

Navigating Challenges and Innovations: Enhancing the Teaching-Research Nexus in Taiwan Academics

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Abstract

In the face of declining birth rates and increasing global competition, Taiwan universities are grappling with challenges such as insufficient student enrollment, declining student quality, and academic inflation. The traditional emphasis on research over teaching has exacerbated these issues, leading to student achievement and employability concerns. This study explores the perspectives of Taiwan academics on integrating teaching and research (Teaching-Research Nexus, TRN) and its practical application in enhancing academic productivity and teaching quality. Through in-depth interviews and expert focus groups, the research investigates academics' views on incorporating research into their teaching practices, the methods they use to foster student engagement in research, and the impact of TRN on student learning outcomes. Key findings reveal that effective TRN strategies can significantly enhance students' interest in learning, academic achievement, and research skills. Moreover, the study identifies several barriers to the successful integration of TRN, including the heavy emphasis on research for promotion, limited support for teaching-focused initiatives, and varying expectations across different academic disciplines. The research offers practical recommendations for policymakers and educators to develop robust TRN strategies, fostering a balanced academic environment supporting teaching and research excellence. These insights are crucial for advancing higher education quality and sustaining academic innovation in Taiwan.

Keywords: academic inflation, Taiwan, teaching-focused initiatives, teaching-research nexus

1. Introduction

1.1 Research Background and Motivation

Higher education is crucial for talent cultivation, academic research, and societal service, significantly impacting national development. Developed countries have pursued reforms to enhance educational quality and global competitiveness (Wu, 2011). Taiwan has also aimed to improve its higher education, but rapid expansion has led to imbalances in quality. The growth from 105 institutions in 1986 to 158 by 2015 has been challenged by declining birth rates, resulting in financial strains, insufficient enrollments, and declining student quality (Dai & Lin, 2015; Hong, 2020). The focus on research over teaching has worsened these issues, highlighting the need for strategies to balance teaching quality and student outcomes. This study examines the feasibility and challenges of integrating the Teaching-Research Nexus (TRN) in Taiwan.

1.2 Research Objectives and Questions

The primary objective of this study is to investigate the current state of the Teaching-Research Nexus (TRN) among Taiwan academics and to identify feasible models for integrating teaching and research that are adaptable to the specific context of Taiwan higher education. This study aims to address the following key research questions:

1. What are the perceptions of Taiwan academics regarding the integration of teaching and research?
2. What factors influence the success of TRN in Taiwan higher education institutions?
3. What strategies can effectively promote TRN in the context of Taiwan higher education, considering the unique challenges faced by these institutions?

These research questions are designed to uncover both the opportunities and barriers to TRN implementation, providing a comprehensive understanding of how teaching and research can be better integrated in Taiwan universities.

2. Literature Review

The development of higher education in Taiwan is deeply rooted in the nation's educational policies and historical context. To understand the future trajectory of higher education in Taiwan, it is essential to re-examine the roles of academics, their professional development in teaching, and how these factors interplay with the broader educational landscape. This section reviews the evolution of Taiwan's higher education policies, the concept of teaching professionalism, the roles of academics, and the significance of linking teaching and research.

2.1 Evolution of Higher Education Policies in Taiwan

The Ministry of Education in Taiwan has introduced various initiatives to boost the international competitiveness of its universities. Since 2005, the "Aim for the Top University Plan" has emphasized research, often neglecting teaching. To address this imbalance, programs like the "Teaching Excellence Project" and the "Development of Exemplary Technological Universities Plan" were launched to encourage diverse university development. The "Pilot Program for Diversified Academics Promotion," introduced in 2013, aimed to create multiple pathways for academic promotion, including research, teaching, and industry-academia collaborations.

In 2017, the "Teaching Practice Research Program" was introduced, inspired by the Scholarship of Teaching and Learning (SoTL) movement. This program encouraged integrating research into teaching to enhance student outcomes, gaining popularity with 2,174 applications in its first year and increasing to 3,020 by 2020. The "Higher Education Sprout Project," launched in 2018, further integrated support for higher and technical vocational education, promoting diverse educational development and ensuring equal access. A key goal was to encourage universities to fulfill social responsibilities through the University Social Responsibility (USR) initiative, focusing on local engagement and social contribution.

2.2 Teaching Professionalism and the Role of Academics

Academics play a central role in educational reform and progress, with their professionalism impacting teaching and student outcomes. In the knowledge society, research, teaching, service, and

administration are interlinked, with research and teaching being the most critical tasks. Boyer (1990) redefined academic practice as "scholarship," proposing four types: discovery, integration, application, and teaching. Hutchings and Shulman (1999) expanded on this, emphasizing the integration of research and teaching through SoTL, advocating for reflective teaching practices informed by research.

2.3 The Teaching-Research Nexus (TRN)

The globalization of higher education has intensified the demand for high-quality academic practices, with a growing emphasis on the collaboration between teaching and research. Musthafa and Sajila (2014) and Shin, Jung, and Kim (2014) highlight the importance of conceptualizing and organizing the relationship between teaching and research within academic environments, recognizing it as a critical area of focus for higher education institutions globally.

Types and Models of the Teaching-Research Nexus

Universities are institutions where teaching, research, and student learning converge. As the knowledge society evolves, integrating research and knowledge transfer (teaching) has become a vital mission for higher education institutions. Boyer (1990) argued that both teaching and research are forms of scholarship, where teaching is a thoughtfully planned activity that encourages students to engage with the subjects they study critically. Conversely, research involves applying theory in practice, leading to new insights and perspectives.

Brew and Boud (1995) found that the common thread between teaching and research is learning, as both involve inquiry, investigation, and experimentation. They suggest that teaching should not be seen as separate from research but as activities that coexist and reinforce each other, contributing to knowledge development and understanding (Neumann, 1994; Deakin, 2006).

Griffiths (2004) categorized the TRN into four forms: research-led teaching, research-oriented teaching, research-based teaching, and research-informed teaching. Each form reflects different approaches to integrating research into teaching, ranging from teacher-centered dissemination of research findings to student-centered inquiry and investigation.

Jenkins and Healey (2005) further developed these models by combining research, teaching, and learning into a comprehensive framework that considers research content and students' role in learning. This approach encourages academics to adopt student-centered teaching methods, integrating research as a fundamental component of the educational experience. The TRN model is divided into four forms:

1. Research-led teaching
2. Research-oriented teaching
3. Research-based teaching
4. Research-tutored teaching

3. Methodology

This study adopts a qualitative research approach to explore the feasibility and challenges of promoting the Teaching-Research Nexus (TRN) among Taiwan academics. The qualitative methodology was

chosen because it allows for an in-depth exploration of academics' experiences, perceptions, and attitudes, which are crucial for understanding the complex dynamics of integrating teaching and research.

3.1 Research Design

Participants

- The study included academics from public and private universities, as well as those from research-intensive and teaching-focused institutions. Participants were selected using purposive sampling to ensure representation from a diverse range of academic disciplines, including the humanities, social sciences, natural sciences, and engineering.
- A total of 18 academics were interviewed, with additional input from two focus group discussions, each comprising 3-4 participants. This sample size was deemed sufficient to achieve data saturation, where no new themes or insights emerged.

Data Collection

- **In-depth Interviews:** Semi-structured interviews were conducted to allow 11 participants to share their experiences and thoughts on TRN freely. The interviews focused on key topics, such as the perceived importance of TRN, the challenges in integrating research into teaching, institutional support for TRN, and the impact of TRN on student learning outcomes.
- **Focus Group Discussions:** These discussions were designed to facilitate interaction among participants, enabling them to compare and contrast their experiences. The 2 groups setting encouraged 7 participants to elaborate on their ideas and provided opportunities to identify common challenges and potential solution.

Data Analysis

- The data collected from interviews and focus group discussions were transcribed and analyzed using grounded theory, which is a systematic methodology in qualitative research that involves constructing theories through methodical gathering and analysis of data.
- The analysis followed a coding process, starting with open coding to identify initial themes and concepts, followed by axial coding to explore relationships between these themes, and finally, selective coding to integrate and refine the core categories. This iterative process allowed the researchers to develop a nuanced understanding of the factors influencing the feasibility and challenges of TRN.

Ethical Considerations

- Ethical approval was obtained from the Institutional Review Board (IRB) of the participating universities. All participants were informed of the study's purpose, and their consent was obtained before data collection. The confidentiality of participants' identities and responses was maintained throughout the study, and all data were anonymized to protect privacy.

4. Results and Discussion

This study employs qualitative research methods (in-depth interviews, focus group discussions, and document analysis) to gather and analyze a wide range of qualitative data. Through coding, translation, induction, and analysis, the research extracts findings that address the following questions:

1. What are the perceptions of Taiwan academics regarding the integration of teaching and research?
2. What factors influence the success of TRN in Taiwan higher education institutions?
3. What strategies can effectively promote TRN in the context of Taiwan higher education, considering the unique challenges faced by these institutions?

By examining the responses of academics concerning their teaching and research work, as well as their efforts to promote the integration of teaching and research, this study seeks to understand their views on academic work, the development of teaching professionalism and role identity, the feasibility and influencing factors of integrating teaching and research, and to clarify the types of integration tendencies among academics. The study also analyzes the challenges and feasible strategies for developing teaching-research integration from individual and institutional perspectives.

4.1 Challenges in Integrating Teaching and Research:

1. Balancing Teaching and Research Responsibilities

One of the most frequently mentioned challenges was the difficulty in balancing teaching and research responsibilities. Academics reported that the demands of research, including securing funding, publishing papers, and attending conferences, often left them with limited time and energy to focus on teaching. This challenge was particularly pronounced for younger faculty members who were under pressure to establish their research credentials for career advancement.

Excerpts from interviews:

- "Whether it is a teaching-oriented or research-oriented university, it all revolves around teaching and research." (Interview N010101)
- "Everything I do is related to research very naturally, so if I had to estimate, it might be 60-40, with 60% research and 40% teaching and service, because honestly, teaching and service are no longer difficult for me." (Interview N030101)
- "When I first started, I spent much time preparing lessons, focusing most of my energy on teaching. Gradually, as teaching became more stable, I began to shift my energy back to research." (Interview S030103)
- "In the past ten years, teaching has taken up about 70%, and research 30%. Although I still publish, I no longer aim for top-tier journals. After two rounds of promotion based on teaching, I know I need to adjust, so now I am balancing it 50-50." (Interview S010101)
- "My primary research is in pure mathematics... Balancing teaching and research felt like being on two parallel tracks, requiring twice the effort to manage both." (Interview S040101)
- "When I first started, the pressure was immense, so the ratio was probably 60% research and 40% teaching. Now, at 60 years old, my mindset has shifted, and it is more like 60% teaching and 40% research." (Interview N010102)

2. Institutional Expectations and Promotion Criteria

The study found that institutional expectations and promotion criteria heavily influenced how academics approached the integration of teaching and research. Many participants noted that promotion and tenure

decisions were primarily based on research output, which incentivized them to prioritize research over teaching. This focus on research metrics was seen as a significant barrier to developing a strong TRN, as it discouraged academics from investing time and effort into innovative teaching practices.

Excerpts from interviews:

- "Teaching and research at the university, because of promotion requirements... Most of the time, it is still heavily weighted towards research... The biggest pressure for new teachers is promotion because there is still a six-year rule, like at our school, so the pressure is quite high." (Interview S030101)
- "Since we are a private university, like Fu Jen Catholic University, every teacher has a heavy course load. So, for me, the ratio of teaching to research is about half and half. I have a lot, so half of my time is spent teaching, and only the remaining time can be used for research." (Interview S050101)
- "The academic expectations of Chung Yuan Christian University are based on disciplinary strengths, so the expectations for teachers in terms of teaching and research depend on the strengths of their disciplines." (Interview N040101)

3. Lack of Institutional Support

A recurring theme in the interviews was the lack of institutional support for teaching-focused initiatives. Academics reported that while there were resources available for research activities, similar support for teaching was often limited or non-existent. This included a lack of funding for teaching development, inadequate recognition of teaching excellence in performance evaluations, and insufficient opportunities for professional development in pedagogy.

Excerpts from interviews:

- "In the engineering sciences, research is still the primary criterion for promotion... No matter how good your teaching is, if your research output is insufficient, it is not conducive to promotion." (Interview S030105)
- "Schools are very realistic, especially in STEM fields where the expectation is still research-based promotion. Even though the Ministry of Education encourages teaching-based promotion, it's still difficult to achieve, especially in traditional schools." (Interview S010105)
- "I think increasing the number of teaching assistants would be very helpful." (Interview S040103)

4.2. Academics' Perceptions of the Teaching-Research Nexus

1. Perceived Importance of TRN

The majority of the academics interviewed recognized the importance of integrating teaching and research. They viewed TRN as essential for enhancing student learning outcomes and for fostering a more dynamic and engaging academic environment. Many participants noted that by incorporating research into their teaching practices, they were able to provide students with up-to-date knowledge and practical examples that connected theory to real-world applications.

Excerpts from interviews:

- "I found that bringing my latest research into the classroom is quite effective for both my teaching

and research progress." (Interview S030108)

- "Over the past 20 years, I have developed a teaching method that integrates research into the classroom, whether in graduate or undergraduate courses." (Interview N020104)
- "Teaching needs have inspired various research paths, which has significantly contributed to my development." (Interview N020202)
- "Professional identity involves both teaching and research. When the teaching and research subjects overlap, it is easier to integrate them." (Interview G1010201)

2. Benefits for Students

Academics highlighted several benefits for students when research is integrated into teaching. These included improved critical thinking skills, greater engagement with the material, and enhanced research skills. Academics also reported that students who were exposed to research in their courses were more likely to pursue further research opportunities, such as undergraduate research projects or graduate studies.

Excerpts from interviews:

- "TRN should be student-centered, considering how research can be useful for teaching and how teaching can support research." (Interview N040301)
- "Some teachers feel that students seem to be getting worse every year, but I see each cohort as a new challenge because, as teachers, we do not choose our students, and students don't choose their teachers either." (Interview S010103)
- "Previously, I did not see the connection, but once I started focusing on student learning outcomes, I began to see how my research could be connected to my teaching." (Interview S020101)
- "Because my research is interdisciplinary, involving IoT and robotics applied to civil engineering, I thought about designing a course that would train my graduate students in the necessary skills." (Interview S030105)

3. Impact on Academic Identity

For many academics, the integration of teaching and research contributed positively to their professional identity. They reported a sense of fulfillment in being able to contribute to both the creation of knowledge (through research) and its dissemination (through teaching). However, some participants expressed concerns that the heavy emphasis on research output for promotion and tenure decisions sometimes overshadowed their teaching efforts, leading to a tension between their dual roles as educators and researchers.

Excerpts from interviews:

- "I have a great passion for teaching, so a few years ago, I decided to explore teaching research, which has become my primary research direction, focusing on the practice of teaching." (Interview S040102)
- "I teach consistently, and every year, I try to develop new things to improve or experiment with in my teaching. Research depends on whether I find an interesting topic; if I do, I pursue it, but I do not force myself to produce results." (Interview N050101)

- "Initially, I had research ideas that I incorporated into my courses, turning research findings into teaching content. But now, I also take feedback from students and others in my field to suggest new research topics." (Interview N040103)
- "Most universities don't value teaching... The real challenge is teaching, which is often overshadowed in universities." (Interview N020101)

4.3 Institutional Factors Influencing TRN

1. Variation Across Disciplines

The study revealed significant variation in how TRN was implemented across different academic disciplines. Academics in the natural sciences and engineering reported a stronger alignment between their research and teaching, as these fields often involved hands-on experimentation and practical applications that could be directly incorporated into the classroom. In contrast, academics in the humanities and social sciences found it more challenging to integrate their research into teaching, particularly when their research was more theoretical or abstract.

Excerpts from interviews:

- "The combination of teaching and research depends on the subject. It's not necessarily applicable to every course, but elements of research can be incorporated into applications, especially in advanced courses." (Interview S030202)
- "In social sciences, the variables are not as empirically based as in natural sciences, so TRN models like Jenkins & Healey's provide a framework for thinking." (Interview N010202)
- "The TRN framework should be applied flexibly based on the content and characteristics of the course." (Interview N050201)

2. The Role of Leadership

Institutional leadership was identified as a critical factor in the success of TRN initiatives. Participants noted that when university leaders actively supported the integration of teaching and research, through policies, funding, and recognition, it created a more conducive environment for TRN. Conversely, a lack of leadership commitment to TRN was seen as a major obstacle, resulting in fragmented efforts and limited impact.

Excerpts from interviews:

- "The Teaching and Learning Center can play a crucial role in supporting Academics." (Interview N030104)
- "The TRN requires a team approach, rather than separating teaching and research." (Interview S020103)
- "Financial incentives for both teaching and research are essential." (Interview S030109)
- "Creating a supportive institutional environment is crucial for recognizing the value of teaching." (Interview S020104)
- "The Teaching Development Center plans to create a database of published articles and measurement tools to help academics with their research." (Interview N010302)

These discussions highlight the importance of promoting TRN in higher education and recognizing various challenges and opportunities of university academics. The study suggests that a blended approach, institutional support, and fostering academic development communities can enhance the integration of teaching and research, ultimately improving the quality of education and research in Taiwan.

5. Research Conclusion

This study explores Taiwan academics' views on academic recognition, professional development, and TRN feasibility, examining support mechanisms and management within universities. It offers strategies to promote sustainable teaching-research integration, enhancing overall teaching and learning quality.

1. Promoting a Systematic Approach Integrating Teaching, Research, and Service in Taiwan Higher Education to Enhance Academics' Professional Practice
2. Most Academics Agree That Teaching Should Be Centered on Student Learning, and They Adapt TRN Strategies to Meet Different Disciplinary Teaching Needs to Enhance Student Learning
3. Establishing Cross-Disciplinary Collaborative Communities Is Beneficial for Teaching Innovation and Research
4. Shaping an "Inquiry and Practice" Culture on University Campuses Through USR to Organically Connect Teaching and Research
5. The Relevance Between Teaching and Research Subjects Reflects the Essence of TRN

6. Recommendations and Limitations

6.1 Recommendations

The Ministry of Education should establish mechanisms encouraging TRN by creating clear promotion pathways and integrating TRN into existing policies like USR. Support mechanisms must enhance academics' professional growth, promote cross-disciplinary collaboration, and emphasize teaching's academic status. Institutions should incentivize TRN through clear promotion criteria, project funding, and supporting teaching innovations. Leadership must prioritize TRN with adequate resources and strategic planning, while individual academics are encouraged to engage in self-development, form professional communities, and actively participate in TRN initiatives.

6.2 Research Limitations and Future Research Directions

This study underscores the feasibility and necessity of TRN in enhancing Taiwan's higher education quality, offering strategies for sustainable improvement and policy-making. However, limitations include sample size, data collection methods, and focus solely on academics, suggesting future research should broaden its scope and include other stakeholders' perspectives.

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