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Innovative Teaching as a Catalyst for HRD Effectiveness in Universities: A Mediated Perspective on Talent Development

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Abstract

This study investigates whether innovative teaching competence (ITC) enhances human resource development (HRD) effectiveness in higher education through the mediating role of innovative talent development (ITD). Motivated by the lack of clarity on how faculty innovation translates into organisational HRD outcomes in China's innovation-driven reform context, we integrate experiential learning theory and self-determination theory to propose a mediation model. Using survey data from 157 academic staff across three Chinese universities and PLS-SEM analysis, the results show that ITC has a significant positive effect on both ITD and HRD effectiveness. Moreover, ITD partially mediates the relationship between ITC and HRD effectiveness, with an indirect effect of 0.039 and a significance level of 0.006. The model explains 56.3% of the variance in HRD effectiveness. The core contribution lies in revealing the "competence–development–effectiveness" pathway, shifting HRD research from student-level outcomes to faculty development and organisational learning. These findings highlight the strategic role of fostering ITC and ITD as levers for institutional performance and faculty development in innovation-driven higher education.

Keywords: Innovative Teaching Competence, Talent Development, HRD Effectiveness, Higher Education, Mediation

Introduction

The global push for innovation-driven development has placed higher education institutions under unprecedented pressure to produce graduates with advanced problem-solving, creativity, and adaptability (Mishrif et al., 2023; Hazrat et al., 2023). Consequently, human resource development (HRD) within universities has evolved from a support function to a strategic priority aimed at enhancing faculty capabilities and institutional performance (Garavan et al., 2021; Sušanj et al., 2020). Among the various competencies expected of contemporary academics, innovative teaching competence (ITC) has gained particular

attention as a catalyst for pedagogical transformation and organisational learning (Xiong et al., 2025; Kulturel-Konak et al., 2025).

However, existing research remains limited in two important respects. First, most studies examine the effects of teaching competencies on student-level outcomes such as engagement or satisfaction (Chen et al., 2025; Wang et al., 2025), rather than on institutional HRD effectiveness. Second, the mechanisms through which ITC contributes to HRD outcomes—particularly the role of faculty members' own innovative talent development (ITD)—remain largely unexamined. This gap is especially salient in the Chinese higher education context, where national reforms such as the Double First-Class initiative emphasise innovation and talent cultivation but often lack empirical models linking teaching practices to organisational outcomes (Zhang, 2025; Xu & Marginson, 2022).

To address this gap, this study integrates experiential learning theory (Kolb, 1984) and self-determination theory (Ryan & Deci, 2000) to propose a mediation model in which ITC influences HRD effectiveness both directly and indirectly through ITD. Specifically, the study addresses the following research questions:

RQ1: Does ITC have a direct positive effect on HRD effectiveness?
RQ2: Does ITC promote ITD among academic staff?
RQ3: Does ITD, in turn, enhance HRD effectiveness?
RQ4: Does ITD mediate the relationship between ITC and HRD effectiveness?

The original intention of this study stems from a practical observation: although universities widely emphasise teaching innovation, few studies have systematically explored how faculty members' own innovative talent development translates teaching innovation into organisational-level HRD effectiveness. Accordingly, the core contributions of this study are threefold: first, it constructs and validates a mediation model with innovative talent development as the key intervening variable; second, it extends the scope of HRD effectiveness research from student-level outcomes to faculty development and organisational learning; third, it offers a practical logic for higher education HRD reform, shifting from a "teaching innovation push" to a "talent development-driven" paradigm.

By answering these questions, the study contributes to higher education HRD literature by clarifying the capability-conversion pathway through which innovative teaching practices generate institutional value. It also provides practical guidance for university administrators seeking to design faculty development programmes that go beyond basic pedagogy toward innovation-oriented talent cultivation.

Literature Review and Hypotheses

Innovative Teaching Competence

Innovative teaching competence refers to the ability of academic staff to adopt creative, adaptive, and innovation-oriented instructional strategies, including creative teaching methods, pedagogical adaptability to changing contexts, and a proactive orientation toward teaching innovation (Scott & Bruce, 1994; De Jong & Den Hartog, 2010). Unlike foundational pedagogical competence, which focuses on instructional coherence and alignment (Biggs & Tang, 2011), ITC emphasises experimentation, risk-taking, and redesign of learning

experiences. Recent studies have shown that ITC is positively associated with student engagement, critical thinking, and teacher job satisfaction (Fernández-Cruz & Rodríguez-Legendre, 2023; Xiong et al., 2025).

Innovative Talent Development

Innovative talent development is conceptualised as the process through which academic staff enhance their capability to innovate, apply knowledge in practical contexts, and sustain professional growth (Garavan et al., 2012; Swanson & Holton, 2009). In this study, ITD is operationalised through three dimensions: capability development (acquiring new skills for innovation), knowledge application (translating theory into teaching/research practice), and professional growth (continuous improvement in academic roles). ITD represents a critical developmental mechanism that links individual competencies to institutional outcomes.

HRD Effectiveness in Higher Education

HRD effectiveness refers to the extent to which HRD initiatives improve individual performance, teaching quality, and organisational learning (Kirkpatrick & Kirkpatrick, 2006; Swanson & Holton, 2009). In higher education settings, HRD effectiveness is increasingly understood as a multidimensional construct that includes not only immediate training outcomes but also long-term capability formation and institutional learning capacity (Pedraja-Rejas et al., 2025; Potnuru et al., 2021).

Theoretical Framework and Hypothesis Development

Experiential learning theory (ELT) suggests that learning occurs through cycles of concrete experience, reflective observation, abstract conceptualisation, and active experimentation (Kolb, 1984). Innovative teaching practices—such as problem-based learning, flipped classrooms, and reflective teaching—activate these cycles, encouraging faculty members to experiment, reflect, and adapt. Such processes are likely to enhance ITD by promoting capability development and knowledge application. Furthermore, self-determination theory (SDT) posits that autonomy-supportive environments foster intrinsic motivation and professional growth (Ryan & Deci, 2000). ITC often involves giving faculty more autonomy in curriculum design and teaching methods, which may enhance their sense of competence and relatedness, thereby facilitating ITD.

Based on this integrated framework, the following hypotheses are proposed:
H1: Innovative teaching competence has a significant positive influence on HRD effectiveness.
H2: Innovative teaching competence has a significant positive influence on innovative talent development.
H3: Innovative talent development has a significant positive influence on HRD effectiveness.
H4: Innovative talent development mediates the relationship between innovative teaching competence and HRD effectiveness.

Research Methodology

Conceptual Framework

Figure 1 presents the conceptual framework of this study.

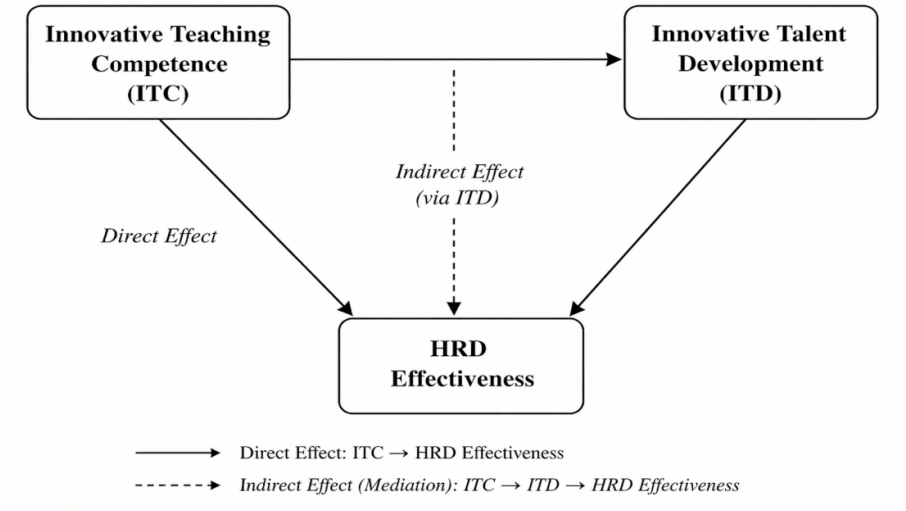

Figure 1. Conceptual Framework

Sample and Procedure

A cross-sectional survey was conducted among academic staff from three universities in Qufu, Shandong Province, China. A total of 175 questionnaires were distributed, and 157 valid responses were retained (89.7% response rate). Table 1 presents the demographic profile of the sample.

Table 1

Demographic Characteristics of the Sample (N=157)

Category	Item	Frequency	Percentage (%)
Gender	Male	67	42.7
	Female	90	57.3
Highest Degree	Master's	84	53.5
	Doctorate	73	46.5
Teaching Experience	5 years or less	29	18.5
	6–10 years	48	30.6
	11–20 years	51	32.5
	21 years and above	29	18.5
Academic Field	Science & Engineering	65	41.4
	Business & Economics	23	14.6
	Literature	37	23.6
	Arts & Sports	21	13.4
	Other	11	7.0

Measures

All constructs were measured using seven-point Likert scales (1 = strongly disagree to 7 = strongly agree). ITC was assessed with nine items adapted from Scott and Bruce (1994) and De Jong and Den Hartog (2010), covering creative teaching, pedagogical adaptability, and innovation orientation. ITD was measured with nine items adapted from Garavan et al. (2012), covering capability development, knowledge application, and professional growth. HRD effectiveness was measured with nine items adapted from Swanson and Holton (2009) and Biggs and Tang (2011), covering individual performance, teaching quality, and organisational learning.

Data Analysis

Data were analysed using SmartPLS 4. The measurement model was assessed for indicator reliability, internal consistency (Cronbach's α, composite reliability), convergent validity (AVE), and discriminant validity (Fornell–Larcker criterion and HTMT). The structural model was evaluated using path coefficients, R^2, effect sizes (f^2), and predictive relevance (Q^2) via blindfolding. Bootstrapping with 5,000 resamples was used for significance testing. Mediation was tested following Hair et al. (2021).

Data Analysis and Results

Measurement Model Evaluation

All indicator loadings exceeded 0.70 (range: 0.815–0.902). Table 2 presents the internal consistency reliability and convergent validity of the three main constructs (ITC, ITD, HRD). Composite reliability (CR) values ranged from 0.899 to 0.921, Cronbach's α from 0.838 to 0.879, and average variance extracted (AVE) from 0.748 to 0.793, all exceeding recommended thresholds (Hair et al., 2021).

Table 2
Internal Consistency Reliability and Convergent Validity

Construct	**Cronbach's α**	**CR**	**AVE**
Innovative Teaching Competence (ITC)	0.879	0.921	0.793
Innovative Talent Development (ITD)	0.851	0.909	0.769
HRD Effectiveness	0.838	0.899	0.748

Discriminant validity was first assessed using the Fornell–Larcker criterion. As shown in Table 3, the square root of AVE for each construct (diagonal values) is greater than its correlations with all other constructs, confirming satisfactory discriminant validity.

Table 3
Fornell–Larcker Criterion

Construct	**ITC**	**ITD**	**HRD**
Innovative Teaching Competence (ITC)	0.891		
Innovative Talent Development (ITD)	0.468	0.877	
HRD Effectiveness	0.599	0.521	0.865

Note: Diagonal elements (bold) are the square roots of AVE; off-diagonal elements are construct correlations.

As a more stringent test, the heterotrait–monotrait ratio (HTMT) was also examined. Table 4 shows that all HTMT values are below the conservative threshold of 0.85, further confirming discriminant validity.

Table 4
Heterotrait–Monotrait Ratio (HTMT)

Construct Pair	**HTMT**
ITC ↔ ITD	0.551
ITC ↔ HRD	0.725
ITD ↔ HRD	0.619

Common Method Bias
Harman's single-factor test showed that the first unrotated factor explained 25.2% of the total variance, below the 40% threshold. Full collinearity variance inflation factors (VIFs) ranged from 1.198 to 1.493, all below 3.3, indicating that common method bias is not a serious concern.

Structural Model Evaluation
Table 5 presents the effect sizes (f^2) of each predictor on the endogenous constructs. Following Cohen's (1988) guidelines, f^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively. ITC had a medium effect on HRD effectiveness ($f^2 = 0.251$) and a small effect on ITD ($f^2 = 0.132$). ITD had a small effect on HRD effectiveness ($f^2 = 0.026$).

Table 5
Effect Sizes (f^2)

Endogenous Construct	**Predictor**	**f^2**	**Effect Size**
Innovative Talent Development (ITD)	ITC	0.132	Small
HRD Effectiveness	ITC	0.251	Medium
HRD Effectiveness	ITD	0.026	Small

Predictive relevance (Q^2) was assessed using the blindfolding procedure. As shown in Table 6, Q^2 values for ITD (0.167) and HRD effectiveness (0.242) are both greater than zero, indicating that the model has satisfactory predictive relevance.

Table 6
Predictive Relevance (Q^2)

Endogenous Construct	**Q^2**
Innovative Talent Development (ITD)	0.167
HRD Effectiveness	0.242

Hypothesis Testing

Table 7 presents the direct effect results. H1 was supported: ITC had a strong positive effect on HRD effectiveness (β = 0.372, p < 0.001). H2 was supported: ITC significantly predicted ITD (β = 0.318, p < 0.001). H3 was supported: ITD significantly predicted HRD effectiveness (β = 0.124, p = 0.004). The model explained 34.1% of the variance in ITD (R^2 = 0.341) and 56.3% of the variance in HRD effectiveness (R^2 = 0.563).

Table 7
Direct Effects

Hypothesis	Path	β	t-value	p-value	Decision
H1	ITC → HRD	0.372	8.957	<0.001	Supported
H2	ITC → ITD	0.318	5.892	<0.001	Supported
H3	ITD → HRD	0.124	2.873	0.004	Supported

Mediation Analysis

As shown in Table 8, the indirect effect of ITC on HRD effectiveness through ITD was significant (β = 0.039, p = 0.006). Since the direct effect (β = 0.372) remained significant after including the mediator, the mediation is partial. Thus, H4 was supported.

Table 8
Mediating Effect

Hypothesis	Indirect Path	β	t-value	p-value	Decision
H4	ITC → ITD → HRD	0.039	2.763	0.006	Supported (Partial mediation)

Discussion

This study provides empirical evidence that innovative teaching competence acts as a catalyst for HRD effectiveness in higher education, both directly and indirectly through the mediation of innovative talent development. The finding that ITC has a strong direct effect on HRD effectiveness (β = 0.372) supports the view that in contemporary, innovation-driven academic environments, adaptability, creativity, and teaching experimentation are more consequential for institutional outcomes than routine instructional skills (Moreira et al., 2023; Muthanna et al., 2026).

From a theoretical standpoint, the results extend experiential learning theory by demonstrating that ITC activates reflective and experimental learning cycles that enhance faculty members' capability development and knowledge application (Kolb, 1984). Consistent with self-determination theory, innovation-oriented teaching environments likely provide greater autonomy and competence support, fostering intrinsic motivation for professional growth (Ryan & Deci, 2000). The partial mediation of ITD indicates that ITC influences HRD effectiveness through two pathways: a direct path (e.g., immediate improvements in teaching quality and student engagement) and an indirect path through the development of faculty members' own innovative capabilities, which then contribute to organisational learning and performance.

The effect size of ITD on HRD effectiveness (β = 0.124) is modest but significant, which is typical in cross-sectional organisational research where the translation from individual capability to institutional outcomes takes time and is influenced by contextual factors (Potnuru et al., 2021). Importantly, the indirect effect (β = 0.039) confirms that ITD plays a meaningful mediating role, even if partial. The model's explanatory power (R^2 = 0.563) indicates that ITC and ITD together account for more than half of the variance in HRD effectiveness, underscoring the practical significance of the proposed framework.

Practically, the findings suggest that universities should prioritise the development of ITC among academic staff. Faculty development programmes should move beyond basic pedagogical training to include creative teaching strategies, problem-based learning, interdisciplinary collaboration, and reflective practice. Moreover, HRD systems should explicitly support ITD through mechanisms such as teaching innovation grants, faculty learning communities, and recognition of pedagogical experimentation in promotion criteria. This study has several limitations. The cross-sectional design precludes causal inference; longitudinal research is needed to confirm the direction of effects. Self-reported data may be subject to response bias, although common method bias tests were satisfactory. The sample was drawn from three universities in one Chinese province, limiting generalisability to other regions or national contexts. Future research should replicate the model across different institutional types (e.g., research-intensive vs. teaching-focused universities) and cultural settings. Additionally, future studies could incorporate objective measures of HRD effectiveness (e.g., student outcomes, innovation metrics) and explore moderators such as leadership support or organisational culture.

Conclusion

This study demonstrates that innovative teaching competence is not merely a desirable pedagogical attribute but a strategic catalyst for HRD effectiveness in higher education. By directly enhancing instructional quality and indirectly promoting faculty members' innovative talent development, ITC contributes substantially to institutional performance. The model explains 56.3% of the variance in HRD effectiveness, underscoring the practical significance of innovation-oriented teaching. As universities worldwide continue to face pressures for digital transformation and innovation-driven talent cultivation, fostering ITC and supporting ITD should become central pillars of faculty development and HRD strategy.

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