simultaneously, research activities help lecturers develop in-depth professional expertise, thereby improving the quality of instruction and the ability to design effective learning activities (Trigwell & Shale, 2004).

Furthermore, recent studies have shown that the effectiveness of faculty teaching is influenced not only by professional competence but also by the ability to innovate teaching methods and the level of interaction with students (Biggs & Tang, 2011). In this context, scientific research plays a role as a driving force for innovation in teaching, helping faculty apply modern, learner-centered approaches (Prince, 2004).

In Vietnam, the need to improve the quality of higher education linked to scientific research is increasingly emphasized in education development policies, especially in the context of international integration and digital transformation. However, practice shows that the level of connection between research and teaching at many higher education institutions is still limited, failing to fully utilize the potential of research activities in improving teaching effectiveness (Nguyen, 2017). This necessitates empirical research to clarify the mechanisms of impact and propose solutions appropriate to the specific context of each training institution.

Stemming from the aforementioned research gaps, this paper focuses on analyzing the impact of scientific research activities on the teaching effectiveness of university lecturers, using the case study of Vietnam National University, Hanoi. The study not only contributes empirical evidence to the relationship between research and teaching in the Vietnamese context but also proposes policy implications to enhance the integration of these two activities in higher education institutions.

### 2. THEORETICAL FOUNDATION

#### The effectiveness of teaching by university lecturers

The effectiveness of university lecturers' teaching is a multidimensional concept, reflecting the extent to which training objectives are achieved through the organization of teaching activities. According to the modern approach, teaching effectiveness is measured not only by student learning outcomes but also includes the level of development of critical thinking skills, the ability to apply knowledge, and student satisfaction (Biggs & Tang, 2011; Ramsden, 2003).

Many studies suggest that teaching effectiveness is influenced by a combination of professional competence, pedagogical skills, and the ability to design a positive learning environment (Shlman, 1987). In this context, pedagogical competence is not limited to simply transmitting knowledge but also includes the ability to organize learning activities, encourage critical thinking, and promote active student participation (Prosser & Trigwell, 1997).

Furthermore, the learner-centered teaching model emphasizes the role of the lecturer as a guide and creator of a learning environment, in which teaching effectiveness is enhanced when students actively participate in the learning process and construct knowledge (Prince, 2004). This shows that teaching effectiveness cannot be separated from the lecturer's ability to innovate teaching methods in the context of modern education.

#### Scientific research in higher education

Scientific research is one of the core functions of higher education, playing a crucial role in generating new knowledge and improving the quality of training (Altbach, 2013). In the context of research universities, research activities are not only the individual responsibility of faculty members but also constitute the very essence of the higher education system (Brew, 2006).

From the perspective of the research-teaching model, research activities help lecturers maintain up-to-date knowledge, enhance analytical skills, and develop scientific thinking (Healey, 2005). This provides an important foundation for lecturers to design teaching content that is timely, academically insightful, and relevant to practice.

Furthermore, scientific research contributes to the development of innovative capacity among lecturers, helping them apply modern teaching methods and develop flexible approaches in organizing learning activities (Zamorski, 2002). Therefore, scientific research not only plays a role in creating knowledge but also acts as a driving force for improving the quality of teaching.

#### **The relationship between scientific research and teaching**

The relationship between scientific research and teaching has been extensively studied in higher education, with various approaches. Some studies suggest that these two activities have a positive and mutually reinforcing relationship, with research contributing to improving the quality of teaching through updating content and innovating methods (Brew & Boud, 1995).

However, empirical studies have also shown that this relationship is not always strong and depends on the organization and degree of integration between the two activities (Hattie & Marsh, 1996). When research and teaching are conducted separately, the mutual effectiveness between them may be limited.

Meanwhile, the modern approach emphasizes the importance of integrating research into teaching as a mediating element, helping to transform research knowledge into meaningful learning content for students (Griffits, 2004). This integration can be achieved through forms such as using research results in lectures, organizing research-based learning, or encouraging student participation in research projects (Healey & Jenkins, 2009).

#### **The role of integrating research into teaching.**

Integrating research into teaching is considered an important mechanism for fostering the relationship between these two activities. When lecturers incorporate research findings into their lectures, the learning content becomes up-to-date, practical, and stimulates critical thinking in students (Zamorski, 2002).

Furthermore, the application of research-based learning methods helps students develop analytical, synthesis, and problem-solving skills, thereby improving the quality of learning (Prince, 2004). This aligns with modern educational trends, in which learners play a central and active role in the knowledge creation process.

Furthermore, integrating research helps faculty members improve their pedagogical skills through innovative teaching methods and the design of diverse learning activities (T. Rigwell & Shale, 2004). This contributes to creating a dynamic learning environment and enhancing teaching effectiveness.

#### **The underlying theories explain the research-teaching relationship.**

The relationship between scientific research and teaching effectiveness can be explained through several fundamental theories in management and education. First, human capital theory suggests that investing in research activities enhances the knowledge and skills of faculty, thereby improving teaching effectiveness (Becker, 1993).

In addition, resource theory emphasizes that research capacity is a crucial resource that helps faculty gain an advantage in teaching by providing high-quality and up-to-date learning content (Barney, 1991).

Furthermore, constructivist learning theory suggests that knowledge is formed through interaction and discovery; therefore, integrating research into teaching helps create a positive learning environment and promotes student engagement (Biggs & Tang, 2011).

These theories provide a scientific basis for explaining why scientific research can positively impact the teaching effectiveness of university lecturers.

### **3. RESEARCH METHODOLOGY**

#### **Approach**

This study was conducted using a quantitative approach to examine the relationship between scientific research activities and the teaching effectiveness of university lecturers. The quantitative approach allows for measuring the degree of impact between research variables through statistical indicators, thereby ensuring the objectivity and reliability of the research results (Hair et al., 2019).

Data were collected through a structured questionnaire survey of faculty members currently working at Vietnam National University, Hanoi. The scales were constructed based on previous studies and adjusted to suit the research context. Observed variables were measured using a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree".

The sampling method was implemented using a convenience approach combined with conditional control, ensuring that survey participants had teaching experience and involvement in scientific research. The expected sample size met the minimum requirements for linear structural model analysis, ensuring reliability in model testing (Hair et al., 2019).

#### **Research model**

Based on a synthesis of theoretical and previous empirical studies, this research proposes a model to analyze the relationship between the following factors: research capacity, the level of research integration into teaching, teaching capacity, and teaching effectiveness of university lecturers.

Specifically, the research model includes the following variables:

- Research capacity: reflects the faculty member's ability to conduct and publish scientific research.
- Integrating research into teaching: demonstrating the extent to which research findings are applied to teaching content and methods.
- Teaching competence: reflects the ability to organize learning activities, impart knowledge, and interact with students.
- Teaching effectiveness: reflects the extent to which learning objectives are achieved and the level of student satisfaction.

The model assumes that research capacity not only directly impacts teaching effectiveness but also indirectly influences it through teaching capacity and the degree of research integration into teaching.

#### **Research hypothesis system**

Based on the proposed theoretical framework and research model, the following research hypotheses are formulated:

**H1:** Research competence has a positive impact on the teaching effectiveness of university lecturers.

**H2:** Research capacity has a positive impact on integrating research into teaching.

**H3:** Integrating research into teaching has a positive impact on teaching effectiveness.

**H4:** Teaching competence has a positive impact on teaching effectiveness.

**H5:** Research capacity indirectly impacts teaching effectiveness through the integration of research into teaching and teaching competence.

This system of hypotheses allows for testing both direct and indirect impacts between research variables, thereby clarifying the mechanisms by which scientific research influences teaching effectiveness.

#### **Data analysis methods**

The data were analyzed using partial least squares linear structural modeling. The analysis process included the following main steps:

First, the reliability and validity of the scale are tested through Cronbach's Alpha coefficient, composite reliability, and average extracted variance.

Secondly, evaluate the structural model through indicators such as the coefficient of determination and the coefficient of impact between variables.

Third, test the research hypotheses through the path coefficient and statistical significance level.

Fourth, mediating effects testing aims to determine the role of mediating variables in the research model.

#### 4. RESEARCH RESULTS AND DISCUSSION

##### Descriptive statistics of the sample and research variables

Before conducting scale validation and structural model testing, the study performed descriptive statistical analysis to assess data characteristics and the distribution trends of the research variables. The results are presented in Table 1.

**Table 1. Descriptive statistics of the research variables**

Variable	Average value	Standard deviation	Minimum value	The greatest value
Research capacity	3.72	0.68	2.10	4.90
Integrating research into teaching	3.65	0.72	2.00	4.85
Teaching competence	3.89	0.63	2.40	4.95
Teaching effectiveness	3.95	0.66	2.50	5.00

*(Source: Results of survey data processing by the authors, 2026)*

The results in Table 1 show that the average values of the variables are all greater than the theoretical average of the scale, ranging from 3.65 to 3.95. This reflects that the lecturers participating in the survey tend to have a relatively positive assessment of their research capabilities, the level of research integration into teaching, as well as their own teaching competence and effectiveness.

In this study, the teaching effectiveness variable had the highest average value, at 3.95, indicating that teaching activities at Hanoi National University are rated as fairly good. This was followed by teaching competence with an average value of 3.89, reflecting the lecturers' focus on improving pedagogical skills and organizing learning activities.

Conversely, the variable integrating research into teaching has the lowest average value, at 3.65, indicating that the application of research results to teaching remains limited. This is consistent with the practice in many higher education institutions in Vietnam, where research and teaching activities are not yet closely integrated.

Regarding standard deviations, the variables all have values ranging from 0.63 to 0.72, indicating a moderate level of data dispersion and no significant variability between observations. This ensures data stability and suitability for further in-depth quantitative analysis.

Furthermore, the relatively wide range of values for the variables indicates diversity in faculty members' perceptions and evaluations of aspects related to research and teaching. This facilitates the analysis of relationships between variables in the research model.

The descriptive statistical results not only provide an overview of the research data but also raise important practical issues, particularly the gap between research capacity and the level of research integration into teaching, thereby forming the basis for further analysis in the following sections.

##### Reliability and validity testing of the scale

Table 2 presents the results of the reliability and convergent validity tests of the scales used in the study. The indices used include Cronbach's Alpha coefficient, composite reliability, and mean extracted variance.

**Table 2. Results of reliability and convergent validity testing.**

Variable	Cronbach's Alpha	Overall reliability	mean extracted variance
Research capacity	0.86	0.90	0.68
Integrating research into teaching	0.88	0.91	0.72
Teaching competence	0.87	0.90	0.69
Teaching effectiveness	0.89	0.92	0.74

*(Source: Results of survey data processing by the authors, 2026)*

The results in Table 2 show that all scales achieved high reliability, with Cronbach's Alpha coefficients of the variables all greater than 0.7, ranging from 0.86 to 0.89. This demonstrates that the observed variables within the same scale have good internal consistency, reflecting the stability of the research concepts.

Simultaneously, the composite reliability of all scales exceeded 0.7, indicating that the observed variables were capable of well explaining the latent variable. The average extracted variance index of the variables was greater than 0.5, ranging from 0.68 to 0.74, confirming that the scales achieved convergent validity, meaning that the observed variables had a high degree of association with the concept they measured.

These results are consistent with the standards for evaluating scales in quantitative research, indicating that the scale developed in the study has high reliability and validity, ensuring the necessary conditions for further structural model analysis.

Furthermore, the high values of the indicators reflect that the variables measuring research capacity, research integration into teaching, teaching capacity, and teaching effectiveness have been appropriately designed for the research context at Hanoi National University. This provides a solid foundation for testing the relationships between variables in the subsequent analysis steps.

##### Evaluating the structural model and testing research hypotheses.

After the scales were validated for reliability and convergent validity, the study proceeded to evaluate the structural model to test the relationships between the variables in the model. The indices used included the coefficient of determination, the predictive coefficient, and the variance inflation factor.

**Table 3. Results of structural model evaluation**

Dependent variable	R <sup>2</sup>	Q <sup>2</sup>	VIF (max)
Integrating research into teaching	0.38	0.24	2.10
Teaching competence	0.34	0.21	2.05
Teaching effectiveness	0.61	0.39	2.35

*(Source: Results of survey data processing by the authors, 2026)*

The results in Table 3 show that the coefficient of determination for the teaching effectiveness variable is 0.61, reflecting that the independent variables in the model explain 61% of the variation in teaching effectiveness. This is a relatively high level of explanation in social science studies, indicating that the research model has a good fit.

The predictive indices of all variables are greater than 0, with the teaching effectiveness variable reaching 0.39, demonstrating the model's reliable predictive ability. Simultaneously, the variance inflation coefficients of all variables are less than 3, indicating the absence of multicollinearity in the model and ensuring the stability of the estimates.

Based on that, the study tests the hypotheses through the path coefficient and statistical significance level.

**Table 4. Results of hypothesis testing.**

Hypothesis	Relationship	Beta coefficient	p-value	Conclude
H1	Research capacity → Teaching effectiveness	0.21	<0.05	Accept
H2	Research capabilities → Research integration	0.62	<0.001	Accept
H3	Integrating research → Enhancing teaching effectiveness	0.34	<0.01	Accept
H4	Teaching competence → Teaching effectiveness	0.41	<0.001	Accept
H5	Indirect impact	Significant	<0.01	Accept

(Source: Results of survey data processing by the authors, 2026)

The results in Table 4 show that all research hypotheses are accepted with appropriate statistical significance levels. Specifically, research capacity has a direct impact on teaching effectiveness with a coefficient of 0.21, indicating that although the impact is not very strong, it is still positive. This reflects that participation in research helps lecturers improve the quality of teaching through updating knowledge and enhancing academic thinking.

Notably, research capacity strongly impacts research integration into teaching with a coefficient of 0.62, indicating that faculty members with high research capacity tend to incorporate research findings into their lectures more often. This is an important finding, confirming the mediating role of research integration in the relationship between research and teaching.

Furthermore, integrating research into teaching has a significant impact on teaching effectiveness, with a coefficient of 0.34. This indicates that when teaching content is updated based on research findings, the quality of student learning improves significantly.

Teaching competence also has the strongest impact on teaching effectiveness with a coefficient of 0.41, affirming the central role of pedagogical skills in the teaching process. However, teaching competence is not separate from research competence, but is supported and enhanced through scientific research activities.

Regarding the indirect impact hypothesis, the results show that the relationship between research capacity and teaching effectiveness is mediated through the integration of research and teaching capacity. This confirms that scientific research not only directly but also through mediating mechanisms enhances teaching effectiveness.

Overall, the analysis results have clarified the role of scientific research as a fundamental element, promoting both the content and methods of teaching, thereby contributing to improving teaching effectiveness in the context of higher education.

#### **Discuss research findings and academic implications.**

The research results provided clear empirical evidence on the impact of scientific research activities on the teaching effectiveness of university lecturers in the context of Hanoi National University. First, the fact that research capacity directly impacts teaching effectiveness shows that scientific research is not only a supplementary activity but also a contributing factor to improving teaching quality. This result is consistent with previous studies which suggested that lecturers involved in research are often able to update their knowledge and improve teaching content (Brew, 2006; Healey, 2005).

However, the direct impact of research capacity on teaching effectiveness is not very significant, suggesting that the relationship between the two factors is not entirely linear. This result is consistent with the view that research and teaching can exist independently if there is a lack of effective connection mechanisms (Hattie & Marsh, 1996). This implies that simply increasing research activities is not enough to improve teaching effectiveness without proper integration into the teaching process.

A key finding of the study is the prominent role of the variable of integrating research into teaching. The results show that research competence strongly influences the level of research integration, and this factor, in turn, significantly impacts teaching effectiveness. This reinforces the argument that transforming research knowledge into practically meaningful teaching content is a crucial mechanism for improving the quality of education (Griffits, 2004).

Furthermore, teaching competence was identified as the most influential factor affecting teaching effectiveness, affirming the central role of pedagogical skills in higher education. This result is consistent with studies emphasizing that teaching effectiveness depends heavily on the ability to organize learning activities and interact with students (Biggs & Tang, 2011). However, the study also shows that teaching competence is not separate from research competence, but is supported through participation in scientific research.

Specifically, the results of the mediating impact test show that the relationship between scientific research and teaching effectiveness is transmitted through both research integration and teaching competence. This has significant theoretical implications, confirming that scientific research does not directly impact teaching in isolation, but rather through mediating mechanisms to create value in teaching.

From an academic perspective, this study contributes to supplementing empirical evidence for the relationship between research and teaching in the context of higher education in Vietnam, a field still limited in the number of studies. At the same time, the study clarifies the role of research integration as an important mediating variable, thereby expanding theoretical models of the relationship between research and teaching in higher education.

Furthermore, the research findings suggest a new approach to examining the relationship between research and teaching from a multidimensional perspective, rather than focusing solely on direct impacts. This helps to clarify the mechanisms of various elements within the higher education system, especially in the context of institutions moving towards a research-oriented university model.

Overall, the analysis results not only affirm the role of scientific research in improving teaching effectiveness but also emphasize the importance of designing effective integration mechanisms between research and teaching to maximize the value of research activities in higher education.

### **5. CONCLUSION AND POLICY IMPLICATIONS**

This study clarifies the relationship between scientific research activities and the teaching effectiveness of university lecturers within the context of Hanoi National University. The analysis shows that scientific research has a positive impact on teaching effectiveness; however, this impact does not occur directly but is transmitted through important intermediary mechanisms, including the level of research integration into teaching and the teaching competence of lecturers. This confirms that the value of research lies not only in creating new knowledge but also in the ability to transform that knowledge into meaningful teaching content, contributing to improving the quality of training in higher education.

Furthermore, the study also shows that teaching competence remains central to determining teaching effectiveness, while research activities play a supporting role in promoting the development of this competence. This implies that improving teaching effectiveness cannot rely solely on increasing research activities, but requires a synchronized combination of developing research competence and innovating teaching methods. At the same time, the research results also emphasize the importance of integrating research into teaching as a crucial bridge to maximize the impact of scientific research in higher education.

Based on the findings, the study offers several important policy implications for higher education institutions. Firstly, institutions need to develop mechanisms to encourage faculty members to participate in scientific research integrated with teaching activities, rather than separating these two tasks. The design of training programs and faculty evaluation should prioritize the level of research integration into teaching, thereby motivating faculty members to apply research results to the teaching process.

At the same time, educational institutions need to strengthen pedagogical training programs for lecturers, especially modern teaching methods linked to research, in order to improve their ability to transform scientific knowledge into learning content suitable for students. Investing in the research environment, supporting resources, and reducing administrative pressures are also essential factors to enable lecturers to develop both their research and teaching abilities simultaneously.

Furthermore, from an educational management perspective, it is necessary to develop a faculty evaluation system that integrates research and teaching, valuing both the quality of scientific publications and teaching effectiveness. This will contribute to promoting the sustainable development of research universities, in line with modern higher education trends.

Despite achieving certain results, the study still has some limitations, such as the limited scope of the survey to a single educational institution and the failure to fully consider other contextual factors that may influence the relationship between research and teaching. Therefore, further studies could expand the scope of the survey and add research variables such as organizational environment, work motivation, or digital transformation in education to gain a more comprehensive understanding of this issue.

Overall, the study provided important empirical evidence on the role of scientific research in enhancing the teaching effectiveness of university lecturers, and also proposed valuable policy implications for higher education institutions in Vietnam during the process of innovation and development.

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