

Learning and Teaching Centres in Global Higher Education: A Qualitative Comparative Analysis on their Effectiveness

Küresel Yükseköğretimde Öğrenme ve Öğretme Merkezlerinin Etkililiği: Nitel Karşılaştırmalı Analiz

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Abstract

Objective: Due to growing emphasis on quality teaching in higher education, universities worldwide have established Learning and Teaching Centers (LTCs). However, the literature often focuses on local-level case studies or descriptive ones, thus comparative perspective on the effectiveness of these centers remains limited.

Methods: This study^{*,**} is designed on a qualitative comparative analysis approach and a multiple case study. Accordingly, open-access documents published by the LTCs at ten universities selected based on the Times Higher Education rankings and representing different higher education regions were examined and analyzed using qualitative comparative analysis methods.

Results: The results revealed four key conditions that constitute the effectiveness of the centers: strengthened innovative pedagogies, high institutional capacity, active student engagement, and rigorous quality mechanisms. The findings demonstrate that effectiveness arises from specific alignments of these four conditions.

Conclusions and Recommendations: While multiple pathways can lead to effectiveness, institutional capacity consistently emerges as a critical condition. The findings also reveal a Western dominance, with the strongest configurations observed in North American and European contexts, while alternative pathways in non-Western contexts indicate how effectiveness can also emerge through compensatory mechanisms. It is recommended that further comparative research be conducted in context-specific settings, and that institutional capacity be prioritized to ensure the sustainability.

Keywords: Learning and Teaching Centres, Quality Teaching in Higher Education, Learning in Higher Education, Comparative Education, QCA in Education

Özet

Amaç: Yükseköğretimde nitelikli öğretime ilişkin artan baskılar sonucu birçok üniversite, Öğrenme ve Öğretme Merkezi kurmuştur. Alanyazında yürütülen çalışmaların çoğunluğu yerel düzeyde vaka incelemesi veya betimleyici odaklı olmasıyla merkezlerin etkililiğine dair karşılaştırmalı bir perspektif sunmakta sınırlı kalmaktadır.

Yöntem: Bu araştırma nitel karşılaştırmalı analizi benimsemekte olup çoklu durum çalışması desenindedir. Bu doğrultuda, Times Higher Education sıralamasına dayalı ve yükseköğretim bölgelerini temsilen belirlenen on üniversitedeki Öğrenme Öğretme Merkezi'nin yayınladığı açık erişimli dokümanlar incelenmiş ve nitel karşılaştırmalı analiz yöntemiyle analiz edilmiştir.

Bulgular: Araştırma sonucunda merkezlerin etkililiğini oluşturan yenilikçi öğretim, güçlü kurumsal kapasite, aktif öğrenci katılımı ve etkili kalite mekanizmaları olmak üzere dört temel koşul öne çıkmıştır.

Sonuç ve Öneriler: Merkezlerin etkililiğinde ilgili koşulların belirli uyumları ortaya çıkmış; ancak alternatif çözüm yollarına ulaşılmasına rağmen güçlü kurumsal kapasitenin kritik koşul olduğu görülmüştür. Ayrıca, merkezlerin etkililiğini oluşturan en güçlü yapıların Kuzey Amerika ve Avrupa üniversitelerinde yoğunlaştığı, diğer bölgelerde ise tamamlayıcı mekanizmalar aracılığıyla etkililiğin sağlandığı belirlenmiştir. Farklı bağlamlara özgü karşılaştırmalı araştırmaların yapılması ve etkililiğin sürdürülebilirliği için kurumsal kapasitenin önceliklendirilmesi önerilmektedir.

Anahtar Kelimeler: Öğrenme ve Öğretme Merkezleri, Yükseköğretimde Nitelikli Öğretim, Yükseköğretimde Öğrenme, Karşılaştırmalı Eğitim, Eğitimde Nitel Karşılaştırmalı Analiz

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Quality teaching has recently gained a renewed focus in higher education. In response to an increasing demand for outcome-driven education, many higher education institutions are strengthening their teaching quality strategies to align with labor market needs, meet accountability expectations, and sustain reputation alongside research output in an intensified global competition atmosphere. This changing climate, marked by the internationalization and diversity of learner profiles (Kondakçı et al., 2018) and immense technological disruption caused by the pandemic and GenAI has forced universities to account for and demonstrate the quality of their teaching and learning outcomes.

This turbulent atmosphere has also affected faculty, feeling disconnected due to increasing demands of fast-paced reforms, often imposed from outside (Marquina, 2025), which caused frustration, resistance, and a sense of losing their autonomy (Woelert, 2023). While some have been forced to be pushed out of the system against pressures on academic roles, others have adapted by rethinking their teaching and using innovative approaches. As teaching-focused identities are becoming increasingly strained within the evolving demands of academic work (McCune, 2021), institutions are increasingly forced to adopt policies that aim to provide faculty with support in teaching and learning. Studies have shown that efforts of volunteering change agents within institutions as the leaders of innovative teaching often remain relatively isolated (Hannan & Silver, 2000) and far from creating a learning community amongst other faculty across disciplines unless the institution embraces a role of serving as a locus for improving teaching (D'andrea & Gosling, 2005). Therefore, maintaining the real inclusion of the academy in learning communities that will help them implement effective teaching strategies for all students is best possible through a policy-based institutionally driven and supported initiative to enhance the quality of teaching and learning.

The critical role that universities have undertaken to trigger the enhancement of teaching and learning quality has been to establish 'Learning and Teaching Centre's (LTCs), usually structured in the form of a central unit dedicated to professional development of faculty in innovative pedagogies and thus supporting learning. The establishment of the first formal LTC in 1962 at the University of Michigan was remarkable in the evolution of these structures (Wright, 2023). The spread of this trend has been an example of benchmarking among institutions of higher education for a best practice intended for the professional development of the faculty as a means towards increasing the quality of education. Benchmarking is essential for universities, enabling them to demonstrate their quality against external standards, especially in the domain of teaching and learning (Chisholm, 2008). However, contextual factors on the implementation of this policy should be taken into account. Academic cultures, the governance mechanisms

and autonomy levels of universities may immensely differ from one to another. Thus, there is a need to closely monitor each factor that influences the desired outcome in the educational ecosystem. For policy borrowing not to become a one-way surveillance mechanism of the 'rich nations club' (Kamens, 2013) and be of real use for the developing nations, comparative evidence is essential.

While the literature acknowledges the role of LTCs, limited research provides insights into how these centres adapt global best practices to their local institutional ecosystems (Chisholm, 2008), through the study of them as local cases (Bitar & Davidovich, 2025; Capriotti & Locatelli, 2024; Elçi & İşeri, 2022; Gündoğdu & Kırkıç, 2023; Nam & Dipasupil, 2019). Although educational phenomena have a great potential that can be explained through causality of combined conditions, compared to other social science fields such as political science and sociology, the potential of QCA research in education has not fully harnessed (Çilesiz & Greckhamer, 2020). To address these gaps, using Qualitative Comparative Analysis (QCA) on the study of global LTC cases, the study offers a unique examination of the conditions under which teaching and learning centres contribute to quality teaching enhancement. This study therefore positions itself at a comparative perspective by focusing on which factors or combinations of factors lead to this outcome across diverse academic environments. Thus, it contributes to closing the empirical gap in the comparative higher education literature. In sum, this study aims to investigate the causality of identified conditions or combinations of conditions on the outcome of high effectiveness of LTCs using QCA, through examining cases from various regions of the global higher education arena. In line with this objective, the study addresses the following research question and sub-questions:

1. Which conditions support the effectiveness of LTCs across different higher education contexts?
2. How does the causation of these conditions reflect the membership of cases (LTCs) in the set of highly effective centres?
3. Which configurations of conditions are most commonly present in cases where LTCs are perceived as highly effective (outcome variable)

Literature Review

Learning and Teaching Centres in Universities

LTCs have developed as key mechanisms to support institutional adaptation, enabling universities to address student diversity, integrate technological change, and meet evolving pedagogical expectations. While studies mentioned above focus on effectiveness and evaluation of LTCs, they reveal the functions and contributions of them at the local level. For instance, the study conducted by Elçi and İşeri (2022) provides an instructive example of how LTCs operate in the Turkish higher education context, suggesting a



need for the increase in number and quality of LTCs, and a call for growing academic interest. Similarly, Nam and Dipasupil (2019) illustrates an Asian perspective on the status of LTCs. Their study revealed that the most common services provided by the LTCs in their context are tutoring, and workshops, and recommended that universities establish LTCs to help faculty development while also supporting students to overcome their academic challenges.

Apart from these descriptive evaluations of LTCs, Bitar and Davidovich (2025) have constructed a unified framework that harmonize the structural, professional, and relational dimensions of LTC operations in Israeli context. This illuminative focus on LTCs provide a valuable viewpoint within particular institutional and national contexts; however, a systematically structured framework is crucial to evaluate their broader impact on teaching and learning. There are few studies focusing on how to evaluate the outcomes of these centres (e.g., Akinlar & Kavgaoglu, 2024). To this end, a holistic perspective was presented for evaluating the critical role LTCs play in sustaining the metamorphosis in higher education, called the PROF-XXI framework (Kloos et al., 2021; Pérez-Sanagustín et al., 2022). The framework is structured in five dimensions as “Teacher support”, “Student support”, “Leadership”, culture and transformation”, “Technology for learning”, and Evidence-based practices. The dimensions are scaled into five levels of competence (Development; Innovation; Value generation; New challenges and opportunities; Public accountability of impacts for continuous improvement).

Conditions for Effectiveness of LTCs

The effectiveness of learning and teaching centres (LTCs) in higher education is shaped by several conditions, one of which is the promotion of *innovative pedagogical practices*. For instance, active and student-centred learning methods play a critical role in student engagement, motivation, and achievement (Ribeiro-Silva et al., 2022). Another randomized study reveals that models such as flipped classrooms and problem-based learning support deep learning and critical reflection (Oliván-Blázquez et al., 2023). Thus, faculty development programmes focusing on active learning have a strong positive effect on both teaching practices and student performance (Park & Xu, 2024). These findings suggest that LTCs must not only introduce pedagogical innovations but also cultivate learning environments for the faculty.

Such innovations can face resistance in cultures where research is appraised more than teaching, or where traditions of discipline affect teaching orientations (McCune, 2021; Roxå & Mårtensson, 2009). This highlights that LTCs’ effectiveness depends on *institutional support* that initiates and sustains pedagogical innovation, which stands out as the second condition. Capacity-building initiatives may also help universities attain teaching excellence, especially in developing contexts, by combining funding with

organizational reform and partnerships (Hellström, 2018). The role of *student engagement* has also been discussed in the literature as another significant condition for LTC effectiveness. Engagement is shaped by curriculum design, interaction opportunities, and institutional culture (Stenalt et al., 2025). LTCs contribute to enhancing student engagement by equipping faculty with tools to design inclusive and participatory learning environments through developing partnership projects with students (Bovill, 2020; Healey & Healey, 2024). When student engagement operates as a bridge between teaching and learning, a more inclusive atmosphere may be built.

Finally, *evaluation and quality mechanisms* play a central role in ensuring that LTC initiatives are effective. There is a need for solid and well-established quality assurance frameworks to support innovation (Harvey, 2024). Evaluation mechanisms, though, must be tailored to local contexts, as one-size-fits-all models often fail to capture diverse institutional realities (Bardakçı, 2024). For LTCs, rigorous evaluation frameworks not only provide accountability but also generate feedback cycles that refine practice and strengthen institutional support. Overall, these conditions function as interconnected elements that reinforce one another. For instance, pedagogical innovation depends on institutional capacity for the sustainability and evaluation frameworks for accountability of LTCs. This perspective aligns with the configurational nature of teaching quality, where different combinations of conditions, rather than single factors, shape institutional effectiveness.

The Power of Comparison

From the earliest stages of higher education research, international comparison has played a central role, as scholars have consistently compared their institutions with those in other countries (Kosmützky & Krücken, 2014). Comparative education still provides a great opportunity to examine policy alternatives in a broader range of possibilities (Altbach, 2001), and even globalization has not diminished its relevance in moving beyond national or systemic boundaries (Green, 2003). The notion of comparative education might yet be replaced by ‘comparative learnology’ as a new concept for research that seeks better to understand the nature of learning by using the systematic cross-cultural and contextual comparisons (Broadfoot, 2009). Overall, through a comparative perspective policy-makers can build paths of causal reasoning to open up the horizon for potential reforms and best practices in higher education (Steiner-Khamsi, 2021).

To capture the essence of social phenomena and also benefit from the power of comparison is possible through qualitative comparative analysis (QCA). As an approach in the intersection of valuable-oriented quantitative and case-oriented qualitative research, QCA seeks to compare the uniqueness of cases in a systematic way (Ragin,

2008). Unlike variable-oriented methods that emphasize the overall effects of specific variables across a large sample of cases, comparative analysis may be an appropriate strategy to illuminate complex configurations of causalities that affect policy processes in education (Fischer & Maggetti, 2017), such as in the case of LTCs in higher education.

Method

Research Design

This study uses qualitative comparative analysis based on qualitative document analysis data. A multiple case study research design was chosen to get a deep understanding of the extent to how effectively learning and teaching centres within universities around major higher education regions have achieved their outcomes. Case study research makes it possible to capture complex phenomena (Yin, 2014) such as LTCs. QCA uses qualitative data collected through a case study design to identify single and a combination of certain conditions that lead to a particular result, which allows researchers to see each case as a whole, at the same time compare how certain causal conditions combine to generate qualitative change across cases (Rihoux & Ragin, 2009).

In QCA, evidence is analyzed with each case compared to others as meaningful combinations of factors. This approach became especially popular in situations with the number of cases too small for variable-oriented methods like regression analysis, but too large for intensive within-case techniques (Beach & Pedersen, 2014). Overall, QCA is often portrayed as a bridge builder between contextualization and generalization (Pattyn et al., 2019).

Sampling

To ensure a geographically diverse selection of universities, this study employed a stratified purposive sampling approach. In case-oriented research, cases are chosen when they allow for the acquisition of in-depth, relevant, and practical knowledge needed to address the research question (Mahoney & Goertz, 2006). Based on the sampling strategy, study group of LTCs comprised of a total of 10 universities, two from each major global region according to Times Higher Education (THE) rankings (North America, Europe, Asia-Pacific, Latin America, Middle East & Africa).

Cases were required to have an established LTC or an equivalent academic unit dedicated to the advancement of teaching and learning practices through specified programs and activities. Institutions were included if they had publicly accessible reports or policy documents related to teaching and learning strategies, faculty development programs or broader institutional pedagogical policies. ■ Table 1 presents the main characteristics of the cases including country, region, foundation year and notable works.

As shown in ■ Table 1, the cases vary in their foundation year, region, and scope, yet they all highlight meaningful contributions to educational innovation. The notable works illustrate the various products of LTCs in supporting faculty, engaging students, and shaping institutional culture.

The Procedure: From Qualitative Document Data to Fuzzy-Set Values

The procedure was conducted in six steps, which will be chronologically elaborated as follows. In step 1, the conditions and outcome were operationalized. In QCA, every case is conceived as a combination of conditions and one particular outcome. Conditions can be conceived as causal variables, determinants, or factors (Rihoux & Ragin, 2009). In step 2, anchor points were determined for the documents based on an evaluation framework specifically designed to assess the competencies of LTCs. In Step 3, a content analysis was conducted to the university websites and documents. In step 4, the content analysis procedures including codes, categories and themes were explained. In step 5, the fuzzy-set scale and the fuzzy-set values were determined. Finally, the fuzzy-set values of conditions and outcome were assigned for each case and revised.

Step 1:

Operationalizing the Conditions and the Outcome

It is necessary to start by operationalizing the theoretical concepts of the conditions and the outcome based on standard-scientific practice and/or researcher's knowledge of the empirical context to be investigated (Ragin, 2000). The PROFXXI framework (Pérez-Sanagustín et al., 2022) inspired the researchers to operationalize the measures of conditions and outcome of LTCs.

Based on theoretical insights and an initial look at the raw data, the following conditions and outcome were determined, which are required to be labelled with adjectives (Aşkun, 2025). Accordingly, the outcome variable in this study is 'high effectiveness of LTCs', and the conditions for this outcome are 'strengthened innovative pedagogical practices' (SIPP), 'high institutional capacity' (HIC), 'active student engagement'(ASE), and 'rigorous evaluation and quality mechanisms' (REQM). An example of the evolution of the measures for which conditions are to be tested is below (■ Table 2). First, preliminary measures were operationalised and later these measures were revised as the qualitative data collection of cases proceeded.

Step 2: Determining Anchor Points

Determining anchor points apriori is essential during the document analysis to measure the fuzzy-set values of the cases and distinguish a case that is more in the set from a case that is less in the set (Basurto & Speer, 2012).

The initial anchor points designated by researchers were based on PROFXXI framework competency levels which were scaled from 1 to 5. These metrics enabled to iden-



tify the indicators for the evaluation of the conditions (1: development, 2: innovation, 3: value generation, 4: new challenges and opportunities, 5: public accountability of impacts). For instance, while development (1) level refers to the basic competencies that are required at the initiation level, the public accountability of impacts for continuous improvement level (5) indicates that competencies are monitored and their transparency was assured. According to these metrics, the documents of LTCs were evaluated by the researchers. Later, the initial anchor points were revised and adapted into 0, 0.33, 0.67 and 1 as four scale fuzzy set threshold points for QCA (Ragin, 2008). These anchor points are the four main thresholds that structure a fuzzy set: 1 (threshold for full membership), 0.67 (threshold for strong but not full membership), 0.33 (threshold for weak membership), and 0 (threshold for nonmembership) (Ragin, 2018).

Step 3: Content Analysis

In this step, a systematic coding of raw qualitative material prior to calibration was performed. All centre websites, institutional reports, and policy documents were read closely and coded according to a provisional scheme derived from our operationalization of the four conditions (SIPP, HIC, ASE, REQM) and the outcome (LTC high effectiveness). Each case was coded across all conditions, ensuring within-case completeness and cross-case comparability. Contradictory or ambiguous evidence was retained in the coding notes to preserve transparency. This step created a structured codebook and a consistent set of coded excerpts for each condition, which then served as the basis for calibration into fuzzy set values (Step 4). In this way, researchers reduced subjectivity by explicitly documenting the link between textual evidence and set membership scores.

Step 4:

Summarizing and Structuring the Data for Calibration

After coding, the evidence was transformed into structured case summaries for each university. For each condition (SIPP, HIC, ASE, REQM) and the outcome (LTC high effectiveness), coded excerpts of documents were synthesized into short case profiles. Each profile described the presence, absence, or degree of development of the condition using the measures defined. Thus, step 4 functioned as the “bridge” between open coding and the numeric calibration that followed in Step 5. These structured summaries also documented contradictions or missing information, which were used for calibration decisions. An example qualitative case summary is presented below (■ Table 3).

Step 5: Calibration into Fuzzy Sets

In the final stage, case summaries were calibrated into fuzzy-set membership scores. A four-value scale (0, 0.33, 0.67, 1) was employed to capture degrees of membership, following Ragin (2008). Calibration rules were applied using the indicators specified in ■ Table 4. Full membership (1) was assigned when institutionalized evidence across

multiple indicators was observed. For example, Warwick and TUM scored 1 on all conditions, as evidence showed regular faculty development workshops, comprehensive evaluation reports, formal student participation, and stable institutionalization. Partial membership (0.67) was applied when evidence was substantial but incomplete. For instance, UC was coded 0.67 on SIPP and HIC, as reports indicated technology-supported teaching and moderate institutional capacity. Similarly, UTOKYO received 0.67 on ASE due to limited but regular student surveys rather than formal partnerships. Scores of 0.33 were used when only minimal or fragmented evidence was present. For example, KSU received 0.33 on SIPP and ASE, as workshops and student involvement were seldom but there was some data on the evaluation procedures informing policy implementation (REQM = 0.67). Full non-membership (0) was reserved for cases with no meaningful evidence across indicators. TEC was calibrated 0 for ASE, as no systematic mechanisms for student engagement could be identified.

The outcome (High Effectiveness of LTCs) was calibrated with the same logic. WISC and UMICH were assigned 1, as their LTCs were embedded in strategic planning and demonstrated broad institutional impact, while UC scored 0.33, reflecting limited influence. In contrast, UMELB and TEC were placed at 0.67, as their centers demonstrated moderate but not fully institutionalized impact. This calibration ensured comparability across cases and created a transparent link between qualitative evidence and the fuzzy-set values used in the analysis.

Data Analysis

Following content analysis phase, data was transformed from qualitative to quantitative fuzzy set scores based on membership in sets. Membership scores were assigned on the basis of the theoretical and substantive knowledge, which is called calibration. fsQCA 4.1 software was then used to transform the assigned membership scores into fuzzy values and the Truth Table was constructed to conduct logical comparison of each case. The multiple causal paths to a certain outcome were identified. The following section elaborates on the results of this analysis.

Results

Stage 1: Building The Data Table

■ Table 5 shows the scores assigned by the researchers to individual cases on each condition and outcome, which is a starting point for four-point fuzzy set QCA.

As defined above, the outcome scores as an indicator of the high level of effectiveness of the cases, reflected full membership in four cases (UMICH, WISC, TUM, WARWICK), and only one case was assigned low membership (UC). Descriptive statistics of scores were shown in ■ Table 6.

As seen in ■ Table 6, mean scores of conditions are generally high except for ASE. While the mean of ASE is rigidly below the outcome mean, REQM mean is slightly below the outcome mean.

Stage 2: Constructing The Truth Table

Having constructed a data table, we then constructed a truth table. A truth table displays the conditions, configurations, and the number of cases with membership in each configuration set. Each configuration in the truth table is itself a set to which cases can be members or not members. The truth table depicts how many cases within a set (or configuration) are instances of the outcome. In this study, the outcome is high effectiveness, and so the truth table indicates how many of the cases within a configuration are members in the set of highly effective LTCs. The truth table is presented in ■ Table 7. The rows are in descending order of consistency, which is the metric used in QCA to express how far the pattern of all the cases is consistent with sufficiency.

As seen in ■ Table 7, the number of cases in SIPP*HIC*~ASE*REQM configuration is 4, in SIPP*HIC*ASE*REQM configuration is 3, in ~SIPP*HIC*~ASE*REQM is 1 and in SIPP*HIC*~ASE*~REQM is 2. It should be noted that each configuration has sufficient consistency (that is >0.80) to be classified as having full membership in the set of 'highly effective LTCs'. Ragin argued that cut-off levels for consistency should be as close to 1 as possible, and that it is difficult to justify drawing conclusions when consistency scores are below 0.75 (2008). For our analysis, we adopted a cut-off for consistency of 0.80 or above.

Configuration 1 depicts the combined effect of the presence of SIPP, HIC, REQM, and the absence of ASE. This shows that in four cases where innovative pedagogies are supported and where institutional capacity and quality management processes are strong, LTCs can accomplish high effectiveness even if student participation is weak. According to the 2nd configuration, the combined effect of the presence of SIPP, HIC, REQM, and ASE is revealed. Only three cases show this configuration, which contribute to the outcome through the combination of the presence of all conditions. Configuration 3 means the combined effect of the absence of SIPP and ASE; and the presence of HIC and REQM. In only one of the cases this configuration has emerged, indicating that the despite the lack of SIPP and ASE, the combined effect of HIC and REQM causes the outcome. Configuration 4 marks the combined effect of the presence of SIPP and HIC, and the absence of ASE and REQM. In other words, the contribution of the factors regarding innovative pedagogical support and a strengthened institutional capacity in combination still causes the outcome even though the other two conditions are missing. In general, the truth table (■ Table 7) depicts under which conditions the cases whose membership scores equals to 1 are clustered and summarizes that the model reveals ideal results in terms of consistency and coverage.

Stage 3: Analysing The Truth Table

Upon completing the previous steps, the consistency and coverage values were measured through 'the analysis of necessary conditions'. The consistency level of SIPP, HIC and REQM was found above .90, which means they all meet the absolute standard (.96 for SIPP, HIC and REQM). This means in 96 % of cases teaching practices are strengthened with innovative pedagogical practices and a strong institutional structure has been established, and a strong evaluation and quality assurance tradition holds. The consistency value for ASE is .56, which shows that in 56% of cases whose membership score equals to 1, there is an active student engagement.

The coverage values of .88 for SIPP and .85 for HIC show that they cover a large part of the cases whose membership score equals to 1. The high coverage value of REQM (1) shows that it covers all the cases where a strong quality mechanism exists. Even though the consistency level of ASE is lower than that of other conditions, it covers all cases with a coverage value of 1. In sum, the analysis of necessary conditions revealed that three conditions have high consistency level in causing the outcome variable.

■ Table 8 depicts that the three solution pathways obtained from the intermediate solution in fuzzy set analysis contribute to the outcome variable with a consistency value of .91 and a coverage value of .95.

The first solution pathway shown in ■ Table 8, which was formulated as SIPP*HIC*~ASE (presence of SIPP and HIC combined with the absence of ASE), includes the cases of TEC; UC; UMICH; UMELB; UTOKYO and UCT above the 0.5 membership threshold. The raw consistency value of this solution pathway is .56, which shows that this pathway explains 56% of cases whose membership score equals to 1. The unique consistency value of this pathway is 0.04, which means only 0.4% of the cases explained are specific to this combination. This highlights that the combined effect of the presence of strengthened innovative pedagogies and a strong institutional capacity and the absence of active student engagement are critical in the realization of the outcome.

According to the second solution pathway HIC*~ASE*REQM (the combination of the presence of HIC and REQM, and the absence of ASE), 5 cases (TEC; UMICH; UTOKYO; KSU and UCT) are included above the 0.5 membership threshold. The raw consistency value of this solution pathway is .56, explaining 56% of cases whose membership score equals to 1. The unique consistency value of this pathway is 0.04, which means only 0.4 % of the cases explained are specific to this combination. This reveals that a strong institutional capacity together with effective quality assurance processes are critical conditions in the outcome variable even though students are not actively engaged in LTCs activities.



Finally, the solution pathway SIPP*HIC*REQM (the combined presence of SIPP, HIC and REQM) was seen in 7 cases (WISC; TUM; WARWICK; UMICH; UTOKYO; UCT and TEC) with a membership threshold of 0.5. The raw consistency value is .86, explaining 86% of cases whose membership score equals to 1. The unique consistency value is 0.34, meaning only 34% of the cases explained are specific to this combination. This solution pathway has a much higher coverage and consistency values than the others, which means it has a much stronger causality effect on the realization of the outcome. This highlights that the combined effect of the presence of strengthened innovative pedagogies, a strong institutional capacity and rigorous evaluation and quality mechanisms are critical the realization of the outcome of high effectiveness.

All in all, the LTCs accomplish high effectiveness through implementation of the various combinations of strengthened innovative pedagogical practices, strong institutional capacity, and a well-structured evaluation and quality mechanism. The presence of the condition of a strong institutional capacity in all three solution pathways manifests it as the most critical condition in the effective execution of the centres.

Discussion

Despite the growing literature on teaching quality and the role of LTCs, few studies have systematically examined the conditions that lead to their effectiveness across diverse contexts (Amundsen & Wilson, 2012; Bitar & Davidovich, 2025). Existing research often emphasizes individual factors such as pedagogical innovation (Ribeiro-Silva et al., 2022), institutional recognition (OECD, 2020), or student engagement (Bovill, 2020). However, little is known about how these conditions interact to shape effectiveness in practice. Moreover, comparative analysis remains limited, with most studies offering single-case or descriptive analyses rather than empirical examinations of causal patterns across contexts. Addressing this gap, the present study employed QCA to capture the configurational nature of LTC effectiveness. In answering the first research question, strengthened innovative pedagogies, a strong institutional capacity, active student engagement, and rigorous evaluation and quality mechanisms were identified as most prominent in achieving effectiveness. As for the second research question, with strong institutional capacity being the most prominently contributing condition, the alignment of rigorous evaluation and quality mechanisms and strengthened innovative practices were found to be central conditions in each case. For the third research question, three solution pathways were identified one of which has a much stronger causality effect on the realization of the outcome variable. In what combinations these conditions affect high effectiveness will now be discussed.

The results demonstrate that effectiveness does not stem from one single condition, but rather from the alignment of complementary conditions for effective teaching and

learning. The literature highlights the centrality of professional development efforts targeting pedagogical innovation to the effectiveness of LTCs. Faculty development programmes that equip academics with new innovations such as flipped classrooms, AI or inclusive curriculum design are linked to remarkable improvements in both student performance and quality teaching (Park & Xu, 2024). The role of LTCs has become significant considering the tension between research and teaching in universities. Teaching-focused academic identities are under the threat of institutional reward and tenure systems that privilege research and diminish the significance of pedagogical expertise (McCune, 2021). Similarly, Yang et al. (2022) emphasize that the dominance of research metrics has eroded the professional standing of teaching, leaving faculty underprepared to adapt when major disruptions such as the pandemic and AI, which heightened new demands for new forms of pedagogical competence. In this context, providing support for innovation in teaching practices was found to be a crucial condition for an effective LTC.

It was found that the effectiveness of LTCs is closely linked to the level of institutional capacity that supports their work. Centres that are well resourced, staffed by professionals, and embedded within governance structures have a stronger capacity to shape educational priorities across the institution (Amundsen & Wilson, 2012), and sustain quality enhancement (OECD, 2020). This has important implications for both institutional leaders and policymakers, suggesting that strengthening teaching quality requires coordinated strategies with meaningful follow-up and organizational support rather than fragmented initiatives. As higher education continues to transform, LTCs' success increasingly depends on their ability to balance professional capabilities with complex institutional dynamics while maintaining trust-based stakeholder relationships (Bitar & Davidovich, 2025). Therefore, while innovative teaching practices represent the pedagogical core of LTC effectiveness, they require institutional legitimacy and support to take hold.

Another condition found to be pivotal in the effectiveness of LTCs is their ability to foster active student engagement, which is a multidimensional construct of cognitive, affective and social factors. Effective engagement of students in higher education strengthens learning outcomes, well-being, self-efficacy and institutional reputation (Bowden et al., 2021). Our findings suggest that support aimed at pedagogical innovation must be accompanied by strategies that enhance learner engagement such as scaffolding, inclusive learning design, and community-building mechanisms for innovation to translate into improved learning. Research indicates that students' trust in the quality of their relationship with faculty is essential for developing students' affective commitment (Snijders et al., 2022) and faculty interaction played a mediating role between teaching quality and student engagement (Wang, 2024). Thus, without student participation, even the most creative teaching interventions may fail to produce their intended impact.

Evaluation and quality assurance mechanisms was also found critical for the effectiveness of LTCs. Quality in higher education should be understood not as an external requirement but as a process of continuous enhancement (Harvey, 2024). It can be noted that evaluation and accreditation frameworks remain vital for providing legitimacy to teaching and learning initiatives. When implemented in a developmental manner, quality mechanisms help institutions demonstrate the impact of pedagogical change through the initiatives of LTCs. de Vincenzi et al. (2018) asserted that quality assurance is one of the priorities on the institutional agenda of quality teaching. Without such a focus, teaching and learning initiatives may risk being undervalued or discontinued due to a lack of visible outcomes.

The findings demonstrate that effectiveness was possible even when active student engagement was weak, provided that this gap was compensated by strengthened innovative pedagogical practices, high institutional capacity or rigorous evaluation and quality mechanisms. For instance, TEC and UC achieved moderate effectiveness although student engagement was absent, because both centres emphasized pedagogical innovation and institutional support. In this context, TEC mainly focuses on professional development of faculty but invests in students as partners in an indirect manner. Indeed, this shows that despite the absence of students' active engagement they still benefit from the development of their professors and thus the high outcome still remains. A similar finding was observed in UMICH and UTOKYO with weak student engagement. In KSU, for instance, strong institutional capacity aligned with evaluation and quality mechanisms was possible to sustain effectiveness despite weak student engagement. These findings emphasize causal asymmetry, meaning that the presence and absence of a condition do not function symmetrically. While active student engagement can be substituted by other enabling mechanisms, high institutional capacity was indispensable across almost all pathways.

The most consistent and robust pathway (HIC+REQM+SIPP) was evident in Western and high-ranking universities such as UMICH, WISC, TUM, and WARWICK. In these contexts, strong resources supported a comprehensive model in which structural capacity, pedagogical innovation, and accountability mechanisms reinforced one another to produce high effectiveness. This means the operation of LTCs varies according to welfare of the country, background of the university, and the specific needs of the context. In line with this, in the Asian context, LTCs were found to face challenges in the functioning of centres due to inadequate support from policymakers (Nam, 2020). This suggests that resource-rich and globally competitive universities are best positioned to realize the full potential of LTCs, which highlights the significance of cultural contexts for global university rankings and the considerable impact of long withstanding asymmetries in the higher education landscape (Jöns & Hoyler, 2013).

This prevalent pathway reflects a broader pattern of Western institutional dominance, which is in line with systemic asymmetries in higher education. As Altbach and de Wit (2015) put it, Western systems of quality assurance in higher education require others to adapt to their standards to achieve legitimacy. LTCs, established as a solution to the problem of quality teaching due to pressures of internationalization and marketization, continue to be highly effective in high-ranking universities and in both economically and politically powerful regions. Western-dominated ranking system positions LTCs simultaneously as part of the problem and as a reaction to the institutional pressures universities face. Although at first glance this appears as a paradox, it indeed reinforces the dual role of LTCs. While LTCs are established as a result of external pressures, their missions require them to serve the pedagogical and institutional innovations that are again enforced by the benchmarks created by these pressures.

Alternative pathways, however, revealed how LTCs in different contexts achieved effectiveness through compensatory configurations. In TEC and UC, relatively weak ASE was compensated by strong SIPP and REQM, revealing how pedagogical innovation and systematic evaluation can substitute for low engagement. Similarly, in UCT and KSU, HIC combined with REQM to sustain effectiveness, despite ASE being limited. These cases suggest that while student engagement can strengthen effectiveness, its absence does not hinder success when other enabling conditions are present, which demonstrate that effectiveness is achievable beyond Western institutions, though often through more fragile or compensatory routes. However, student engagement in the advancement of teaching and learning should not be totally neglected as faculty professional development and the student engagement are two complementary elements for the effectiveness of LTCs. In their study, Nam & Dipasupil (2019) recommended not only do the faculty members are afforded the chance to develop, but the students also possess an appropriate platform to tackle their scholarly difficulties that would otherwise be significantly more challenging in the absence of a dedicated center in three Asian countries.

Last but not the least, HIC emerged as a critical condition across all pathways, supporting the argument that institutional capacity is indispensable for LTC effectiveness. Second, the variation in pathways across cases highlights the context-dependent nature of teaching quality reforms. In Western settings, effectiveness typically rested on the comprehensive alignment of HIC, SIPP, and REQM, while in non-Western contexts, alternative routes are observed, relying more on institutional capacity to compensate for weak conditions. This discrepancy between the solution pathways observed in Western and non-Western cases reinforces the importance of comparative approaches in higher education research and challenges universalistic models of teaching quality by showing that multiple,



context-sensitive pathways can achieve effectiveness. For policy transfers to create authentic organizational change, tertiary institutions must strengthen their institutional capacity while considering the complex organizational dynamics (Mozin & Nggilu, 2023). Similarly, Shin et al. (2022) emphasize that the extent to which higher education policy reforms will achieve their goals is determined by their institutional capacity.

Conclusions and Recommendations

There is a need to see if professional development models in the form of LTCs are actually moving institutional cultures towards the idea of advancement or excellence in teaching and learning. Although case-specific studies around different regions have already presented a deeper sensemaking than traditional business tools can do, in this study QCA has offered a valuable methodological complement, as it enables a basis for meaningful global comparison rather than reducing change to isolated metrics.

The findings reveal that initiatives for the quality of teaching and learning serve as a cornerstone to deal with the challenges of educational leadership. In most cases where innovative pedagogies are supported and where institutional capacity and quality management processes are strong, LTCs can accomplish high effectiveness. The dominances observed deserve further scholarly attention for those who seek to analyse the impact of institutional and cultural realities on implementation of LTCs. QCA studies focusing on other conditions or a sub-set analysis of institutional capacity may present an alternative. This study has two main limitations, which are having a small number of cases and being solely based on document analysis; thus, studies with a widened comparison of more cases and more enriched data sources may contribute to the field.

In sum, all four conditions were found to be significant for LTC effectiveness while institutional capacity stands out as the most critical. Without adequate resources, staffing, and organizational recognition, other conditions struggle to generate sustainable impact. For universities to achieve their mission of enhancing teaching and learning, policy efforts must therefore focus on strengthening institutional capacity as a culture within which pedagogical innovation can flourish, evaluation mechanisms can build trust, and student engagement can be meaningfully supported.

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APPENDICES

Appendix 1: List of urls of cases:

<https://crlt.umich.edu/>
<https://ctlm.wisc.edu/>
<https://www.unimelb.edu.au/tli>
<https://www.he.u-tokyo.ac.jp/en/>
<https://www.tum.de/en/studies/tum-center-for-study-and-teaching>
<https://warwick.ac.uk/about/teachingandlearning/>
<https://celt.ksu.edu.sa/en/node/5051>
<https://cilt.uct.ac.za/>
<https://desarrollodocente.uc.cl/>
<https://tec.mx/en/ife>

Appendix 2: Tables

Table 1

Demographic Characteristics of Cases

Case / LTC	Country	Region	Foundation Year	Notable Works
CRLT (UMich)	USA	North America	1962	Number of staff: 40. Supported 11.308 participants in total. 52 publications were produced during the year.
CTLM (Wisc)	USA	North America	2019	Number of staff: 50. Served 196 online courses and numerous events to at least 883 participants.
LTC (Unimelb)	Australia	Asia-Pacific	NI	Framework for educational excellence identifies seven critical dimensions of staff activity that contribute to professional development.
LTC (UTokyo)	Japan	Asia-Pacific	2004	5 Technical Deep Dives (1 virtual, 4 face to face); 52 World Bank urban development projects; 10 external events with technical contributions were completed with 1.602 participants.
CST (TUM)	Germany	Europe	2006	Teaching principles were defined with the Teaching Mission Statement in 2011. Teaching Constitution which outlined the institutional framework, quality management, digitalization, and student participation was constructed in 2018.
CTE (Warwick)	UK	Europe	2010	IATL Strategy was constructed through three Foundational Principles: Research-Led Educational Innovation, Participatory Practices and Inclusive Structures and Care-Rooted Approaches. Activities for students and staff focused on Learning beyond Disciplines, Student Research, Learning beyond Borders and Research-Infused and Enterprise-Infused Curricula.
CELT (KSU)	Saudi Arabia	Middle East/Africa	2010	Since 2010, 54 programs and services, 147 workshops have been completed, benefiting 26.882 students and 3.556 faculty.
CHED (UCT)	South Africa	Middle East/Africa	1999	Advancing digital education leadership and inclusive curriculum design, C-DELTA Project, Next Generation Extended Curricula, ROER4D Project were completed.
CIAE (UC)	Chile	Latin America	NI	A total of 53 books and 90 academic papers were published; 73 research projects were conducted.
CEDDIE (Tec de Monterrey)	Mexico	Latin America	NI	From August 2025, Faculty's Development and Well-being Model supported faculty through six strategic development areas in Teaching Excellence and Educational Innovation & Technology.

NI: Not indicated

Table 2

Preliminary and final measures for ASE condition

Condition	Preliminary Measures	Final Measures
Active Student Engagement	Student participation into teaching and learning activities Opportunities for feedback collection Evidence of student-faculty collaboration on teaching initiatives	Student engagement in teaching/learning activities Regular student surveys and feedback systems Co-creation initiatives (students as partners in projects, mentoring, learning coaching)

**Table 3**

Qualitative summary for UMICH

Case	Conditions and Outcome	Qualitative Synthesis
UMICH	SIPP	Data indicate sustained initiatives in flipped classrooms, active learning workshops, and technology integration. Evidence shows systematic integration of these practices across departments rather than isolated projects.
	HIC	The centre benefits from stable funding, extensive staff resources, and strong alignment with university leadership. It is referenced in strategic planning documents and is positioned as the primary driver of teaching innovation.
	ASE	There is evidence of formalized student input mechanisms through feedback. Student partnerships and co-creation of learning are limited, suggesting engagement is present but not fully institutionalized.
	REQM	The center conducts regular assessments of teaching development programs, publishes evaluation summaries, and uses evidence to redesign initiatives. Quality assurance is formalized and visible in institutional documents.
	Outcome: High effectiveness	UMICH's LTC demonstrates a strong and institutionalized influence on teaching and learning. Its activities are embedded into faculty development and policy structures, justifying a fuzzy membership score of 0.67 (moderate-to-high impact).

Table 4

Explanation of Calibration Scores

Conditions and Outcome	Measures	Fuzzy-set Calibration
SIPP	Faculty development workshops Technology integration Curriculum redesign efforts Institutional recognition of innovative teaching awards	1=well-documented policies and faculty development 0.67=several initiatives but uneven in scope or sustainability 0.33=isolated projects or innovations 0=no evidence of pedagogical innovation
HIC	Dedicated funding Professional staff size and expertise Infrastructure support (learning spaces, labs, studios) Recognition in university governance and strategy	1=stable budget, sufficient staff, strategic embedding in governance 0.67=moderate resources and partial strategic alignment 0.33=minimal funding, no recognition in strategic plan 0=no dedicated resources or institutional capacity
ASE	Student inclusion in teaching/learning committees Regular student surveys and feedback Participatory curriculum design Co-creation initiatives (student partnerships)	1=institutionalized student roles in teaching and learning 0.67=structured input but limited power. 0.33=little inclusion in the advancement of teaching and learning. 0=no evidence of student engagement
REQM	Annual reports on LTC outcomes Use of performance indicators for teaching and learning External reviews or accreditations Evidence of data-driven program redesign	1=systematic evaluation across programs with published reports 0.67=evaluation present but irregular or limited 0.33=occasional or informal assessments only 0=no quality mechanisms observed
Outcome	Visibility in institutional strategic plans Influence on faculty promotion/tenure Documented integration into teaching/learning strategies Recognition in external rankings or accreditation	1=strong and widely recognized institutional impact, embedded in policies 0.67=clear but partial impact with rather limited scope 0.33=minimal or fragmented impact with low institutional visibility 0=no identifiable impact on institutional teaching and learning

Table 5
Membership Scores Assigned for Conditions and Outcome

Case	Conditions				Outcome
	SIPP	HIC	ASE	REQM	High Effectiveness
UMICH	1	0.67	0.33	1	1
WISC	1	1	0.67	1	1
UNIMELB	0.67	0.67	0.33	0.33	0.67
UTOKYO	0.67	1	0.33	0.67	0.67
TUM	1	1	1	1	1
WARWICK	1	1	1	1	1
KSU	0.33	0.67	0.33	0.67	0.67
UCT	1	1	0.33	0.67	0.67
UC	0.67	0.67	0	0.33	0.33
TEC	1	1	0	0.67	0.67

Table 6
Descriptive Statistics For Conditions and Outcome

Variable	Cases (n)	Mean	Std. Dev.	Min.	Max.
SIPP	10	0.834	0.2236157	0.33	1
HIC	10	0.868	0.1616663	0.67	1
ASE	10	0.432	0.335732	0	1
REQM	10	0.734	0.2501679	0.33	1
Outcome	10	0.768	0.2133448	0.33	1

Table 7
Truth Table for Configurations of Conditions for the Outcome

SIPP	HIC	ASE	REQM	Number	Out- come	Raw const.	PRI const.	SYM const.	Configuration Set Label
1	1	0	1	4	1	1	1	1	SIPP*HIC*~ ASE*REQM
1	1	1	1	3	1	1	1	1	SIPP*HIC*ASE*REQM
0	1	0	1	1	1	1	1	1	~ SIPP*HIC*~ ASE*REQM
1	1	0	0	2	1	0.87218	0.5	0.5	SIPP*HIC*~ ASE*~REQM

Notes: Const. means as consistency. The configurations with raw consistency >0.80 are shown in bold.



Table 8
Truth Table Analysis

		Raw Coverage	Unique Coverage	Consistency
With Simplifying Assumptions	SIPP*HIC*~ASE	0.565104	0.0442708	0.866267
	HIC*~ASE*REQM	0.565104	0.0442708	1
	SIPP*HIC*REQM	0.86849	0.347656	1
	Solution coverage Consistency	0.957031 0.916459		

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