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# CONTENTS

# Implementation And Perceived Effectiveness of Professional Learning Communities (PLCS) In an International Baccalaureate (IB) World School

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*Abstract*

*This study comprehensively evaluates the implementation and perceived effectiveness of Professional Learning Communities (PLCs) within the specific context of an International Baccalaureate (IB) World School. Grounded in Hord's (1997, 2003) framework of five core PLC characteristics—supportive and shared leadership, shared values and vision, collective learning and application, shared practice, and supportive conditions—the research employed a mixed-methods approach. A researcher-developed questionnaire was administered to 21 IB teachers, collecting demographic data, quantitative Likert-scale responses, and qualitative open-ended feedback. The findings indicate a strong implementation of collaborative elements, with collective learning and application (95.2% agreement) and shared practice (94% agreement) being the most prominent strengths. Supportive and shared leadership was also widely acknowledged (88.1% agreement), though qualitative data revealed a desire for more inclusive decision-making processes. Supportive conditions, encompassing time, resources, and communication, were identified as the weakest area (83.3% agreement). The study further reveals that demographic factors, such as a teacher's level of IB experience and whether PLCs are structured by subject or grade level, influence their perception of PLC effectiveness. Key challenges identified include time constraints, inconsistent colleague commitment, and high documentation workload, which can impede meaningful engagement. To enhance sustainability and effectiveness, the study recommends strategic actions, including refining PLC scheduling to dedicated school hours, reducing administrative burdens, implementing mentorship programmes for less experienced IB educators, and fostering more participatory leadership models. These insights contribute to the limited literature on PLCs in IB settings and provide actionable recommendations for optimizing collaborative professional learning to support both teacher development and student success.*

***Keywords:*** *Professional Learning Communities (PLCs), International Baccalaureate (IB), teacher collaboration, educational leadership, professional development, mixed-methods research, school improvement.*

## Introduction

In an era of global educational reform, the imperative to demonstrate both effective teaching methodologies and tangible student progress has intensified. This shift has catalysed a move away from isolated professional development towards collaborative models that foster continuous, job-embedded growth for educators (Harris & Jones, 2019). Among these, Professional Learning Communities (PLCs) have emerged as a leading framework, providing a structured approach to nurture teacher collaboration, deepen reflective practice, and sustain professional learning (Vescio et al., 2020). Grounded in the principles of learning organizations, PLCs are predicated on the belief that collective capacity drives school improvement. However, their implementation is not uniform; success is highly contingent on contextual factors such as the quality of leadership support, the depth of teacher engagement, and the ability to overcome structural barriers like time constraints and workload (Ng & Tan, 2020). For PLCs to transcend rhetoric and realize their potential in fostering meaningful professional development and enhancing student achievement, schools must engage in a systematic and critical examination of these influencing variables (Hargreaves & Fullan, 2020).

This study focuses on this implementation within the distinctive context of an International Baccalaureate (IB) World School. The IB framework, with its explicit emphasis on inquiry-based learning, international-mindedness, and a constructivist approach to pedagogy (International Baccalaureate Organization [IBO], 2020), presents a unique environment for teacher collaboration. The school in this study has made a significant institutional investment in PLCs, utilizing advanced video conferencing technology to bridge multiple campuses and structuring weekly meetings around focused dialogue and action planning. While such infrastructural and procedural commitments establish a foundation for collaboration, the ultimate effectiveness of PLCs is determined by the lived experiences and perceptions of the teachers within them. Understanding these perceptions is critical for moving from structural implementation to cultural embedding, ensuring the long-term sustainability and impact of these professional learning communities.

Despite a robust body of literature on PLCs in Western educational systems, a significant gap exists regarding their specific efficacy and adaptation within IB schools, particularly in the burgeoning Asian IB sector (Wong et al., 2021). The unique pedagogical demands and cultural dynamics of these settings necessitate focused inquiry. This paper details a study designed to address this gap by evaluating the implementation and perceived effectiveness of PLCs in an IB school, examining their impact on teacher practice and, by extension, student learning. The goal is to provide empirically-grounded insights that can help optimize collaborative professional learning to better support educator development and student success within the IB's global framework.

## Research Objective and Research Questions

The primary objective of this research is to conduct a comprehensive evaluation of the implementation and perceived effectiveness of Professional Learning Communities within an International Baccalaureate school. This evaluation is structured around the five defining characteristics of effective PLCs established by Hord (1997, 2003): supportive and shared leadership, shared values and vision, collective learning and application, shared practice, and supportive conditions. These dimensions provide a critical lens to assess not only the structural presence of PLCs but also their functional vitality as catalysts for building school-wide instructional capacity (DuFour & DuFour, 2016). The study seeks to illuminate how these characteristics are enacted—or where they fall short—in the daily professional lives of educators operating within the IB's specific philosophical and pedagogical framework (Morrissey, 2019).

Beyond this overarching assessment, the study is designed to investigate how key demographic variables correlate with teachers' perceptions of PLC value. Specifically, it will examine the influence of teaching experience, depth of involvement in IB programmes, and the organizational structure of the PLC (e.g., subject-based vs. grade-level). Analysing these factors is essential for understanding the diverse needs of the faculty and for tailoring PLC initiatives to be inclusive and effective for all educators, from novice to veteran (Vescio et al., 2020).

Finally, the research aims to identify the salient challenges impeding effective PLC engagement in this context and to formulate actionable, evidence-based recommendations for enhancement. By doing so, this study contributes to the broader discourse on sustaining professional learning communities (DuFour & Eaker, 2015) and offers practical guidance for IB schools seeking to leverage PLCs for continuous improvement in teacher professionalism and student outcomes.

**The study is guided by the following research questions:**

1. How are the five core characteristics of Professional Learning Communities (PLCs) implemented within an International Baccalaureate (IB) school setting?
2. In what ways do demographic factors influence teachers' perceptions of PLC effectiveness?
3. What are the primary challenges teachers encounter when engaging with PLCs within an IB school?
4. What strategies can be implemented to enhance the sustainability and overall effectiveness of PLCs in IB schools?

**Significance of the Study**

This study holds substantial significance for multiple educational stakeholders by providing a nuanced, empirical investigation into the functionality of Professional Learning Communities (PLCs) within the unique ecosystem of an International Baccalaureate (IB) World School. For teachers, the findings offer a validated voice, articulating both the empowering potential of collaborative structures and the very real challenges of time constraints, workload, and variable engagement levels that can impede meaningful participation (Harris & Jones, 2019). By identifying these specific barriers, the study moves beyond generic advocacy for PLCs to provide a diagnostic tool that educators can use to reflect on and advocate for improvements in their own professional learning environments.

For school leaders and administrators, this research provides an evidence-based roadmap for effective PLC implementation. The confirmation that PLC success is contingent on strong leadership support, structured collaboration, and targeted professional development opportunities underscores the need for strategic, rather than superficial, adoption (Lee & Riordan, 2022). The study’s emphasis on the critical role of communication, intrinsic motivation, and relational trust offers leaders actionable levers to pull to enhance PLC sustainability. For instance, understanding that trust is a precursor to genuine shared practice can guide leaders in fostering a psychologically safe environment for teacher collaboration (Bryk & Schneider, 2023).

Furthermore, the analysis of how demographic factors—such as years of IB experience and PLC organisational structure—influence teacher perceptions is particularly valuable for policy makers and curriculum coordinators. This insight allows for a more differentiated and equitable approach to professional development. It suggests that a one-size-fits-all model is ineffective; instead, PLC structures might be tailored, and mentorship programmes instituted to supportnovice IB teachers, thereby optimising the professional learning architecture across the entire school (Ng & Tan, 2020).

The significance is amplified by the rapid expansion of the IB network across the Asia-Pacific region. As IB schools proliferate in diverse cultural contexts, there is a pressing need for context-sensitive models of teacher collaboration that align with the IB's philosophical framework. This study directly addresses this gap, offering insights that can guide the development of sustainable, culturally responsive PLCs. By doing so, it contributes to the larger mission of fostering continuous professional growth and enhancing teaching quality, which is directly linked to improved student learning outcomes and the realisation of the IB's mission to develop inquiring, knowledgeable, and caring young people (International Baccalaureate Organization, 2020). Ultimately, this research serves as a critical bridge between the theoretical promise of PLCs and their practical, impactful implementation within the dynamic and demanding context of international IB education.

## Literature Review

### Theoretical and Conceptual Frameworks

Professional Learning Communities (PLCs) are conceptually rooted in the theory of learning organizations, a paradigm pioneered by Senge (1990) which posits that institutions excel when they facilitate the collective learning of their members. Senge's five disciplines—personal mastery, mental models, shared vision, team learning, and systems thinking—provide a foundational ethos for collaborative professionalism. Building upon this, Hord (1997, 2003) operationalized these ideas into five definitive dimensions of effective PLCs: supportive and shared leadership, shared values and vision, collective learning and application, shared practice, and supportive conditions. This framework has become a cornerstone for evaluating PLC implementation, providing a structured lens to assess collaborative dynamics (Vescio et al., 2020). Concurrently, Wenger's (1998, 2000) social theory of "communities of practice" complements this by emphasizing the importance of mutual engagement, a joint negotiated enterprise, and a shared repertoire of tools and stories as the bedrock of collaborative learning.

While these foundational frameworks remain relevant, recent scholarship has sought to apply and refine them in specific contexts. Research continues to affirm that structured collaboration, a clearly articulated shared purpose, and ongoing reflective practice are universal hallmarks of effective PLCs (Harris & Jones, 2019). However, a significant gap persists regarding the application of these models within International Baccalaureate (IB) schools. The IB framework, with its distinct emphasis on constructivist, inquiry-based learning and international-mindedness (International Baccalaureate Organization, 2020), constitutes a unique pedagogical context. The extent to which traditional PLC models integrate with or require adaptation for the IB's specific curriculum models—such as the Primary Years Programme (PYP) transdisciplinary themes or the Middle Years Programme (MYP) concepts—is underexplored in the literature.

Furthermore, the cultural contexts of many IB schools, particularly in Asia, may influence norms around leadership, collaboration, and voicing professional opinions, suggesting that Western-derived PLC models may not be directly transferable without cultural consideration (Wong et al., 2021). This study, therefore, uses Hord's established framework as a starting point to investigate how this core characteristics manifest within the unique socio-pedagogical environment of an IB World School.

**Characteristics of Effective PLCs**

A robust Professional Learning Community is characterized by a move from individualistic practice to a culture of shared responsibility and continuous improvement. The literature consistently identifies shared or distributed leadership as a critical catalyst, where school administrators act as facilitators and co-learners rather than top-down directors (Lee & Riordan, 2022). This empowers teachers and fosters a sense of collective ownership. Central to this is collective learning and its application, where educators engage in collaborative inquiry, critically interrogating their teaching practices and student data to develop and implement improved instructional strategies (DuFour & DuFour, 2016). This process is fuelled by shared practice, which involves the de-privatization of teaching through peer observation, co-planning, and the critical exchange of feedback.

Recent studies have reinforced the positive outcomes associated with these characteristics. Schools with strong PLCs report higher levels of teacher commitment, professional morale, and a greater propensity for instructional innovation (Harris & Jones, 2019). Furthermore, effective PLCs create a mechanism for sustained professional growth that is embedded in daily practice, moving away from the traditional, often ineffective, "one-off" workshop model of professional development (Kennedy, 2019).

Despite these documented benefits, significant challenges to realizing these ideal characteristics persist. A primary obstacle is the legacy of traditional professional development models that position teachers as passive recipients of knowledge rather than active co-constructors (Cochran-Smith & Lytle, 1999). This can create a cultural inertia that is difficult to overcome. Furthermore, even with willing participants, a lack of sufficient administrative support, clearly defined objectives, and—most critically—dedicated and protected time for collaboration can cause PLCs to stagnate and fail to achieve their intended impact on teaching and learning (Schmoker, 2006; Ng & Tan, 2020). The challenge is not merely to establish PLCs in structure, but to cultivate the cultural and structural conditions that allow their defining characteristics to thrive.

*Table 1: Core Characteristics of Effective PLCs and Associated Challenges*

| Core Characteristic (Hord, 1997) | Description | Common Implementation Challenges |
|---|---|---|
| Supportive & Shared Leadership | Leadership is distributed, fostering collaboration and shared decision-making. | Top-down management styles; lack of teacher autonomy; symbolic rather than genuine empowerment. |
| Shared Values & Vision | A clear, collectively developed focus on student learning guides all practices. | Visions imposed by leadership; lack of consensus; misalignment with daily instructional priorities. |
| Collective Learning & Application | Educators engage in joint inquiry and apply new strategies in their classrooms. | Lack of structured protocols for inquiry; insufficient time for deep discussion; failure to translate learning to practice. |
| Shared Practice | Teaching is de-privatized through peer observation, feedback, and collaboration. | Culture of isolation; fear of judgment; lack of trust among staff members. |
| Supportive Conditions | Structures (time, space, resources) and relationships (trust, respect) facilitate collaboration. | Time constraints; excessive workload; inadequate resources; poor communication; low relational trust. |

**Implementation and Effectiveness of PLCs**

A substantial body of empirical research demonstrates that well-implemented PLCs have a positive impact on both teacher effectiveness and student achievement. Vescio et al. (2020) concluded that participation in PLCs is associated with changes in teacher practice and modest gains in student learning. The key mechanism is the creation of a collaborative culture where teachers collectively analyse student performance data and refine their instructional approaches accordingly (DuFour & DuFour, 2016). Schools that intentionally foster this culture and provide dedicated, non-negotiable time for professional learning are more likely to experience sustained instructional improvements.

However, the path to effective implementation is fraught with barriers. Time constraints remain the most frequently cited obstacle, as teachers struggle to find the bandwidth for meaningful collaboration amidst their extensive teaching and administrative responsibilities (Harris & Jones, 2019). Related to this is the issue of teacher workload, where PLCs can be perceived as an additional administrative burden rather than a supportive structure, leading to collaboration fatigue (Ng & Tan, 2020). Furthermore, varying levels of engagement and commitment among staff can create inequitable participation and hinder the collective momentum of the group.

A significant gap in the literature concerns the specific implementation of PLCs within IB schools. While studies from North American and European contexts provide a valuable foundation, their applicability to the IB's distinctive, globally-minded and constructivist framework is uncertain. The IB explicitly encourages collaboration and reflective practice, suggesting a natural alignment with PLC philosophy (International Baccalaureate Organization, 2020). Yet, research exploring this synergy, particularly how PLCs can be leveraged to deepen the implementation of IB standards and practices, is limited. Moreover, cultural factors in the many international settings where IB schools operate may profoundly influence teacher collaboration styles and perceptions of professional learning, necessitating further exploration in these non-Western contexts (Wong et al., 2021). This study directly addresses this gap by examining the implementation dynamics within a specific IB school environment.

## Literature Gaps

While the value of Professional Learning Communities is well-established in the broader educational literature, several critical gaps persist, particularly when examining their application in specialized contexts like International Baccalaureate schools. First, there is a pronounced scarcity of empirical, data-driven studies on PLCs within IB schools, with a specific dearth of research conducted in the rapidly growing Asian IB sector (Wong et al., 2021). Much of the existing literature remains anecdotal or theoretical, lacking the systematic investigation of teacher perceptions and outcomes.

Second, existing studies on PLCs often focus on general school improvement, which, while valuable, does not illuminate the specific impact of PLCs on the core pedagogical elements of IB teaching practices. For instance, it is unclear how PLCs contribute to the collaborative planning of MYP units, the development of PYP exhibitions, or the fostering of the IB learner profile attributes (International Baccalaureate Organization, 2020). The unique demands of the IB framework require a more targeted analysis.

Third, while theoretical models like Hord's provide a robust diagnostic framework, practical, context-specific strategies for launching, sustaining, and evaluating PLCs in diverse international and IB settings are less documented in peer-reviewed literature. The challenges of high teacher turnover, cultural diversity, and the balance between mandated curriculum and collaborative inquiry demand tailored approaches that are currently under-represented. This study aims to address these gaps by providing an empirical investigation of PLCs in an IB school, linking findings directly to IB context and offering actionable recommendations for sustainability.

## Methodology

## Research Approach

This study employed a qualitative-dominant mixed-methods research design to investigate the implementation and perceived effectiveness of Professional Learning Communities (PLCs). This approach was selected to capture both the breadth of trends across the teaching faculty and the depth of individual teacher experiences (Creswell & Plano Clark, 2017). While quantitative data from Likert-scale questions provided a measurable overview of perceptions, the primary emphasis remained on qualitative analysis to richly explore the nuanced realities, challenges, and meanings that teachers ascribe to their PLC involvement (Sandelowski, 2000).

The methodological approach is grounded in a social constructivist paradigm, which posits that individuals construct their understanding and knowledge through interaction with their social environment (Maxwell, 2012). This lens is particularly appropriate for studying PLCs, as it recognizes that the "effectiveness" of a PLC is not an objective absolute but is co-constructed through the diverse experiences, interactions, and perceptions of its members. The study, therefore, did not assume uniformity across PLCs but sought to understand the varied dynamics and lived experiences of teachers within these collaborative structures (Hammersley, 2007). By integrating quantitative and qualitative data, the research aimed to develop a comprehensive and contextualized understanding of the phenomenon.

**Population and Sampling**

The study population consisted of 37 full-time IB teachers from a single IB World School, comprising 14 Middle Years Programme (MYP) teachers, 18 Primary Years Programme (PYP) teachers, and 5 teachers who worked across both programmes. Given the relatively small and bounded population, a purposeful sampling strategy was employed, inviting all eligible teachers to participate to ensure a wide range of perspectives (Palinkas et al., 2015). This census-style approach aimed to capture the full diversity of the teaching staff in terms of programme affiliation, teaching experience, and PLC involvement.

Ultimately, 21 teachers completed the study questionnaire, yielding a robust response rate of 56.8%. This sample provided a substantial cross-section of the faculty, ensuring that the findings reflected diverse viewpoints on PLC implementation and effectiveness. The demographic composition of the respondents is detailed in Table 2.

*Table 2: Demographic Profile of Participants (N=21)*

| Demographic Variable | Category | n | % |
|---|---|---|---|
| **Gender** | Female | 16 | 76.2% |
| | Male | 5 | 23.8% |
| **Total Teaching Experience** | 1-5 years | 10 | 47.6% |
| | 6-10 years | 8 | 38.1% |
| | 11-15 years | 2 | 9.5% |
| | 16-20 years | 1 | 4.8% |
| **IB Programme Taught** | PYP | 9 | 42.9% |
| | MYP | 8 | 38.1% |
| | PYP & MYP | 4 | 19.0% |
| **PLC Structure** | Subject/Department | 12 | 57.1% |
| | Grade Level | 9 | 42.9% |

**Instrumentation and Data Collection**

Data were collected using a researcher-developed, three-part mixed-method questionnaire. **Part A** gathered essential demographic information, including gender, total teaching experience, specific involvement in IB programmes and the organisational structure of their PLC (e.g., grade-level or subject-based).

**Part B** quantitatively assessed teachers' perceptions of the five core PLC characteristics as defined by Hord (1997). It featured a series of Likert-scale statements, and a four-point scale (Strongly Disagree, Disagree, Agree, Strongly Agree) was used to force a choice and eliminate neutral responses, thereby enhancing the validity and discriminatory power of the data (Taherdoost, 2019).

**Part C** consisted of open-ended questions designed to elicit rich, qualitative data on teachers' personal experiences, including the perceived challenges and benefits of PLCs, their sources of motivation, and specific recommendations for improvement. This section was crucial for understanding the context behind the numerical scores.

To ensure content and face validity, the survey instrument was piloted with a small group of senior teachers not involved in the final study. This process led to refinements in wording, such as clarifying the definition of "leadership" in questions and making motivation-related prompts more explicit. Furthermore, a standard definition of a PLC was provided in the participant consent form to ensure a shared conceptual understanding among all respondents.

## Data Analysis

The data analysis followed a concurrent mixed-methods strategy. The quantitative data from the Likert-scale questions in Part B were analysed using descriptive statistics (frequencies and percentages). This provided a clear, broad overview of the levels of agreement and disagreement regarding the implementation of the five PLC characteristics across the faculty.

The qualitative data from the open-ended responses in Part C were analysed using thematic content analysis, following the guidelines of Braun and Clarke (2019). This involved a systematic process of reading and re-reading the responses to identify initial codes, which were then grouped into emerging themes that captured the key insights, concerns, and suggestions of the teachers. A deductive approach was also utilized, whereby the data were mapped against Hord's (1997) five-dimension framework to ensure the analysis remained coherent with the established research underpinning the study. This integration of quantitative and qualitative findings allowed for a triangulation of data, providing a completer and more validated picture of the research problem (Creswell & Plano Clark, 2017).

## Ethical Considerations

Ethical approval for this study was granted by the School Principal, and the research adhered to the stringent ethical guidelines set forth by the British Educational Research Association (BERA, 2024). Key ethical protocols were rigorously followed. **Informed consent** was obtained from all participants, who received a detailed information sheet outlining the study's purpose, procedures, and their rights before signing consent forms. **Confidentiality** was guaranteed through the anonymisation of all responses and the secure, password-protected storage of data. **Voluntary participation** was emphasized, and teachers were informed of their right to withdraw from the study at any point without penalty.

To minimise social desirability bias and the potential for the Hawthorne effect—where participants alter their behaviour because they know they are being studied—the researchers explicitly clarified that candid, critical feedback was more valuable than positive but insincere responses (McCambridge et al., 2014). The anonymous nature of the survey was stressed to encourage honesty.

## Study Limitations

This study acknowledges several limitations that affect the generalizability and scope of its findings. First, the small sample size (N=21), drawn from a single IB school, means that the results are context-specific and cannot be broadly generalized to all IB schools, which operate in diverse cultural and structural environments. Second, time constraints inherent in the research design precluded a longitudinal investigation. The study provides a snapshot in time, limiting insights into how PLCs evolve in their effectiveness and how teacher perceptions change over the long term.

Third, the reliance on self-reported data through a survey instrument introduces the possibility of response bias. Participants may have provided answers they perceived as socially desirable or may have been influenced by their recent experiences. Finally, the researcher-developed questionnaire, while piloted for validity, has not undergone extensive psychometric testing for reliability. Despite these limitations, the study offers valuable, in-depth insights into PLC implementation in an under-researched context and serves as a foundational reference for future larger-scale or longitudinal studies in IB settings.

## Findings

### Demographic Profile of Participants

The study achieved a 56.8% response rate, with 21 teachers completing the questionnaire. The demographic profile, summarized in Table 3, reveals a predominantly female teaching staff (76.2%). In terms of teaching experience, the faculty was relatively early-career, with 47.6% having 1-5 years of total experience and an average of 6.5 years. Notably, the average tenure at the current IB school was only 2.6 years, indicating a potentially high rate of staff turnover, which can pose a challenge for sustaining long-term initiatives like PLCs. The participants were distributed across the IB programmes, with 42.9% from the PYP, 38.1% from the MYP, and 19% teaching across both. Regarding PLC structure, a majority (57.1%) participated in subject or department-based PLCs, while 42.9% were in grade-level teams.

*Table 3: Summary of Participant Demographic Characteristics (N=21)*

| Demographic Variable | Category | N | % |
|---|---|---|---|
| **Gender** | Female | 16 | 76.2 |
| | Male | 5 | 23.8 |
| **Total Teaching Experience** | 1-5 years | 10 | 47.6 |
| | 6-10 years | 8 | 38.1 |
| | 11-15 years | 2 | 9.5 |
| | 16-20 years | 1 | 4.8 |
| **IB Programme Taught** | PYP | 9 | 42.9 |
| | MYP | 8 | 38.1 |
| | PYP & MYP | 4 | 19.0 |
| **PlC Structure** | Subject/Department | 12 | 57.1 |
| | Grade Level | 9 | 42.9 |

**Findings from the Likert Scale Questions**

The quantitative data provided a clear measure of teacher perceptions regarding the implementation of Hord's (1997) five PLC characteristics. The results, detailed in Table 4, indicate that Collective Learning and Application (95.2% agreement) and Shared Practice (94% agreement) were the most strongly implemented dimensions. This suggests a robust culture where teachers actively learn from one another and feel comfortable sharing and receiving feedback on their instructional methods.

Supportive and Shared Leadership was also positively viewed, with 88.1% of teachers acknowledging that leadership fosters a collaborative environment. However, the qualitative data would later reveal nuances, indicating that this support did not always translate into genuine shared decision-making. Supportive Conditions, which include time, resources, and communication, emerged as the weakest area, with 83.3% agreement. While still a majority, this lower figure points to significant operational challenges. Shared Values and Vision received the lowest quantitative rating (64.3%), suggesting that while collaboration is happening, it may not always be driven by a deeply internalized and collectively developed purpose, a finding that aligns with recent critiques of PLC implementation (Harris & Jones, 2019).

*Table 4: Teacher Perceptions of PLC Implementation (N=21)*

| PIC Characteristic (Hord, 1997) | % Agreement (Agree & Strongly Agree) |
|---|---|
| Supportive And Shared Leadership | 88.1% |
| Shared Values and Vision | 64.3% |
| Collective Learning and Application | 95.2% |
| Shared Practice | 94.0% |
| Supportive Conditions | 83.3% |

**Alignment with Research Questions**

**RQ1: Implementation of PLC Characteristics.** The Likert-scale data directly addresses RQ1, revealing a clear pattern: the interpersonal and collaborative components of PLCs (collective learning, shared practice) are well-established, while the foundational structural and visionary elements (supportive conditions, shared vision) require strengthening. This misalignment suggests that teachers are collaborating effectively in spite of, rather than because of, the institutional systems in place.

**RQ2: Influence of Demographic Factors.** Analysis revealed that demographic factors significantly influenced perceptions. Teachers with less than three years of IB experience frequently expressed uncertainty about their role and contributions within the PLC, leading to more passive engagement. Furthermore, PLCs structured by subject or department (57.1%) were consistently perceived as more effective than grade-level PLCs (42.9%). Teachers in subject-based groups reported that shared content knowledge led to more focused and practical collaborations, supporting the idea that functional alignment enhances PLC efficacy (Vescio et al., 2020).

**RQ3 & RQ4: Key Challenges and Enhancement Strategies.** Teachers identified three pervasive challenges: time constraints, inconsistent commitment from colleagues, and the high burden of documentation. Regarding collaboration mode, 52.4% found weekly videoconferencing effective for connecting across campuses, but a significant portion reported "collaboration fatigue," advocating for a blended model that incorporates in-person meetings. To enhance sustainability (RQ4), teachers proposed concrete strategies: introducing student counsellors to offload behavioural management discussions, protecting PLC time within the official school day, and drastically reducing redundant documentation. These findings underscore the need for strategic workload management to preserve the integrity of collaborative time (Ng & Tan, 2020).

## Findings from Open-Ended Responses

The qualitative data provided depth and context to the numerical scores, richly addressing the research questions.

**RQ1: Implementation of PLC Characteristics.**
Teachers consistently acknowledged the presence of a "supportive" leadership but qualified this by expressing a strong desire for a more "shared" leadership model. As one teacher noted, *"We are heard, but not always sure if we have a real say in final decisions."* This highlights a gap between supportive leadership and authentic distributed leadership (Lee & Riordan, 2022). While shared practice was strong, concerns about supportive conditions were vivid, with teachers citing "fragmented communication" and "a lack of common planning time" as major impediments.

**RQ2: Influence of Demographic Factors.**

The qualitative data powerfully illustrated the struggle of less experienced teachers. One novice IB educator commented, *"Sometimes I don't know if I'm supposed to be learning or contributing, so I just listen."* This links directly to the quantitative finding on role clarity. The preference for subject-based PLCs was explained through comments about the immediacy of sharing "subject-specific strategies and assessments," whereas grade-level meetings were sometimes perceived as more focused on administrative coordination.

**RQ3: Key Challenges.**

The themes of time, workload, and commitment were pervasive. A typical response was: *"The PLC is valuable, but it feels like the 10th thing on my to-do list. By the time I get there, I'm often unprepared."* The issue of "collaboration fatigue," especially with virtual meetings, was a novel insight, suggesting that the medium of collaboration is as important as the act itself.

**RQ4: Enhancement Strategies.**

Beyond the strategies identified quantitatively, teachers emphasized the need for "structured protocols" to make meetings more efficient and "true facilitation, not just management." The call for mentorship was strong, with suggestions to formally pair new and experienced IB teachers within the PLC structure to accelerate acculturation and ensure all voices are heard, thereby building collective capacity (Kennedy, 2019).

## Implications and Recommendations

The findings of this study carry significant implications for practice and yield several actionable recommendations for strengthening Professional Learning Communities within International Baccalaureate schools. The disparity between the strong culture of collaboration (evidenced in collective learning and shared practice) and the weaker structural and visionary foundations (supportive conditions and shared vision) suggests that IB schools must move beyond launching PLCs to deliberately cultivating the conditions for their success.

**1. Enhancing Leadership Practices: From Supportive to Shared**

The finding that teachers feel supported but desire a greater voice in decision-making implies that leadership must evolve. School leaders should adopt a more participatory and distributive leadership model (Lee & Riordan, 2022). This can be operationalized by:

- Establishing teacher-led PLC steering committees to co-design meeting agendas and focus areas.
- Involving PLC teams in key decisions regarding curriculum resources, assessment policies, and professional development topics.
- Providing training for both formal leaders and teacher-facilitators on distributed leadership and meeting facilitation skills to ensure inclusive and productive dialogue.

**2. Strategically Allocating and Protecting Collaboration Time**

Time constraints emerged as the most formidable barrier. To demonstrate institutional commitment, school leadership must:

- Institutionalize dedicated, non-instructional time for PLC meetings within the official school timetable, treating them as core to the teaching role rather than an add-on.
- Audit and streamline other meeting obligations to prevent duplication and reduce overall meeting fatigue.
- Protect this time from interruptions and cancellations, signalling that collaborative professional learning is a non-negotiable priority.

**3. Streamlining Administrative Tasks and Aligning Purpose**

The perception of PLCs as an additional workload, compounded by documentation burdens, must be addressed to sustain teacher motivation. Schools should:

- Conduct a review of all documentation required of PLCs to eliminate redundancy and ensure that every task directly serves the PLC's student-learning goals.
- Promote the use of efficient, shared digital platforms for documentation to minimize effort and enhance accessibility.
- Re-centre PLC conversations around the core business of analysing student work and improving instruction, ensuring that the shared vision is constantly referenced and reinforced to maintain a clear, purposeful focus (Harris & Jones, 2019).

### 4. Implementing Differentiated Support and Mentorship

The influence of demographic factors, particularly IB experience, calls for a more differentiated approach to teacher support within the PLC framework. To build capacity and ensure equitable engagement, we recommend:

- Creating formal mentorship programmes that pair novice IB teachers with experienced colleagues within their PLC. This provides role clarity, accelerates pedagogical understanding, and fosters a supportive peer relationship.
- Tailoring PLC structures where possible, recognizing that subject-based collaboration may be more effective for certain goals, while ensuring cross-disciplinary connections are maintained for programme alignment.

By addressing these areas with strategic intent, IB schools can transform their PLCs from a procedural initiative into a deeply embedded cultural driver of continuous improvement. This will not only enhance teacher professionalism and job satisfaction but also create a more coherent and powerful learning environment, ultimately leading to the improved educational outcomes that define the IB mission.

## Conclusion

This study affirms the significant potential of Professional Learning Communities (PLCs) to foster a robust collaborative culture within an International Baccalaureate (IB) school. The findings indicate a strong implementation of core PLC dimensions, particularly in collective learning and shared practice, underscoring their role in enhancing instructional dialogue and reflective practice. However, the research also reveals a critical dissonance: while collaborative activities are valued, their sustainability is threatened by inadequacies in supportive conditions and a gap between supportive and authentically shared leadership.

Persistent challenges such as time constraints, high administrative workload, and a desire for more inclusive decision-making processes align with broader literature on PLC implementation (Harris & Jones, 2019; Ng & Tan, 2020). The perception of PLCs as an additional burden by some staff, coupled with the struggle to allocate dedicated time for collaboration, highlights a systemic issue that requires strategic intervention beyond mere advocacy. Furthermore, the influence of demographic factors, such as a teacher's IB experience, points to the need for differentiated support structures within the PLC framework.

To bridge the gap between PLC structures and a deeply embedded collaborative culture, IB schools must adopt a more intentional approach. Leadership must evolve from being facilitative to being genuinely distributive, actively involving teachers in decision-making to foster ownership (Lee & Riordan, 2022). Institutionally, this involves the non-negotiable protection of collaborative time and a concerted effort to streamline administrative tasks. Implementing formal mentorship programmes can provide crucial support for less experienced teachers, enhancing role clarity and building collective capacity. By addressing these foundational elements of time, trust, and targeted support, IB schools can solidify their PLCs, transforming them from a procedural initiative into a sustainable driver of continuous professional growth and improved student learning outcomes.

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# From Theory to Impact: The Transformative Role of IBEC Graduates in PYP and MYP Classrooms

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*Abstract*

*This study investigates the transformative impact of International Baccalaureate Educator Certificate (IBEC) graduates on teaching and learning within International Baccalaureate (IB) World Schools, focusing on the Primary Years Programme (PYP) and Middle Years Programme (MYP). Through a case study of University College Fairview (UCF) graduates, the research explores how IBEC-trained educators integrate student-cantered, concept-based inquiry, enhance professional collaboration, and nurture student agency. Drawing on classroom observations, teacher interviews, and student surveys, the study identifies both challenges and solutions in the transition from theory to practice. Findings reveal that IBEC graduates foster heightened student engagement, promote critical thinking, and assume leadership roles within their schools. However, they also confront tensions between IB philosophy and local educational contexts, as well as difficulties in classroom management and differentiation. To address these challenges, the study introduces the* ***IBEC Impact Cycle****—a conceptual framework emphasizing induction, observation and feedback, collaborative professional learning, leadership development, and student agency outcomes. The framework highlights how systemic supports transform novice educators into impactful practitioners, with implications for international schools worldwide. The study underscores the necessity of robust mentorship, leadership support, and professional learning communities to sustain the long-term impact of IBEC graduates.*

***Keywords****: IBEC, PYP, MYP, teacher education, student engagement, inquiry-based learning, professional collaboration*

## 1. Introduction

Teacher preparation has long been identified as a decisive factor in shaping student learning outcomes (Darling-Hammond, 2021). Within International Baccalaureate (IB) World Schools, the challenge is intensified by the complexity of delivering inquiry-driven, concept-based curricula across diverse cultural and educational contexts. The International Baccalaureate Educator Certificate (IBEC) programme was designed to address this challenge by equipping teachers with pedagogical expertise aligned with IB philosophy.

This article presents a case study of University College Fairview (UCF) graduates who completed IBEC training and subsequently assumed teaching roles in Primary Years Programme (PYP) and Middle Years Programme (MYP) classrooms. The study explores how these graduates translate theory into practice, the challenges they encounter, and the systemic supports required to maximize their impact.

Three interrelated research questions guide this investigation:

1. How do IBEC graduates influence teaching effectiveness and student engagement in PYP and MYP contexts?
2. What challenges do newly trained IB teachers face in translating theory into practice?
3. How can schools develop systemic supports that sustain IBEC graduates' impact over time?

In answering these questions, the study contributes both empirical evidence and theoretical insight by proposing the **IBEC Impact Cycle,** a conceptual model that connects teacher preparation, professional collaboration, and student agency. This model provides a framework for schools to design induction programmes, mentorship structures, and professional learning opportunities that empower IBEC graduates to thrive.

## 2. Literature Review

### 2.1 Teacher Preparation and Induction in International Contexts

Teacher education plays a pivotal role in equipping educators with the skills necessary to respond to diverse student needs. Induction programmes are especially critical for novice teachers, reducing attrition and fostering professional confidence (Ingersoll & Strong, 2021). Within international schools, the challenges multiply due to cultural diversity, high parental expectations, and accountability to multiple curricula. Research emphasizes that induction must balance theoretical ideals with the pragmatic realities of classroom practice (Tan & Wong, 2021). Effective induction has been shown to accelerate teachers' ability to design inquiry-based tasks, manage diverse classrooms, and align assessment with broader learning goals (Hammerness & Matsko, 2022).

### 2.2 Inquiry-Based and Concept-Based Pedagogy

The International Baccalaureate (IB) framework is grounded in inquiry-driven and concept-based learning, intended to foster transferable understanding and critical thinking (Erickson, Lanning, & French, 2022). Inquiry-based approaches are associated with increased student engagement, problem-solving capacity, and long-term retention of knowledge (Furtak & Penuel, 2019). However, implementing inquiry successfully requires teachers to balance openness with structure, and to design scaffolds that support diverse learners (Chu, Reynolds, & Notari, 2021). Novice teachers often struggle with this balance, particularly in contexts where assessment systems emphasize rote learning or narrow standards of achievement (Hallinger & Lee, 2023).

### 2.3 Tensions Between Philosophy and Practice in IB Schools

IB schools articulate ambitious goals of international-mindedness, holistic learning, and student agency. Yet, the realities of local assessment pressures, national curriculum requirements, and parental expectations often create systemic tensions (Tan & Wong, 2021). Teachers are caught between enacting IB philosophy and meeting external demands, leading to professional stress and, at times, superficial implementation of inquiry practices. Hallinger and Lee (2023) argue that the sustainability of IB pedagogy depends heavily on leadership buy-in, resource allocation, and organizational culture. Without systemic alignment, inquiry-based teaching risks being marginalized or diluted.

### 2.4 Professional Collaboration and Mentorship

Professional learning communities (PLCs) are widely recognized as vehicles for sustained teacher growth. When designed as collaborative problem-solving hubs, PLCs enable teachers to co-construct strategies for scaffolding inquiry, differentiating tasks, and integrating transdisciplinary learning (Darling-Hammond, Hyler, & Gardner, 2021). However, research warns against reducing PLCs to "talking shops" devoid of tangible outcomes (Stoll, 2020). Mentorship further supports novice teachers by bridging theory and practice, modelling effective classroom strategies, and providing a safe space for reflection (Johnson, 2020). In IB contexts, mentorship has been identified as particularly crucial for helping teachers reconcile tensions between philosophy and local realities.

### 2.5 Emerging Frontiers: Digital and AI-Supported Professional Development

The rise of digital platforms and artificial intelligence (AI) presents new opportunities for professional learning. Zhao (2022) highlights how AI can support teacher reflection by connecting lesson observations to student outcomes in real time. Similarly, Hennessy et al. (2023) argue that digital platforms can sustain professional networks beyond physical school boundaries, strengthening collaboration and innovation. However, scholars caution that digital tools must augment—not replace—human mentorship and community (Selwyn, 2022). Within IBEC contexts, digital scaling may offer ways to extend professional learning while maintaining the deep relational connections necessary for impactful teacher growth.

## 3. Methodology

### 3.1 Research Design

This study employed a **qualitative case study design** to investigate the impact of IBEC graduates within Primary Years Programme (PYP) and Middle Years Programme (MYP) classrooms. A case study approach was selected because it allows for in-depth exploration of complex, context-bound phenomena, particularly where the boundaries between phenomenon and context are blurred (Creswell & Poth, 2018; Yin, 2018). The case of University College Fairview (UCF) graduates provides a focused yet transferable lens to understand how IBEC-trained teachers enact inquiry-driven pedagogy and navigate systemic challenges in international schools.

### 3.2 Research Context

The study was conducted within the **Fairview School ecosystem**, a network of K–12 international schools implementing IB programmes across multiple levels. The context was chosen due to its long-standing engagement with IB philosophy and its unique partnership with University College Fairview, which offers IBEC programmes for aspiring educators. This ecosystem allows for continuous observation of the trajectory from teacher preparation (preservice) to classroom implementation (in-service).

### 3.3 Participants

Five IBEC graduates who had transitioned into teaching roles within PYP and MYP classrooms participated in the study. Selection criteria included:

- Completion of the IBEC programme at UCF within the past three years.
- Full-time teaching roles in PYP (Years 1–5) or MYP (Years 6–10) classrooms.
- Willingness to participate in classroom observations, interviews, and reflective discussions.

The participants represented a range of subject specializations, including language and literature, mathematics, science, and integrated humanities. Three of the five were early-career teachers (0–2 years of experience at entry), while two had prior teaching experience outside the IB system.

### 3.4 Data Collection

Multiple sources of data were triangulated to enhance validity and reliability:

1. **Classroom Observations**
    - Conducted over two terms, focusing on implementation of inquiry-based strategies, classroom management, and evidence of student agency.
    - Observations were guided by a structured rubric adapted from the Rigor/Relevance Framework (Daggett, 2020), allowing for developmental scaling from "beginning" to "well-developed."
2. **Teacher Interviews**
    - Semi-structured interviews lasting 45–60 minutes.
    - Topics included experiences of induction, challenges in applying IB frameworks, strategies for differentiation, and perceptions of mentorship.
    - Interviews were transcribed and coded thematically.
3. **Student Surveys**
    - Administered to 85 students across the five classrooms.
    - Likert-scale and open-ended items assessed student perceptions of engagement, agency, and critical thinking in lessons led by IBEC-trained teachers.
    - Response rate: 92%.
4. **Document Analysis**
    - Lesson plans, reflective journals, and PLC meeting notes provided supplementary data on instructional planning and collaborative practices.

### 3.5 Data Analysis

Data were analysed thematically through iterative coding, combining inductive and deductive approaches (Braun & Clarke, 2021). Initial codes were derived from the three "tensions" identified in the literature and presentation framework—pedagogical, systemic, and structural.

Emerging themes were then mapped against these tensions, highlighting both challenges and strategies employed by IBEC graduates. Quantitative data from student surveys were analysed descriptively, focusing on frequency distributions and percentages.

### 3.6 Ethical Considerations

Ethical approval was obtained through University College Fairview's academic review board. All participants provided informed consent, with assurances of anonymity and confidentiality. Student surveys were conducted with parental consent, and all data were stored securely in compliance with data protection protocols.

## 4. Findings

The analysis of classroom observations, teacher interviews, student surveys, and document reviews revealed significant insights into the role of IBEC graduates in PYP and MYP contexts. Four major themes emerged**: student engagement, teacher leadership and development, challenges in practice, and systemic supports.**

### 4.1 Impact on Student Engagement

Across the five classrooms studied, IBEC graduates consistently fostered higher levels of student engagement. Student surveys indicated that **85% of learners reported heightened interest and active participation** in lessons led by IBEC-trained teachers. Open-ended responses highlighted appreciation for opportunities to ask questions, lead discussions, and explore topics beyond the textbook.

Classroom observations confirmed that IBEC graduates regularly integrated **student-led inquiry tasks, concept-mapping activities, and Socratic-style discussions.** These practices aligned with IB's learner profile attributes, particularly *inquirers*, *thinkers*, and *communicators*. One observed PYP lesson in mathematics, for instance, engaged students in designing real-world problems connected to personal interests, which sustained motivation and collaborative problem-solving.

However, observations also revealed variability in execution. While some teachers facilitated inquiry with minimal scaffolding, others struggled to maintain focus, leading to off-task behaviour. This suggests that while IBEC training provides a strong foundation, classroom management and differentiation remain areas requiring ongoing support.

### 4.2 Teacher Development and Leadership

A notable outcome was the rapid progression of IBEC graduates into leadership roles. Within two years of teaching, **three of the five participants had assumed mentorship responsibilities** for peers, particularly in guiding inquiry-based lesson design. This reflects the strong emphasis on reflective practice within the IBEC programme and the collaborative culture of the Fairview ecosystem.

Interviews revealed that teachers saw themselves not merely as classroom practitioners but as **agents of curricular innovation and professional collaboration.** One MYP teacher described mentoring a colleague in designing interdisciplinary assessments, noting that IBEC training had instilled confidence to take on leadership despite limited years of experience.

This finding underscores the **leadership pipeline potential** of IBEC graduates: while they enter the classroom as novices, the training equips them with the conceptual tools and confidence to become change agents relatively early in their careers.

### 4.3 Challenges Encountered by IBEC Graduates

Despite positive outcomes, participants faced multiple challenges that mirrored the **pedagogical, systemic, and structural tensions i**dentified in the literature

1. **Classroom Management and Differentiation (Pedagogical Tension).**

   Novice IBEC teachers often struggled with balancing open-ended inquiry and maintaining classroom order. Teachers also found it challenging to scaffold tasks for students with diverse language proficiencies and prior knowledge levels.

2. **Adapting IB Philosophy to Local Contexts (Systemic Tension).**

   Teachers reported tension between IB's philosophy of inquiry and local demands for exam preparation or parent-driven expectations for visible progress. One teacher described pressure to provide frequent test scores, which conflicted with the IB emphasis on formative assessment and conceptual understanding.

3. **Isolation in Professional Practice (Structural Tension).**

   Despite the collaborative ethos of IB, some graduates initially felt isolated in their roles, particularly when placed in departments dominated by colleagues trained in non-IB systems. The absence of structured mentorship in the early months amplified this challenge.

### 4.4 Supports and Solutions Implemented

To mitigate these challenges, three systemic supports within the Fairview ecosystem proved pivotal:

1. **The IBEC Launchpad Programme.**

   A structured induction programme-oriented graduates to the realities of classroom life, bridging the gap between IB philosophy and local assessment cultures. Teachers valued its pragmatic focus on realistic expectations rather than abstract ideals.

2. **Lesson Observation Framework.**

   A developmental rubric adapted from Daggett's Rigor/Relevance Framework allowed for continuous observation, feedback, and reflection. Teachers noted that the framework provided clarity on progression, moving them from "beginning" to "well-developed" in specific competencies.

3. **Post-IBEC Professional Learning Communities (PLCs).**

   Graduates found PLCs most valuable when they shifted from theoretical discussions to collaborative problem-solving. Successful PLCs focused on designing inquiry tasks, co-creating concept-based assessments, and troubleshooting classroom management strategies.

### 4.5 Student Agency Outcomes

Ultimately, the most significant outcome was the **growth of student agency**. Survey data revealed that students of IBEC graduates reported feeling empowered to ask questions, lead group projects, and reflect on their own learning. One PYP student wrote: *"We get to decide what to explore, and it makes me want to learn more."*

This finding demonstrates how IBEC-trained teachers, despite challenges, succeed in enacting IB's vision of fostering independent, critical, and globally minded learners. The emphasis on student agency links directly to the final stage of the proposed **IBEC Impact Cycle,** situating learners at the centre of the model.

## 5. Conceptual Framework: The IBEC Impact Cycle

The findings of this study informed the development of the **IBEC Impact Cycle**, a conceptual framework designed to explain how novice IBEC graduates transition from pre-service preparation into impactful classroom practice. The model integrates insights from the literature review with the case study data, capturing both the challenges and supports encountered by new IB teachers.

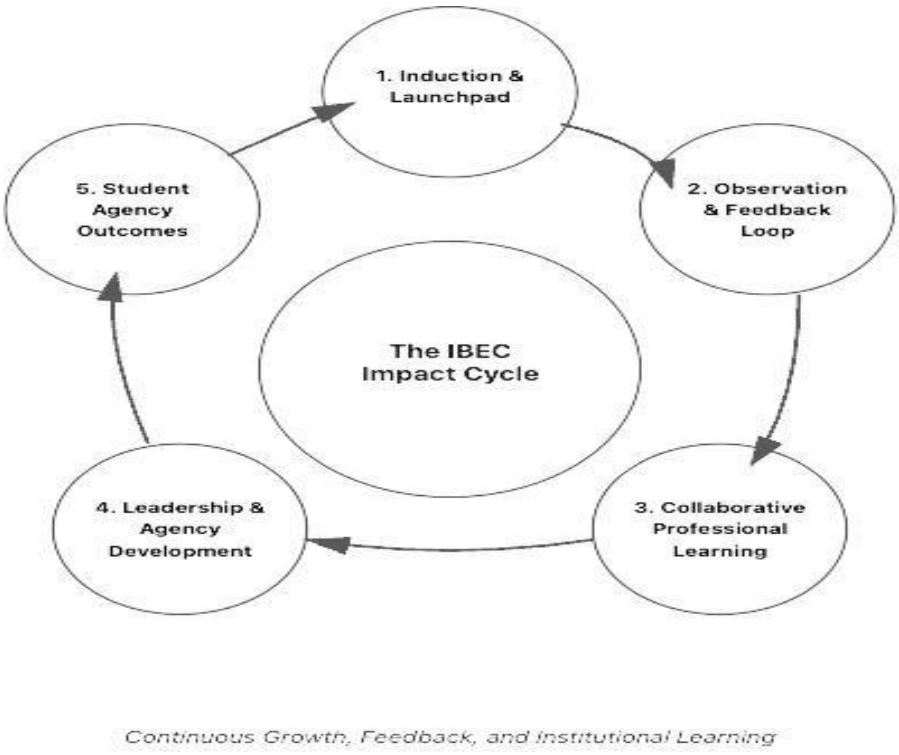


***Figure 1.*** *The IBEC Impact Cycle: Continuous Growth, Feedback, and Institutional Learning.*

### 5.1 Stage One: Induction and Launchpad

The cycle begins with structured induction, such as the Fairview Launchpad Programme. This stage acknowledges the **systemic tension** between IB philosophy and local realities, ensuring that new teachers are not overwhelmed by conflicting expectations. Induction programmes grounded in realism rather than idealism help teachers align IB's inquiry-driven framework with external accountability measures (Tan & Wong, 2021).

### 5.2 Stage Two: Observation and Feedback Loop

The second stage emphasizes developmental feedback. Using lesson observation frameworks, novice teachers receive clear, structured guidance on classroom management, differentiation, and scaffolding inquiry. This phase addresses the **pedagogical tension** of translating strategies into execution. Research indicates that frequent, targeted feedback accelerates novice teachers' professional growth and confidence (Hammerness & Matsko, 2022).

### 5.3 Stage Three: Collaborative Professional Learning

In the third stage, teachers participate in **professional learning communities (PLCs)** that prioritize problem-solving and co-construction of practice. Unlike discussion-based groups, effective PLCs generate practical strategies, co-design assessments, and share inquiry scaffolds. This stage bridges the **structural tension** between isolation and collaboration, affirming the importance of collegiality in sustaining inquiry pedagogy (Darling-Hammond et al., 2021).

### 5.4 Stage Four: Leadership and Agency Development

As teachers develop, they begin to assume mentorship and leadership roles. The study revealed that three out of five IBEC graduates became peer mentors within two years. This stage positions graduates as **agents of change**, reinforcing distributed leadership models within IB schools (Johnson, 2020). By mentoring others, teachers reinforce their own practice while embedding IB values across the institution.

### 5.5 Stage Five: Student Agency Outcomes

The final stage highlights the **ultimate goal of IB pedagogy: student agency.** Surveys confirmed that students of IBEC graduates felt empowered to take ownership of their learning, demonstrating higher levels of engagement and critical thinking. This stage represents both the culmination and renewal of the cycle, as improved student outcomes provide evidence of teacher impact and feed back into reflective practice.

## 6. Discussion

### 6.1 From Theory to Practice: Addressing the Pedagogical Tension

The findings confirm that IBEC training provides teachers with strong conceptual foundations in inquiry-based learning, but that translating these strategies into daily practice remains challenging. Classroom observations revealed inconsistency in managing open inquiry and scaffolding for diverse learners, echoing earlier research on the difficulties novice teachers face in balancing freedom and structure (Chu et al., 2021). The **Observation and Feedback Loop** in the IBEC Impact Cycle directly addresses this challenge, ensuring that teacher growth is not left to trial-and-error but scaffolded through structured developmental feedback.

This aligns with Hammerness and Matsko's (2022) call for teacher education programmes to embed "practice-based rehearsals" that bridge theory with enactment. In this study, the developmental rubric adapted from Daggett's Rigor/Relevance Framework provided clarity and progression markers, showing how systematic feedback can accelerate novice teacher competence.

### 6.2 Navigating the Systemic Tension: Philosophy vs. Reality

Teachers in this study consistently reported the difficulty of reconciling IB philosophy with external pressures such as standardized assessment and parental expectations. This tension is not unique to Fairview but is a well-documented phenomenon in IB schools worldwide (Tan & Wong, 2021).

The **Induction and Launchpad** stage of the IBEC Impact Cycle offers one pathway through this tension by preparing teachers to navigate contextual constraints while maintaining fidelity to IB principles. Leaders who design induction programmes with pragmatic sensitivity help new teachers avoid disillusionment, a key factor in retention and long-term success. This resonates with Hallinger and Lee's (2023) argument that leadership buy-in is essential for sustaining inquiry-based approaches.

### 6.3 Overcoming the Structural Tension: Isolation vs. Collaboration

Structural tensions emerged when IBEC graduates entered professional cultures that were not fully aligned with IB values. Some teachers described feeling isolated when colleagues defaulted to traditional, content-driven pedagogy. Without structured collaboration, the risk of professional stagnation increased.

The **Collaborative Professional Learning** stage of the IBEC Impact Cycle proved essential in transforming PLCs from perfunctory meetings into genuine problem-solving hubs. When PLCs focused on co-constructing assessments or troubleshooting classroom strategies, teachers reported increased confidence and collective efficacy. This finding reflects Darling-Hammond et al.'s (2021) view that professional collaboration must be embedded in authentic problem-solving to avoid becoming tokenistic.

### 6.4 Teacher Leadership as a Multiplier of Impact

One of the most striking findings was the emergence of IBEC graduates as mentors within a short time frame. Leadership development was not simply an aspirational outcome but a documented reality, with three of five participants stepping into peer mentoring roles within two years. This challenges the assumption that novice teachers are too inexperienced to contribute to leadership.

The **Leadership and Agency Development** stage in the IBEC Impact Cycle reflects the recursive nature of teacher growth: as IBEC graduates mentor others, they reinforce their own learning while multiplying impact across the school. This dynamic aligns with Johnson's (2020) argument that early-career teachers thrive when leadership pathways are clearly articulated and supported.

### 6.5 Student Agency as the Core Outcome

Ultimately, the success of IBEC graduates must be measured by student outcomes. Survey data revealed that students experienced greater agency, engagement, and ownership in their learning when taught by IBEC-trained teachers. These findings substantiate Erickson et al.'s (2022) argument that concept-based inquiry cultivates transferable understanding and critical thinking.

The **Student Agency Outcomes** stage of the IBEC Impact Cycle situates learners at the centre of the model, emphasizing that all other stages feed into the empowerment of students. By framing student agency as both the culmination and renewal of the cycle, the model underscores that teacher development is not an end in itself but a means to transformative learning.

### 6.6 Implications for Policy and Practice

The IBEC Impact Cycle offers practical guidance for IB schools seeking to maximize the impact of novice teachers:

1. **Design Realistic Induction Programmes.** Induction must explicitly prepare teachers for systemic tensions between IB philosophy and local realities.
2. **Embed Developmental Feedback Loops.** Observation frameworks with clear progression markers help teachers move from theory to execution.
3. **Strengthen Professional Learning Communities.** PLCs must function as collaborative problem-solving hubs, not abstract discussion groups.
4. **Cultivate Teacher Leadership Pathways.** Schools should provide structures for novice teachers to mentor peers, reinforcing professional growth and institutional learning.
5. **Measure Student Agency as an Impact Indicator.** Surveys and reflective portfolios can document how teacher practices directly influence student ownership and engagement.

## 7. Conclusion and Implications

### 7.1 Conclusion

This study explored the transformative role of IBEC graduates in PYP and MYP classrooms, focusing on how novice teachers translate theory into practice within the Fairview School ecosystem. Evidence from classroom observations, student surveys, and teacher interviews demonstrated that IBEC-trained educators significantly enhance student engagement, foster critical thinking, and assume leadership responsibilities early in their careers.

At the same time, IBEC graduates encounter substantial challenges: managing inquiry-driven classrooms, adapting IB philosophy to local realities, and overcoming structural isolation. These tensions are not merely individual struggles but systemic issues that require institutional responses.

The proposed **IBEC Impact Cycle** offers a conceptual framework that synthesizes findings into five interrelated stages: induction, observation and feedback, collaborative professional learning, leadership development, and student agency outcomes. By framing teacher development as a continuous cycle, the model underscores that supporting novice teachers is not a one-time intervention but an ongoing process embedded in institutional culture.

### 7.2 Implications for Practice

The findings suggest several practical steps for IB World Schools and teacher preparation institutions:

1. **Structured Induction.** Schools should design induction programmes that explicitly address the systemic tension between IB philosophy and local assessment cultures.
2. **Developmental Observation.** Regular feedback anchored in developmental rubrics accelerates novice teachers' movement from theory to effective practice.
3. **Collaborative PLCs.** Professional learning communities should function as problem-solving hubs focused on immediate classroom challenges.
4. **Leadership Pathways.** Schools should cultivate teacher leadership by creating opportunities for novices to mentor peers and contribute to curriculum design.
5. **Measuring Student Agency.** Schools should assess student engagement and ownership as key indicators of teacher effectiveness, moving beyond test scores.

### 7.3 Implications for Policy

For institutions and policy-makers, the study highlights the importance of integrating IBEC programmes into broader teacher education systems. Aligning certification with induction, mentorship, and leadership development ensures continuity between pre-service training and in-service growth. Policy frameworks should also support schools in balancing IB philosophy with local accountability measures, preventing novice teachers from being pulled in contradictory directions.

### 7.4 Limitations

As a single-site case study with five participants, the findings are contextually bound and cannot be generalized across all IB schools. The reliance on self-reported data from teachers and students introduces potential bias. Future studies should adopt comparative designs across multiple IB World Schools and integrate longitudinal data to track the long-term career trajectories of IBEC graduates.

### 7.5 Directions for Future Research

Further research should explore:

- The long-term leadership trajectories of IBEC graduates across diverse cultural contexts.
- The effectiveness of digital and AI-supported mentorship in sustaining reflective practice (Zhao, 2022; Hennessy et al., 2023).
- Comparative analyses of IBEC-trained teachers and those without IBEC preparation, focusing on student outcomes and teacher retention.

The IBEC Impact Cycle provides both a conceptual lens and a practical roadmap for sustaining the impact of novice IB teachers. By embedding induction, feedback, collaboration, leadership, and student agency into a continuous loop, schools can transform early-career teachers into lasting contributors to student success. This study demonstrates that targeted preparation, coupled with systemic support, empowers IBEC graduates not only to survive but to thrive—and, in turn, to lead.

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# Building A Sustainable, Cost-Effective IB Faculty Development Model Through University-School Affiliation

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***Abstract***

*The recruitment and retention of high-quality International Baccalaureate (IB) educators present ongoing challenges for schools worldwide, particularly in contexts marked by financial pressures and teacher shortages. Rising human resource costs—often comprising up to 60% of IB school budgets—have intensified the urgency of finding sustainable, cost-effective approaches to faculty development. This study investigates a university-school affiliation model that addresses these challenges by embedding IB-specific postgraduate certification programs within a collaborative institutional framework. Drawing on qualitative case study data from seven schools (five IB and two aspiring IB), the research examines the outcomes of postgraduate pathways, specifically the Postgraduate Diploma in Education with IB Certificate in Teaching and Learning (PGDE-IBCTL) and the Master of Education with IB Advanced Certificate in Teaching and Learning Research (MEd-IBACTLR). The findings reveal four interrelated themes: (1) structured pathways to professional growth, (2) pedagogical shifts driven by reflective practice, (3) the emergence of collaborative learning cultures and distributed leadership, and (4) measurable gains in financial sustainability and faculty retention. These outcomes highlight the potential of affiliation models to reduce recruitment costs, foster leadership capacity, and create enduring professional development pipelines. The study contributes to the growing literature on sustainable international education, offering a replicable framework that aligns academic rigor with school-based practice. Implications are discussed for IB schools, aspiring IB institutions, and policymakers seeking scalable approaches to global teacher capacity-building.*

***Keywords***
*International Baccalaureate (IB); teacher development; university-school partnerships; postgraduate education; professional learning communities (PLCs); faculty sustainability; distributed leadership; reflective practice*

## 1. Introduction

Developing a sustainable, high-quality, and cost-effective teaching faculty is a persistent challenge in International Baccalaureate (IB) schools across the globe (Yeo & Johnson, 2021). As of October 2024, there are more than 5,900 IB World Schools in over 160 countries, and yet the pool of trained IB educators remains insufficient to meet this growing demand. The International Baccalaureate Organisation (IBO, 2023) underscores the importance of teacher professional learning communities and reflective practice, but schools frequently struggle to retain faculty capable of enacting IB's inquiry-driven, student-cantered philosophy (Tan & Low, 2022).

The financial pressures facing private and international schools intensify these challenges. Recent reports highlight significant closures of fee-dependent schools in the United Kingdom, United States, China, and Southeast Asia, largely due to unsustainable operating models and rising human resource costs

Since staffing typically constitutes the largest budget item, schools face a dual burden: recruiting qualified IB teachers at high cost while simultaneously attempting to sustain long-term financial viability.

Traditional approaches to professional development—short workshops, external certifications, or one-off training—have proven insufficient to address these systemic issues (Gordon & Murphy, 2020). Such models may enhance individual teacher knowledge in the short term but rarely create enduring pipelines of IB-ready educators or address broader institutional sustainability.

This paper presents a case study of a university-school affiliation model designed to close this gap. The collaboration between University College Fairview (UCF), Fairview International Schools, and the BeEd digital platform integrates postgraduate programs directly into school systems. Specifically, the PGDE (IBCTL) and MEd (IBACTLR) programs serve as structured pathways for developing reflective, inquiry-oriented practitioners while reducing reliance on costly external recruitment. The affiliation model seeks to "grow our own IB experts", equipping schools with a steady pipeline of credentialed educators, enhancing retention, and lowering HR expenditure.

The central argument advanced here is that faculty development must be reframed not as an expense but as a strategic investment. By situating IB teacher preparation within collaborative university-school ecosystems, schools can achieve dual objectives: maintaining academic excellence and ensuring financial sustainability. This study responds to the urgent call for scalable, evidence-based models of teacher education that align with the realities of international schooling in a rapidly changing global context (Whitehead & Brown, 2022).

### 1.1 Research Questions

The formulation of clear and actionable research questions is foundational in qualitative research, especially when addressing complex, practice-oriented challenges in education (Creswell & Poth, 2018). The purpose of this study was to explore the university-school affiliation model as a strategy for developing International Baccalaureate (IB) teaching capacity in a sustainable and cost-effective manner. The guiding research questions were formulated based on existing gaps in the literature and practical insights from both IB and non-IB schools involved in professional development initiatives.

## Research Questions

The study was guided by the following research questions:

1. How does the university–school affiliation model contribute to IB teacher recruitment, training, and retention?
2. What pedagogical and professional benefits do participants perceive from the PGDE (IBCTL) and MEd (IBACTLR) programs?
3. In what ways does the model contribute to financial sustainability and institutional resilience for IB schools?
4. What challenges and opportunities emerge in implementing this model across diverse school contexts?

## 2. Literature Review

### 2.1 The Challenge of IB Teacher Recruitment and Retention

Research consistently highlights teacher recruitment and retention as central challenges in international schools, particularly those offering IB programmes (Bunnell, 2020; Savva, 2021). While the IB is widely recognized for its inquiry-based pedagogy and holistic philosophy, it requires educators with specific dispositions and skills—qualities not easily developed through generic teacher education (Tan & Low, 2022). Shortages of IB-trained faculty often lead schools to rely heavily on external recruitment, which is expensive and, in many cases, unsustainable (Yeo & Johnson, 2021).

The transient nature of international teaching further compounds the issue. Teacher turnover rates in international school's average between 15–20% annually, creating constant cycles of recruitment and induction (Bunnell, 2020). For IB schools, this instability disrupts curriculum continuity, weakens programme implementation, and inflates operational costs. As such, building sustainable faculty pipelines has become a pressing concern for IB leadership worldwide.

### 2.2 Professional Development and Reflective Practice in IB Contexts

The IB's Standards and Practices (IBO, 2020) emphasize ongoing professional learning as a prerequisite for school authorization and evaluation. In particular, reflective practice and professional learning communities (PLCs) are seen as critical levers for improving teacher quality and student outcomes (Savva & Stanfield, 2021). Reflective practitioners are more likely to adapt pedagogy to student needs, engage in collaborative inquiry, and sustain professional growth over time (Darling-Hammond et al., 2020).

However, research suggests that professional development in IB schools is often fragmented—delivered through external workshops or conferences with limited follow-up or school-based application (Gordon & Murphy, 2020). This "event-based" model does little to foster enduring change, and teachers frequently report a lack of coherence between training and classroom practice. Recent scholarship advocates for embedded, research-informed professional development that positions teachers as active knowledge constructors rather than passive recipients (Tan & Low, 2022).

## 2.3 University-School Partnerships in Teacher Education

Partnerships between universities and schools have long been recognized as powerful mechanisms for bridging theory and practice in teacher education (Zeichner, 2021). In recent years, such partnerships have gained renewed attention for their potential to provide scalable and sustainable solutions to teacher shortages, especially in specialized contexts like IB schools (Whitehead & Brown, 2022).

University-affiliated postgraduate programs, such as the PGDE and MEd, offer rigorous pathways that combine academic study with situated practice. Studies indicate that when universities collaborate closely with schools, they not only enhance teacher preparation but also foster cultures of inquiry and innovation within the schools themselves (Darling-Hammond et al., 2020). Importantly, these partnerships can reduce reliance on external recruitment by creating pipelines of qualified, credentialed teachers from within existing faculty.

## 2.4 Financial Sustainability in International Education

A critical but underexplored dimension of teacher development is its financial sustainability. Schools increasingly face pressure to balance rising costs with accessible tuition fees, especially in competitive international markets (Gordon & Murphy, 2020). Staff costs account for the majority of budgets, and high recruitment turnover further inflates expenditures.

Recent studies point to faculty development models that double as cost-containment strategies, whereby schools reduce reliance on recruitment agencies by investing in "grow-your-own" pipelines (Yeo & Johnson, 2021). These approaches also mitigate risks associated with market volatility, such as the closures of fee-dependent schools in the United Kingdom, China, and Southeast Asia (Savva, 2021). Embedding postgraduate certification within school systems not only elevates pedagogy but also stabilizes finances—an increasingly important consideration in the post-pandemic education landscape.

## 2.5 The Gap in Current Research

Despite growing recognition of the value of partnerships and reflective practice, there is limited empirical research on **affiliation-based postgraduate models** for IB schools. Existing studies often examine university-school collaborations in national contexts (Zeichner, 2021) but rarely consider the unique demands of international schools operating under IB frameworks. Moreover, little research addresses the dual imperative of improving teacher quality and achieving financial sustainability simultaneously.

This study seeks to address these gaps by presenting evidence from a multi-school case study of the Fairview–University College Fairview–BeEd affiliation. By analysing both pedagogical outcomes and financial impacts, it contributes to the literature on sustainable international education and offers a replicable model for IB and aspiring IB schools.

## 3. Methodology

### 3.1 Research Design

This study employed a **qualitative case study design** to examine the university–school affiliation model for IB faculty development. A case study approach was appropriate because the research sought to explore a contemporary phenomenon within its real-life context, where boundaries between the phenomenon and context are not clearly evident (Yin, 2018). The affiliation between University College Fairview (UCF), Fairview International Schools, and the BeEd platform provided a bounded system through which processes, outcomes, and challenges could be studied holistically.

### 3.2 Research Setting

The research was situated within a network of **seven schools** across Asia: five fully authorized IB World Schools and two aspiring IB schools preparing for candidacy. These schools represent diverse contexts in terms of size, student demographics, and programme offerings (PYP, MYP, DP). Each participated in the affiliation with UCF to support the development of their teaching faculty.

The university partner, UCF, provided postgraduate pathways—the PGDE (IBCTL) and MEd (IBACTLR)—with delivery supported by the BeEd platform for digital access and monitoring. This tripartite structure formed the focus of investigation.

### 3.3 Participants

Participants included:

• **Educators (n=42):** Teachers enrolled in or graduated from the PGDE or MEd programs.
• **School Leaders (n=14):** Principals, coordinators, and heads of teaching and learning involved in program implementation.
• **University Faculty (n=6):** Academic staff responsible for curriculum design, teaching, and assessment.

Purposive sampling was used to capture perspectives across stakeholder groups (Creswell & Poth, 2018).

### 3.4 Data Sources

Multiple data sources were triangulated to enhance credibility:
• **Semi-structured interviews** with teachers, leaders, and university faculty (n=62).
• **Document analysis** of unit plans, reflective journals, and assessment artifacts produced during the programs.
• **Institutional data** including recruitment costs, retention rates, and professional development budgets from participating schools.
• **Observation notes** from professional learning community (PLC) sessions, mentoring meetings, and teaching practicum.

### 3.5 Data Collection Procedures

Data was collected over an 18-month period (January 2024–June 2025). Interviews were conducted via video conferencing and transcribed verbatim. Documentary evidence (reflective journals, unit plans) was collected with participant consent. Institutional data were accessed through school HR and finance departments, anonymized before analysis. Observation notes were taken during site visits and PLC sessions facilitated online.

### 3.6 Data Analysis

Thematic analysis was employed following Braun and Clarke's (2019) six-step framework:

i. Familiarization with data,
ii. Generating initial codes,
iii. Searching for themes,
iv. Reviewing themes,
v. Defining and naming themes, and
vi. Producing the report.

Data from interviews, documents, and institutional sources were coded in Atlas.Ti, with iterative refinement to ensure alignment with research questions.

Triangulation across data sources supported validity, while member checking with participants ensured that findings accurately reflected their perspectives (Creswell & Poth, 2018). Quantitative institutional data (e.g., retention rates, recruitment costs) were used descriptively to complement qualitative findings.

### 3.7 Ethical Considerations

Ethical approval was obtained from the university's Institutional Review Board prior to data collection. Participation was voluntary, with informed consent secured from all participants. Data were anonymized, and pseudonyms were used in reporting. Schools and individuals were given the opportunity to review findings to ensure accuracy and minimize misrepresentation.

### 3.8 Limitations

As a qualitative case study, findings are not generalizable to all IB contexts. The focus on one university-school partnership may limit transferability, although thick description is provided to allow readers to assess relevance for their settings. Reliance on self-reported data introduces potential bias, though triangulation mitigated this risk.

## 4. Findings

This section presents a detailed analysis of interview and institutional data collected from seven participating schools—five IB World Schools and two non-IB schools engaged in IB-related capacity-building initiatives. The findings are structured thematically, using Braun and Clarke's (2019) thematic analysis approach (coded in Atlas.Ti). They are presented with explicit reference to the guiding research questions (RQ1–RQ4), drawing on direct quotes and coded patterns from transcripts and documents.

### 4.1 Theme 1: Pathways to Professional Growth (RQ1)

**Category:** Institutional Motivation

**Codes:** Access to certification, IB credibility, career mobility, pipeline development.

Many interviewees emphasized the strategic rationale behind enrolling teachers in the PGDE (IBCTL) and MEd (IBACTLR). For IB schools, the university–school affiliation professionalized teaching, aligned faculty with global IB standards, and reduced dependency on external recruitment.

"We needed a pathway to certify our teachers affordably and locally—partnering with a university made this possible." (IB Coordinator, School A) "IB expects a level of thinking and reflection that's not always present in traditional teacher training. Our PGDE teachers show marked improvement in inquiry-based planning." (Head of School, School B) Non-IB schools viewed the IB-aligned programs as aspirational levers to raise pedagogy and benchmark against international expectations.

"Sending our teachers to the PGDE with IB focus exposed them to ideas we want to integrate, even if we're not IB yet." (Principal, School F) **Interpretation for RQ1 (Contribution to recruitment, training, retention):** The affiliation establishes a coherent, accredited pipeline that strengthens internal supply, accelerates IB-specific capability, and lays the groundwork for retention through visible career pathways.

### 4.2 Theme 2: Pedagogical Shifts and Reflective Practice (RQ2)

**Category:** Learning Transformation

**Codes:** Reflective journals, unit planning, inquiry learning, constructivism, ATL integration Across cases, PGDE and MEd participants maintained reflective journals and produced IB-style unit plans. Leaders reported observable changes in planning quality, assessment alignment, and learner agency. "Teachers who came back from PGDE actually redesigned their units. They now think in terms of key concepts and ATL skills." (PYP Coordinator, School C) "The IB reflective cycle gave them a habit of questioning their own methods. It's like they see their teaching with new eyes." (Head of Subject, School E) In non-IB schools, full IB implementation was not always feasible; nevertheless, reflective practice seeded incremental shifts. "We asked one of our PGDE teachers to lead an internal workshop on 'learning through inquiry.' The ripple effect was strong." (Vice Principal, School G)

**Interpretation for RQ2 (Perceived pedagogical/professional benefits):** Structured reflection and inquiry-based design catalysed mindset and practice change, moving professional learning from event-based exposure to embedded, evidence-seeking pedagogy.

### 4.3 Theme 3: Collaborative Culture and Leadership Capacity (RQ3)

**Category:** Professional Learning Communities (PLCs)

**Codes:** Mentoring, peer learning, school-wide impact, distributed leadership, induction
Several IB schools reported graduates assuming mentoring roles, facilitating PLCs, and leading curriculum sprints; these roles amplified program effects across faculties.

"We set up a mentoring system for new staff, and PGDE graduates were central to this. They helped build our IB culture." (IB Coordinator, School D)
"They're not just better teachers—they've become leaders. One is now our MYP lead." (Head of Secondary, School A)
Non-IB schools adapted similar PLC structures, using graduates as catalysts for cross-department dialogue on learner agency and assessment.
"One of our teachers, after the MEd, formed a cross-department book club focused on learner agency. That never happened before." (Principal, School F)

**Interpretation for RQ3 (Capacity building and leadership):** The affiliation normalizes distributed leadership by design, converting graduates into mentors and PLC leads who stabilize induction, curate practice, and reduce single-point leadership risk.

### 4.4 Theme 4: Financial Sustainability, Implementation Challenges, and Opportunities (RQ4)

**Category:** Resources and Operations

**Codes:** Recruitment spend, retention, workload and release time, mentor capacity, accreditation timelines, tech adoption, regional policy, scalability, equity Schools reported tangible **financial gains** and identified **operational frictions** that shape implementation:
**Financial outcomes.** Leaders cited material reductions in recruitment expenditure (reported up to ~40%) and improved tenure profiles (several schools moving from ~2 years average to 5+ years among program completers). Savings were attributed to fewer agency fees, shorter vacancy lags, and faster time-to-effectiveness for internally developed teachers.

**Operational challenges:**

- **Workload and time:** Teachers balancing postgraduate study with full-time teaching required protected release and assessment pacing.
- **Mentor capacity:** Coaching quality varied; schools noted the need for mentor training and load caps.
- **Accreditation and recognition:** Regional variation in regulatory processes created lead-time risks that had to be anticipated in MOUs.
- **Technology enablement:** Platform onboarding and data use required structured induction; once normalized, analytics supported monitoring and early interventions.
- **Equity and access:** Locally hired teachers benefited significantly, but funding models and scholarship policies were pivotal to inclusion.

Representative comments:

"We saw budget relief within a year because we were filling roles internally, but we had to safeguard release time or people burned out." (Principal, School B)
"Mentoring is the flywheel—when it's strong, everything moves; when mentors are overloaded, progress stalls." (Coordinator, School E)

**Interpretation for RQ4 (Challenges and opportunities across contexts):** The model is scalable and financially accretive when paired with disciplined workload protections, mentor development, early accreditation planning, and inclusive funding. Digital delivery is an enabler, not a substitute, for governance and coaching quality.

***Table 2. Summary of Themes, Categories, Codes, and RQ Alignment.***

| Theme | Category | Representative Codes | Aligned RQ |
|---|---|---|---|
| Pathways to Professional Growth | Institutional Motivation | Access to certification; IB credibility; career mobility; pipeline development | RQ1 |
| Pedagogical Shifts & Reflective Practice | Learning Transformation | Reflective journals; unit planning; inquiry learning; constructivism; ATL integration | RQ2 |
| Collaborative Culture & Leadership Capacity | Professional Learning Communities | Mentoring; peer learning; school-wide impact; distributed leadership; induction | RQ3 |
| Financial Sustainability & Implementation | Resources and Operations | Recruitment spends; retention; workload; mentor capacity; accreditation; tech; equity | RQ4 |

### 4.5 Synthesis of Findings

Taken together, the four themes describe a **self-reinforcing system**: accredited pathways attract and retain talent (Theme 1), structured reflection upgrades pedagogy (Theme 2), graduates lead and diffuse practice through PLCs (Theme 3), and disciplined implementation yields financial resilience while surfacing actionable constraints (Theme 4). The interplay of these elements forms the empirical basis for the **Affiliation-Based IB Faculty Development Model** presented in the next section.

## 5. The Affiliation-Based IB Faculty Development Model

The thematic findings outlined in Section 4 demonstrate that the university–school affiliation produces benefits that extend beyond individual teacher certification. The evidence points to a systemic framework that integrates postgraduate study, reflective practice, collaborative leadership, and institutional sustainability. This section formalizes these insights into the **Affiliation-Based IB Faculty Development Model** (Figure 1).

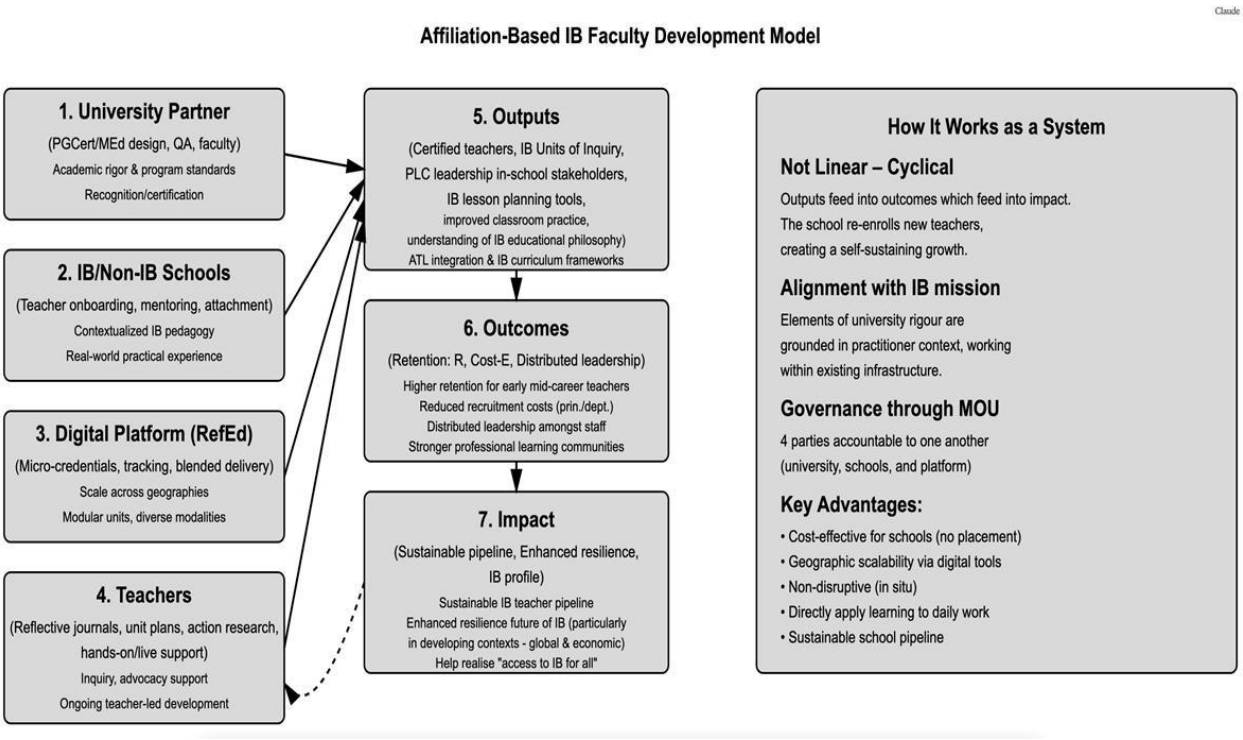


***Figure 1. The Affiliation-Based IB Faculty Development Model***

### 5.1 Core Components

The model rests on four interconnected components; each aligned with one of the themes identified in the findings:

1. **Accredited Pathways (Theme 1):** University-led PGDE (IBCTL) and MEd (IBACTLR) programs provide structured certification that aligns with IB Standards and Practices. These pathways create professional credibility and career mobility, directly addressing recruitment and retention challenges.
2. **Reflective Pedagogy (Theme 2):** Teachers engage in reflective journals, inquiry-based unit planning, and action research, transforming classroom practice and cultivating a culture of self-evaluation and growth.
3. **Collaborative Leadership (Theme 3):** Graduates transition into mentors, professional learning community (PLC) leaders, and curriculum facilitators, fostering distributed leadership and strengthening school-wide capacity.
4. **Institutional Integration (Theme 4):** Schools and universities co-design the pipeline, supported by digital platforms such as BeEd. This ensures scalability, monitoring, and alignment with institutional goals.

### 5.2 Outputs, Outcomes, and Long-Term Impact

The model functions across three-time horizons:
• **Outputs (within 12 months):** Certified IB educators, revised inquiry-based unit plans, reflective journals, and internally led PD workshops.
• **Outcomes (12–36 months):** Reduced reliance on external recruitment, stronger retention (average tenure doubling), and the institutionalization of PLCs and mentoring systems.
• **Impact (3–5 years):** Sustainable teacher pipelines, measurable financial savings (up to 40% reduction in recruitment costs), and enhanced IB programme quality and continuity across schools.

### 5.3 Governance and Accountability

The model depends on clear governance structures established through memoranda of understanding (MOUs) between schools and universities. These agreements specify responsibilities for cost-sharing, workload allocation, academic quality assurance, and ethical oversight. Digital platforms serve as accountability tools, enabling data-driven monitoring of teacher progress and institutional outcomes.

### 5.4 Systemic Cycle

Unlike linear training models, the affiliation framework is cyclical and self-renewing. Teachers move from being learners to certified practitioners to mentors and leaders. Each new cohort benefits from the experience of the previous one, creating a feedback loop that reinforces institutional expertise and reduces vulnerability to faculty turnover.

### 5.5 Strategic Significance

By linking the three thematic findings into one systemic model, the affiliation framework addresses both **pedagogical quality** and **financial sustainability**. It reframes faculty development as a **strategic investment**—not an operational cost—yielding returns in both human capital and institutional resilience.

This model, grounded in evidence from seven schools, offers a replicable blueprint for IB schools and aspiring IB institutions seeking to strengthen their faculty pipelines while navigating the fiscal pressures of international education.

## 6. Discussion

### 6.1 Aligning Findings with Existing Literature

The findings of this study extend the existing literature on IB teacher education and professional development. Previous research has emphasized the difficulty of recruiting and retaining IB-trained faculty (Bunnell, 2020; Savva, 2021), and our case study confirms that these challenges remain acute. However, the university–school affiliation model contributes a structured response by embedding postgraduate pathways within the school ecosystem. This aligns with Zeichner's (2021) argument that university–school partnerships provide sustainable solutions to teacher shortages by strengthening theory–practice integration.

The model also supports the IB's emphasis on reflective practice and professional learning communities as critical drivers of quality (IBO, 2020). Teachers' use of reflective journals, unit redesign and action research echoed findings by Darling-Hammond et al. (2020), who argue that professional development grounded in reflection and inquiry has greater impact on teaching practice than episodic workshops. By institutionalizing reflective practice through postgraduate programs, the affiliation model strengthens the reflective culture of participating schools.

### 6.2 Contributions to Sustainable International Education

This study also contributes to scholarship on financial sustainability in international education. Recent analyses warn that fee-dependent schools are vulnerable to closure if costs rise faster than revenues (Savva, 2021; Gordon & Murphy, 2020). Our findings show that by reducing recruitment costs and improving teacher retention, the affiliation model reframes professional development from a cost centre into a strategic investment.

This dual focus—improving pedagogy while strengthening financial resilience—represents a significant contribution to the literature. While most studies examine professional development or financial sustainability in isolation, this study demonstrates the value of addressing both simultaneously. For IB schools, which must maintain high pedagogical standards while competing in volatile education markets, this integrated approach is particularly salient.

### 6.3 Implications for IB Schools

The model holds several implications for IB schools and aspiring IB institutions:

1. **Strategic Investment in Faculty:** Schools should reframe professional development as a long-term investment, recognizing that retention gains and recruitment savings can offset upfront costs within 12–18 months.
2. **Embedding Postgraduate Pathways:** Offering accredited postgraduate programs creates structured career trajectories, which foster professional commitment and reduce turnover.
3. **Leveraging Digital Platforms:** Digital tools such as BeEd enable scalability across multiple campuses, lower opportunity costs, and ensure consistent monitoring of teacher growth.
4. **Building Distributed Leadership:** Graduates of the programs assume leadership roles within schools, reducing dependency on a small number of senior staff and embedding sustainability into the professional culture.

These implications are particularly relevant for networks of schools, which can leverage economies of scale to achieve impact across multiple campuses.

### 6.4 Tensions and Challenges

While the model demonstrates clear benefits, it also raises tensions. First, workload management emerged as a concern: some teachers struggled to balance postgraduate study with full-time teaching. This reflects wider debates about teacher workload in international contexts (Bunnell, 2020). Schools implementing this model must ensure protected time and mentoring support to prevent burnout.

Second, sustaining mentor capacity is critical. The success of reflective practice and PLCs depends on skilled mentors, yet not all schools have sufficient depth in leadership to provide consistent coaching. This highlights the need for mentor certification and careful workload allocation.

Finally, accreditation timelines and regulatory differences across regions can pose barriers to scaling. Universities and schools must engage early with accrediting bodies to ensure recognition of postgraduate qualifications across diverse jurisdictions.

### 6.5 Theoretical Contributions

From a theoretical perspective, the model contributes to an emerging **ecosystemic view of teacher development** (Zeichner, 2021; Tan & Low, 2022). Rather than treating universities, schools, and digital platforms as separate entities, the affiliation model conceptualizes them as interdependent actors within a professional ecosystem. Teachers are positioned not merely as recipients of training but as reflective practitioners and leaders within this ecosystem.

This approach advances scholarship by demonstrating how faculty development can be simultaneously rigorous, context-sensitive, and financially sustainable. It also underscores the importance of governance—through memoranda of understanding (MOUs) and joint oversight structures—in ensuring accountability and equity in university–school partnerships.

## 7. Conclusion and Recommendations

### 7.1 Conclusion

This study examined the university–school affiliation model for IB faculty development, focusing on the partnership between University College Fairview, a network of IB and aspiring IB schools, and the BeEd digital platform. The findings demonstrate that embedding postgraduate pathways within school ecosystems addresses two persistent challenges in IB education: teacher shortages and financial sustainability.

Four key outcomes emerged: (1) structured career pathways through accredited programs (PGDE and MEd), (2) pedagogical transformation driven by reflective practice, (3) strengthened collaborative cultures and distributed leadership, and (4) measurable gains in retention and reduced recruitment costs. Together, these outcomes position the affiliation model as a replicable framework for sustainable teacher development.

Theoretically, the model contributes to an **ecosystemic understanding of teacher education**, where universities, schools, digital platforms, and teachers function as interconnected actors. Practically, it reframes professional development not as a discretionary expense but as a strategic investment that yields both pedagogical and financial returns.

### 7.2 Recommendations for Practice

Based on the study's findings, several recommendations can guide IB schools and policymakers:

1. **Reframe Professional Development as Investment**
School leaders should present professional development as an investment with measurable returns in retention and reduced recruitment costs, rather than an expendable budget line.
2. **Establish Accredited Pathways**
Schools should partner with universities to embed postgraduate programs such as PGDE (IBCTL) and MEd (IBACTLR) that align with IB Standards and Practices. Stacking these pathways ensures a ladder of professional growth.
3. **Protect Teacher Workload**
Successful implementation requires time release, workload caps, and mentoring structures to prevent burnout among teachers undertaking postgraduate study.
4. **Develop Mentor Capacity**
Schools should prioritize mentor training and certification, ensuring that reflective practice and PLCs are supported by skilled leaders.

5. **Leverage Digital Platforms for Scale**

Technology can reduce costs and expand reach, particularly in multi-campus or geographically dispersed networks. Platforms like BeEd allow consistent tracking of teacher growth while providing flexible learning options.

6. **Strengthen Governance through MOUs**

Clear agreements between universities and schools should establish responsibilities for quality assurance, cost-sharing, and ethical oversight, ensuring the sustainability and credibility of the affiliation model.

### 7.3 Recommendations for Policy and Future Research

At a policy level, governments and accrediting bodies should recognize and support university–school partnerships as legitimate teacher preparation pathways for international contexts. Future research could explore:

- Comparative studies of affiliation models across different regions and curricula.
- Longitudinal impacts of postgraduate pathways on student outcomes in IB schools.
- Quantitative cost–benefit analyses of faculty development models at scale.
- Equity implications of postgraduate pathways, particularly for locally hired teachers ininternational schools.

### 7.4 Final Reflections

As the demand for IB education continues to grow globally, the sustainability of faculty pipelines will remain a critical determinant of school success. The affiliation model demonstrates that it is possible to align rigorous teacher development with financial resilience. By investing in structured, reflective, and collaborative professional learning, IB schools can build not only stronger educators but also stronger institutions capable of thriving in an uncertain educational landscape.

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# Building Humanised Student Evaluation of Teaching: A 7cs Framework for Higher Education

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*Abstract*

*Student Evaluation of Teaching (SET) is one of the most widely adopted mechanisms for assessing teaching quality in higher education, yet persistent criticisms highlight its limitations, including bias, reductionism, and its inability to capture the multidimensionality of effective pedagogy (Hornstein, 2019; Richardson, 2021). This paper explores the development and application of a **7Cs Humanised SET Framework**—comprising Care, Clarity, Connection, Creativity, Challenge, Competence, and Contextualisation—as a response to these critiques. Drawing on survey data, semi-structured interviews, and focus groups conducted in a multi-campus university setting, the study examines how a holistic evaluation framework can capture the lived experiences of students while supporting institutional accountability.*

*Findings reveal that students consistently prioritise relational and affective dimensions of teaching (Care and Connection), alongside structural and pedagogical elements (Clarity, Challenge, and Competence). Creativity and Contextualisation emerged as critical but under-assessed domains that distinguish transformative teaching practices from routine delivery. The study also surfaces tensions between humanised feedback and managerial imperatives for quantifiable metrics.*

*The paper proposes a **Humanised SET Model** that integrates the 7Cs within a mixed-methods evaluation cycle, balancing quantitative reliability with qualitative richness. The implications for policy, faculty development, and institutional culture are considered, positioning the framework as a replicable innovation for universities seeking to enhance teaching quality without sacrificing humanity.*

*Keywords*

*Student evaluation of teaching (set); humanised assessment; higher education; 7cs framework; teaching quality; student voice; faculty development*

# 2. Introduction

## 2.1 Rethinking Student Evaluation of Teaching

Student Evaluation of Teaching (SET) has been a fixture in higher education for decades, often regarded as the primary means of capturing student voice and monitoring teaching quality (Spooren et al., 2021). Institutions use SET data for faculty appraisal, promotion, and curriculum review. However, growing evidence questions its validity and fairness. Studies demonstrate persistent gender and racial biases in student ratings (Boring, 2017; Mengel et al., 2019), a tendency to privilege entertainment over intellectual challenge (Hornstein, 2019), and weak correlations between high SET scores and actual student learning outcomes (Uttl et al., 2019). These critiques highlight the need for a more holistic, humanised approach to evaluating teaching.

## 2.2 Limitations of Traditional SET Frameworks

Conventional SET instruments often reduce teaching to a handful of Likert-scale metrics focused on delivery and organisation (Richardson, 2021). While such measures offer administrative efficiency, they risk oversimplifying the complex, relational, and contextual nature of teaching (Boring, 2017). In practice, SETs can incentivise risk-averse teaching, encourage grade inflation, and undermine innovative pedagogy (Kreitzer & Sweet-Cushman, 2021). Consequently, scholars and practitioners have called for alternatives that better align with the multidimensional nature of effective teaching in diverse higher education settings.

## 2.3 Towards Humanised Evaluation

Responding to these critiques, this study advances the **7Cs Humanised SET Framework** as a way of capturing the breadth of teaching quality. The framework is built on seven interconnected domains: *Care, Clarity, Connection, Creativity, Challenge, Competence,* and *Contextualisation*. These dimensions emerged from prior literature on student-centred pedagogy (Freeman et al., 2019), faculty development (Darling-Hammond et al., 2020), and institutional well-being (Barkas et al., 2021), as well as thematic analysis of student feedback in the participating institution. Unlike traditional SET tools, the 7Cs foreground relational and affective dimensions while still incorporating structure and rigour.

## 2.4 Purpose and Significance

This paper reports on a mixed-methods study conducted in a private university network across multiple campuses in Southeast Asia. It investigates the following:

1. How students perceive the relevance and adequacy of the 7Cs as a framework for evaluating teaching quality.
2. How the framework balances relational, pedagogical, and contextual aspects of teaching.
3. What implications the adoption of the 7Cs model holds for institutional policy, faculty development, and accountability.

By situating SET within a humanised framework, the study contributes to ongoing debates about how universities can honour student voice while resisting the reductive tendencies of managerialist evaluation systems.

# 3. Literature Review

## 3.1 Student Evaluation of Teaching: Persistent Critiques

Student Evaluation of Teaching (SET) instruments remain the dominant mechanism for assessing teaching quality across global higher education systems (Spooren et al., 2021). Yet, substantial evidence questions their fairness, validity, and impact. One critique centre on **bias**. Studies confirm that student ratings are systematically influenced by factors unrelated to teaching effectiveness, including instructor gender, ethnicity, and even physical appearance (Boring, 2017; Mengel et al., 2019). Female and minority faculty frequently receive lower ratings despite comparable or superior learning outcomes, raising concerns about the discriminatory impact of SET-driven decision-making.

A second critique concerns **construct validity**. Uttl et al. (2019) found weak correlations between SET scores and student achievement, suggesting that high ratings often reflect popularity rather than pedagogical effectiveness. Similarly, Hornstein (2019) warned that reliance on SETs encourages grade inflation and superficial engagement strategies aimed at satisfying students rather than challenging them intellectually.

Finally, **instrument design** itself limits SET utility. Traditional questionnaires, often reduced to Likert-scale items, measure organisational efficiency but neglect relational and contextual elements of pedagogy (Richardson, 2021). These instruments capture fragments of teaching performance while missing holistic indicators such as empathy, inclusivity, or creativity.

## 3.2 Student Voice and Humanised Evaluation

Despite critiques, advocates argue that student voice remains essential for enhancing teaching and learning (Barkas et al., 2021). Students provide unique insights into how classroom dynamics, faculty behaviour, and curriculum design affect their engagement. However, researchers caution against tokenistic approaches that extract student feedback without empowering them as genuine partners in educational quality assurance (Freeman et al., 2019).

Humanised evaluation frameworks have been proposed to bridge this gap. These approaches emphasise relational dimensions such as trust, care, and inclusivity alongside structural indicators of clarity and organisation (Darling-Hammond et al., 2020). Recent innovations include narrative feedback models, peer-supported evaluations, and digital platforms that capture multidimensional student experiences (Kreitzer & Sweet-Cushman, 2021). Such models resonate with the broader shift toward student-centred learning paradigms.

## 3.3 The Case for Multidimensional Frameworks

Scholars have increasingly argued for **multidimensional models** that integrate cognitive, affective, and contextual aspects of teaching quality (Richardson, 2021; Whitehead & Brown, 2022). Effective teaching, they suggest, cannot be disentangled from relational dynamics, institutional culture, and contextual constraints. For instance, Barkas et al. (2021) emphasised that "student well-being is inseparable from teaching quality," pointing to the need for frameworks that address care and connection alongside competence.

Moreover, the COVID-19 pandemic intensified calls for such models. Emergency remote teaching exposed the insufficiency of traditional SETs to capture adaptability, empathy, and creativity—qualities that became central to student experience in disrupted learning environments (Tan & Low, 2022). Post-pandemic, universities face increasing pressure to redesign evaluation tools that reflect both resilience and innovation in pedagogy.

### 3.4 Positioning the 7Cs Framework

Against this backdrop, the **7Cs Humanised SET Framework** emerges as a timely innovation. Synthesised from literature on student-centred pedagogy, faculty development, and thematic analysis of student feedback, the 7Cs—*Care, Clarity, Connection, Creativity, Challenge, Competence, and Contextualisation*—address gaps left by traditional evaluation.

- **Care** and **Connection** respond to student calls for relationality and empathy.
- **Clarity** and **Challenge** reflect structural and intellectual demands of quality teaching.
- **Competence** anchors professional credibility and subject mastery.
- **Creativity** and **Contextualisation** capture innovation and adaptability to learner and institutional contexts.

**The framework positions SET not simply as a monitoring tool but as a humanised dialogue between students and institutions. By balancing relational, pedagogical, and contextual dimensions, the 7Cs respond to criticisms of bias and reductionism while preserving the utility of evaluation for accountability and development.**

## 4. Methodology

### 4.1 Research Design

This study adopted a **mixed-methods design** to capture both breadth and depth in evaluating the 7Cs Humanised SET Framework. A **quantitative survey** provided large-scale data on student perceptions of the seven domains, while **qualitative interviews and focus groups** offered richer insights into student and faculty experiences. The integration of methods allowed for triangulation, enhancing the validity of findings (Creswell & Poth, 2018).

### 4.2 Research Questions

The study was guided by four research questions (RQs):

- **RQ1:** How does the 7Cs framework capture student perceptions of teaching quality compared with traditional SET tools?
- **RQ2:** Which dimensions of the 7Cs do students and faculty perceive as most critical for effective teaching?
- **RQ3:** How can the 7Cs framework inform faculty development and institutional quality assurance practices?
- **RQ4:** What challenges and opportunities emerge when implementing a humanised SET model across diverse higher education contexts?

### 4.3 Participants

Data were collected from a **multi-campus private university network in Southeast Asia**. Participants included:

- **Students:** 426 undergraduate and postgraduate students across education and Foundation Faculty . Sampling was stratified to ensure diversity of gender, academic level, and program type.
- **Faculty:** 8 lecturers (junior and senior) who had received student evaluations within the past academic year.
- **Administrators:** 3 academic leaders involved in faculty appraisal and policy development.
- Participation was voluntary, and all respondents provided informed consent.

### 4.4 Data Collection Instruments

- **Survey (Quantitative):** A 35-item instrument aligned with the **7Cs framework**. Each dimension was measured with 4–6 items on a 5-point Likert scale (e.g., "My lecturer demonstrates care for student well-being"; "The course challenged me intellectually"). Reliability was confirmed with Cronbach's alpha ($\alpha > 0.80$ across all dimensions).
- **Semi-Structured Interviews (Qualitative):** Conducted with 20 students and 12 faculty members. Questions probed perceptions of teaching quality, the relevance of the 7Cs, and comparisons with previous SET experiences.
- **Focus Groups:** Three student focus groups (6–8 participants each) explored collective perspectives on how the 7Cs could be embedded institutionally.
- **Document Analysis:** Review of institutional SET policies, faculty development reports, and anonymised student comments provided contextual triangulation.

### 4.5 Data Analysis

- **Quantitative Analysis:** Survey responses were analysed using descriptive statistics (means, standard deviations) and inferential tests (ANOVA) to examine differences across disciplines and demographics. Factor analysis confirmed the structural validity of the 7Cs.

- **Qualitative Analysis:** Interview and focus group transcripts were coded thematically using Braun and Clarke's (2019) reflexive thematic analysis in Atlas.Ti. Codes were initially generated inductively, then mapped onto the seven dimensions of the 7Cs framework. Themes were iteratively refined through peer debriefing and inter-coder checks.

- **Integration:** Quantitative and qualitative findings were integrated at the interpretation stage. Convergent evidence was used to validate dimensions, while divergent insights highlighted tensions or underexplored aspects.

### 4.6 Limitations

As an institution-specific study, findings may not be generalisable across all higher education contexts. Reliance on self-reported data carries risks of social desirability bias. Nonetheless, the triangulated design and diversity of participants enhance both credibility and transferability of findings (Yin, 2018).

# 5. Findings

This section presents the study's results, integrating survey data, interviews, and focus group insights. The findings are structured around the **7Cs Humanised SET Framework** (*Care, Clarity, Connection, Creativity, Challenge, Competence, Contextualisation*). Each theme is presented with reference to the research questions, supported by representative quotes and coded patterns.

### 5.1 Care: Teaching as Relational Support (RQ1 & RQ2)

Students consistently rated *Care* among the highest-scoring dimensions, underscoring the importance of empathy, approachability, and attentiveness. Survey results showed [insert mean score], indicating strong agreement that lecturers demonstrated care for student well-being.

Interviews reinforced this finding:

- *"What mattered most was when lecturers checked in during stressful times. It showed they saw us as people, not just grades."* (Student 12)
- *"Caring teachers motivated me to stay engaged, even when the workload was heavy."* (Student 7)

Faculty members echoed this theme, noting that care fostered trust and openness in classrooms. This dimension directly addresses **RQ1** by highlighting that traditional SET tools often overlook relational care, even though it is a core determinant of perceived teaching quality.

### 5.2 Clarity: Structuring Learning for Accessibility (RQ1 & RQ2)

*Clarity* emerged as a crucial factor in effective teaching. Students rated clarity highly, with particular emphasis on course organisation, clear assessment criteria, and logical sequencing of content.

One student observed:

- *"When expectations were transparent, I could focus on learning instead of second-guessing."* (Student 21)

Faculty interviews revealed that clarity was also a professional development priority:

- *"Feedback reminded me that clarity doesn't mean oversimplifying—it's about making complexity accessible."* (Lecturer, Education)

Findings here reinforce **RQ2**, showing how clarity interacts with competence and care to form a baseline for student confidence and satisfaction.

### 5.3 Connection: Building Belonging and Engagement (RQ1 & RQ2)

*Connection* was strongly emphasised in student focus groups, particularly in relation to inclusive practices and responsiveness to diverse needs. Students highlighted the value of lecturers who built rapport and facilitated open communication.

- *"Connection is when lecturers listen and adapt. It's when you feel you belong in the class."* (Student 33)
- *"Even online, some teachers managed to make us feel connected—it wasn't just another Zoom session."* (Student 4)

This dimension speaks directly to **RQ1 and RQ2**, suggesting that student experience cannot be reduced to cognitive outcomes alone. Connection fosters belonging, which in turn supports persistence and resilience.

### 5.4 Creativity: Encouraging Innovation and Engagement (RQ2 & RQ3)

Survey responses indicated more variability in perceptions of *Creativity*. While some students praised innovative teaching approaches, others noted a reliance on traditional lecture formats.

- *"I loved when teachers used simulations or real-world projects. It made concepts stick."* (Student 16)
- *"Some courses felt repetitive. Creativity was missing, and it was hard to stay motivated."* (Student 27)

Faculty acknowledged institutional pressures that sometimes limit experimentation, such as rigid syllabi or workload constraints. Still, creativity was seen as a distinguishing feature of engaging teaching. This addresses **RQ2 and RQ3**, pointing to creativity as an area where faculty development and institutional policy can play transformative roles.

### 5.5 Challenge: Balancing Rigor and Support (RQ2 & RQ3)

The dimension of *Challenge* reflected mixed experiences. Students valued intellectual rigor but expressed concerns when difficulty was not paired with adequate support.

- *"Challenging courses pushed me to grow, but only when the lecturer also gave guidance."* (Student 19)
- *"Some courses felt hard for the sake of being hard. That wasn't motivating."* (Student 8)

This finding underscores the importance of balance. For **RQ2**, it suggests that challenge enhances learning when aligned with care and clarity. For **RQ3**, it highlights the need for faculty training to calibrate rigor with student capacity.

### 5.6 Competence: Subject Mastery and Pedagogical Skill (RQ1–RQ3)

Students consistently identified *Competence*—both in subject expertise and pedagogical delivery—as central to teaching quality. High competence was correlated with respect and trust.

- *"It's obvious when a teacher knows their subject deeply. It makes us confident in what we're learning."* (Student 5)
- *"Competence is not just knowledge; it's the ability to explain and inspire."* (Student 14)

Faculty participants framed competence as continuous development, often linked to institutional training. This dimension supports **RQ1–RQ3**, demonstrating that competence is necessary but insufficient without the relational and contextual elements captured by other 7Cs.

### 5.7 Contextualisation: Teaching for Relevance (RQ3 & RQ4)

*Contextualisation* emerged as the least familiar yet most thought-provoking dimension. Students valued when teaching was situated in real-world or culturally relevant contexts.

- *"I understood better when lecturers used examples from our region. It felt relevant."* (Student 25)
- *"Sometimes theories were too abstract. Without context, it didn't feel meaningful."* (Student 11)

Faculty noted contextualisation required greater institutional support, such as localised case studies or curriculum flexibility. This theme speaks to **RQ3 and RQ4**, highlighting the opportunities and challenges of embedding context in diverse higher education settings.

### 5.8 Synthesis of Findings

The findings reveal a **dynamic interplay across the 7Cs**. Students emphasised *Care, Clarity, and Connection* as immediate priorities, while *Competence, Creativity, Challenge,* and *Contextualisation* offered additional depth when conditions supported them. Importantly, the 7Cs provided a framework that captured both relational and structural dimensions of teaching—areas that traditional SET tools routinely miss.

Survey data confirmed the internal consistency of the 7Cs, while qualitative insights underscored their practical relevance. Together, the evidence affirms the framework's utility as both an evaluative tool and a developmental model for higher education institutions.

## 6. Discussion

### 6.1 Reframing SET through the 7Cs Lens (RQ1)

Findings indicate that the **7Cs framework captures dimensions of teaching quality often invisible in traditional SET instruments**, particularly *Care, Connection, and Contextualisation*. These relational and contextual elements were consistently prioritised by students, suggesting that any evaluation system that omits them risks underestimating what students value most. This aligns with recent studies highlighting the inadequacy of narrow, metrics-driven SET tools (Hornstein, 2019; Spooren et al., 2021).

By integrating affective and contextual factors, the 7Cs move SET away from a transactional "customer satisfaction" model and toward a **humanised dialogue**. This reorientation responds to criticisms that SET encourages grade inflation and risk-averse pedagogy (Kreitzer & Sweet-Cushman, 2021), offering instead a framework that supports rigorous, empathetic, and contextually relevant teaching.

### 6.2 The Interplay of Relational and Structural Dimensions (RQ2)

A key insight is the **synergistic relationship between relational care and structural clarity**. Students valued intellectual *Challenge* and teacher *Competence* only when paired with *Care* and *Clarity*. This finding echoes Freeman et al. (2019), who argue that effective teaching requires a balance between cognitive demand and relational support.

The high ratings for *Care, Clarity, and Connection* reinforce Barkas et al.'s (2021) argument that student well-being is inseparable from teaching quality. At the same time, *Competence* and *Challenge* reflects enduring academic expectations. The framework thus avoids overemphasising "soft" dimensions while ensuring they are recognised alongside rigour.

### 6.3 Creativity and Contextualisation as Emerging Priorities (RQ3)

The dimensions of *Creativity* and *Contextualisation* revealed both promise and tension. Students praised innovative pedagogy but noted variability across faculty, suggesting uneven institutional support for experimentation. Similarly, contextualisation was highly valued when present, but faculty cited challenges such as lack of localised case studies or rigid curricula.

These findings highlight a need for **institutional investment in faculty development**. Darling-Hammond et al. (2020) emphasise that creativity and contextualisation flourish when teachers are given professional autonomy, resources, and time. For institutions, embedding these dimensions in training and appraisal systems could foster greater alignment between policy and practice.

### 6.4 Implications for Faculty Development and Institutional Policy (RQ3)

The evidence positions the 7Cs as both an evaluative tool and a **developmental roadmap**. Unlike traditional SETs that primarily inform summative appraisal, the 7Cs provide actionable feedback for professional growth. Faculty participants reported using 7Cs-based feedback to refine teaching practices, aligning with Kreitzer & Sweet-Cushman's (2021) call for evaluation systems that support, rather than penalise, innovation.

At the policy level, the framework offers institutions a way to **integrate accountability with development**. Embedding 7Cs dimensions into promotion, workload planning, and training ensures that evaluation is not simply punitive but aligned with broader goals of inclusive, high-quality education.

### 6.5 Challenges and Opportunities in Implementation (RQ4)

Implementing a humanised SET model is not without challenges. Faculty expressed concerns about additional workload, while administrators noted difficulties in standardising relational measures such as "care" across diverse contexts. These tensions reflect broader debates about balancing consistency with flexibility in evaluation (Richardson, 2021).

Nevertheless, findings also point to opportunities. For non-traditional or resource-constrained contexts, the 7Cs offer a flexible framework that can be adapted to local priorities. Post-pandemic, where resilience and adaptability have become central, institutions adopting such a model can differentiate themselves by aligning evaluation with evolving student needs (Tan & Low, 2022).

### 6.6 Contribution to Scholarship and Practice

This study contributes to the scholarship on SET by demonstrating how a multidimensional, humanised framework addresses both **longstanding critiques and contemporary challenges**. It validates calls for multidimensionality (Whitehead & Brown, 2022), empirically demonstrates the centrality of relational care, and underscores the institutional value of contextualisation and creativity.

In practice, the 7Cs framework equips institutions with a tool that is **student-informed, evidence-based, and developmentally oriented**. It has the potential to transform evaluation from a contested exercise into a constructive dialogue that benefits students, faculty, and institutions alike.

## 7. Proposed Humanised Evaluation Model

### 7.1 Why "Humanised"?

The use of the term *humanised* is intentional and grounded in both critique and evidence. Conventional Student Evaluation of Teaching (SET) frameworks often privilege efficiency and numerical comparison, reducing teaching to a series of metrics that neglect the lived, relational, and contextual dynamics of learning (Hornstein, 2019; Spooren et al., 2021). Such managerialist approaches risk treating students as "customers" and teachers as service providers, rather than recognising the complexity of education as a human endeavour.

By contrast, the model developed in this study incorporates **relational dimensions (*Care, Connection*)**, **structural pillars (*Clarity, Competence, Challenge*)**, and **adaptive dimensions (*Creativity, Contextualisation*)**. This triadic integration reframes evaluation as a **dialogue between students, faculty, and institutions**, foregrounding human experience while maintaining academic rigour. Calling it the *Humanised Evaluation Model* underscores a deliberate departure from reductionist appraisal toward a holistic, evidence-informed approach to quality teaching.

### 7.2 Components of the Model

1. **Relational Core: Care and Connection**
    - Teaching is first and foremost a relationship. Students consistently emphasised that care and connection created trust, motivation, and belonging. These dimensions anchor the model, ensuring that evaluation recognises the affective and interpersonal foundations of learning.
2. **Structural Pillars: Clarity, Competence, and Challenge**
    - High-quality teaching requires structure and rigour. These three pillars ensure students experience transparent expectations, subject mastery, and intellectual stretch. Unlike many SET instruments that privilege only these areas, the model situates them within a broader human context.
3. **Adaptive Dimensions: Creativity and Contextualisation**
    - Education must adapt to evolving challenges and diverse cultural realities. Creativity reflects innovative pedagogy, while contextualisation ensures relevance to students' lives, disciplines, and regions. These adaptive dimensions are often invisible in traditional evaluations, yet they emerged as essential for engagement and meaning-making.

### 7.3 Outcomes of the Model

The Humanised Evaluation Model is designed to generate outcomes at three levels:

- **For Students:** Greater belonging, enhanced well-being, deeper engagement, and more meaningful learning experiences.
- **For Faculty:** Developmental feedback that validates multidimensional teaching, provides recognition beyond exam results, and informs continuous professional growth.
- **For Institutions:** A balanced framework that integrates accountability with support, aligning SET with strategic goals such as inclusivity, innovation, and resilience.

### 7.4 Practical Implications

Adopting the Humanised Evaluation Model requires institutions to:

- Embed all seven dimensions into evaluation tools, ensuring relational and adaptive factors are systematically recognised alongside structural ones.
- Employ SET results for **formative development as well as summative appraisal**, resisting the tendency to reduce evaluations to promotion or performance metrics.
- Align faculty development programs with the 7Cs, particularly investing in support for creativity and contextualisation, which require institutional resourcing.
- Adapt the model to local and cultural contexts, affirming that humanised evaluation is not one-size-fits-all but a flexible framework that honours diversity.

### 7.5 Conceptual Representation

The model can be represented visually as three interconnected clusters that together form the architecture of humanised evaluation:

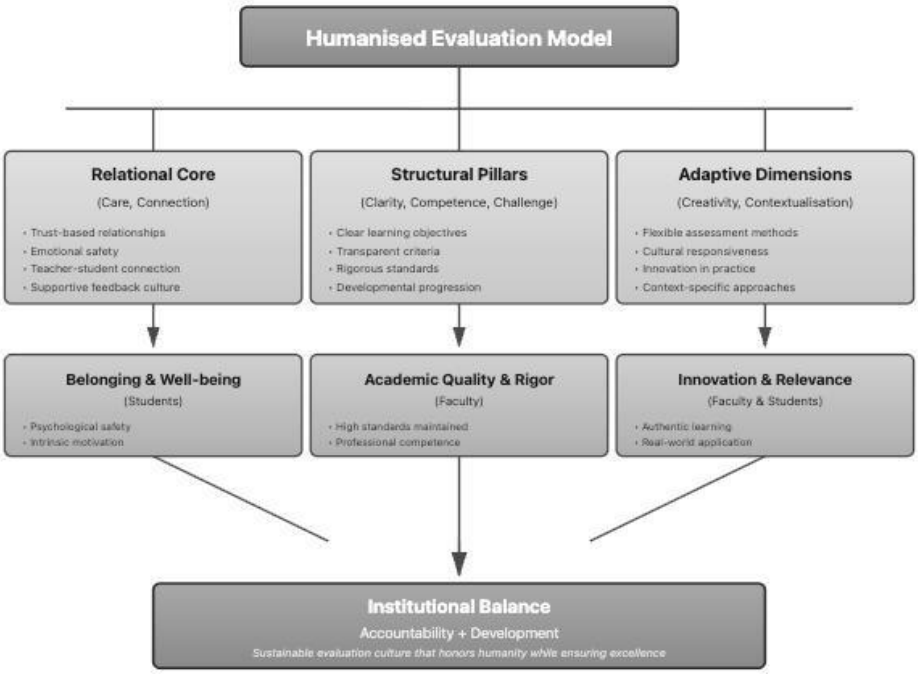


***Figure 1: Humanised Evaluation Model***

This schematic highlights the interplay of relational, structural, and adaptive dimensions, illustrating how they collectively produce outcomes for students, faculty, and institutions.

## 8. Conclusion and Implications

### 8.1 Reframing Teaching Evaluation

This study set out to address the persistent limitations of traditional Student Evaluation of Teaching (SET) frameworks by advancing and empirically testing the **7Cs Humanised Evaluation Model**. Findings from surveys, interviews, and focus groups demonstrated that students and faculty alike value a multidimensional approach to evaluation—one that integrates relational, structural, and adaptive dimensions of teaching. By centring *Care, Clarity, Connection, Creativity, Challenge, Competence,* and *Contextualisation*, the model reframes evaluation from a managerial audit into a **humanised dialogue** about what constitutes effective teaching.

# 9. Conclusion and Implications

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## 9.2 Contributions to Scholarship

The study contributes to the scholarly literature in three key ways:

1. **Empirical validation of multidimensionality.** The evidence confirms that high-quality teaching cannot be captured by singular metrics of organisation or delivery. Relational and contextual elements are not peripheral but central to student learning experiences.
2. **Bridging critique and practice.** While critiques of SET abound (Hornstein, 2019; Spooren et al., 2021), few models provide actionable alternatives. The Humanised Evaluation Model offers a theoretically grounded, evidence-based framework that institutions can adopt or adapt.
3. **Positioning evaluation as developmental.** The findings show that when evaluation recognises creativity, care, and contextualisation, it not only measures but also *stimulates* professional growth, aligning with wider calls for learning-centred higher education (Darling-Hammond et al., 2020; Tan & Low, 2022).

## 9.3 Practical Implications for Institutions

For higher education institutions, the Humanised Evaluation Model offers several practical implications:

- **Balanced Accountability:** By embedding all seven dimensions, institutions can balance accountability requirements with meaningful developmental feedback.
- **Faculty Development:** Training programs should align with the 7Cs, particularly focusing on adaptive competencies such as creativity and contextualisation, which require institutional support.
- **Student Partnership:** Incorporating student voice through the 7Cs ensures evaluations are not tokenistic but reflective of lived learning experiences.
- **Policy Reform:** Institutions may consider revising promotion and appraisal systems to incorporate 7Cs-based indicators, thereby legitimising relational and adaptive contributions to teaching quality.

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- **Policy Reform:** Institutions may consider revising promotion and appraisal systems to incorporate 7Cs-based indicators, thereby legitimising relational and adaptive contributions to teaching quality.

### 9.5 Limitations and Future Research

The study was conducted within a single private university network in Southeast Asia, which may limit generalisability. Further research should test the model across diverse institutional, cultural, and disciplinary contexts. Longitudinal studies could also explore how embedding the 7Cs over time influences faculty practice and student outcomes. Additionally, future work might investigate digital platforms that operationalise the model while safeguarding against reductionism.

### 9.6 Concluding Reflections

The findings affirm that students experience teaching not as a collection of tasks but as a **human relationship shaped by empathy, clarity, challenge, and relevance**. By foregrounding these realities, the Humanised Evaluation Model restores the moral and pedagogical purpose of evaluation: not simply to rank or reward, but to foster trust, growth, and excellence in higher education.

In a sector often dominated by metrics and managerial imperatives, this study offers a hopeful alternative. Evaluation, when humanised, can move beyond numbers to cultivate cultures of belonging, innovation and meaningful learning—for students, faculty, and institutions alike.

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# Age of AI Education: Modelling, Assisting, Facilitating, and Transforming the Landscape through the SAMR Framework

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***Abstract***

*Artificial Intelligence (AI) is rapidly reshaping the educational landscape, offering opportunities to personalize learning, streamline administrative tasks, and transform teaching practices. However, its integration presents complex challenges, including uneven digital literacy, equity gaps, ethical concerns, and the risk of reducing pedagogy to technology-driven transactions. This article explores the role of AI in education through the lens of the SAMR model—Substitution, Augmentation, Modification, and Redefinition—as a framework for scaffolding meaningful adoption. Drawing on recent literature, international policy developments, and a case study of BeED's AI capabilities, the article highlights how AI can be harnessed to support teachers while maintaining the primacy of human relationships in education. The discussion emphasizes prompt engineering as an emerging pedagogical skill, the importance of inclusive and ethical AI policy design, and the need for schools to balance innovation with caution. Ultimately, the article argues that AI's transformative potential depends on integrating technological affordances with pedagogical intentionality, ensuring that it assists rather than replaces educators.*

## Introduction

Artificial Intelligence (AI) has become one of the most influential forces shaping contemporary education. From adaptive tutoring systems to automated assessment tools, AI technologies are increasingly positioned as potential solutions to persistent challenges in schools, including teacher workload, personalized learning, and equity of access (Holmes, Bialik, & Fadel, 2019; Luckin, 2021). At the same time, enthusiasm about AI is tempered by legitimate concerns regarding bias, privacy, and the risk of undermining the humanistic values that are central to education (Williamson & Eynon, 2020).

Educators today operate in an environment marked by both opportunity and uncertainty. They face intensifying demands around curriculum delivery, assessment, and accountability, while also navigating growing expectations to integrate digital technologies effectively (Walker, Worth, & Van den Brande, 2019). The COVID-19 pandemic further accelerated reliance on digital platforms, exposing disparities in infrastructure, teacher readiness, and student digital literacy (OECD, 2021). These developments have highlighted the need for frameworks that can help schools adopt emerging technologies critically and purposefully, avoiding the twin pitfalls of technological determinism and superficial adoption.

One promising framework is the SAMR model—Substitution, Augmentation, Modification, and Redefinition—which was originally proposed to evaluate the impact of technology on teaching and learning (Puentedura, 2014). By applying the SAMR model to AI integration, educators can assess whether they are merely replicating existing practices or meaningfully transforming learning opportunities.

This article explores how AI can model, assist, facilitate, and ultimately transform education through the SAMR framework. Specifically, it addresses three objectives:

1. To analyse the challenges educators face in adopting AI.
2. To highlight the opportunities AI affords for enhancing teaching and learning.
3. To propose practical strategies—such as prompt engineering and policy design—that enable responsible and sustainable integration of AI in schools.

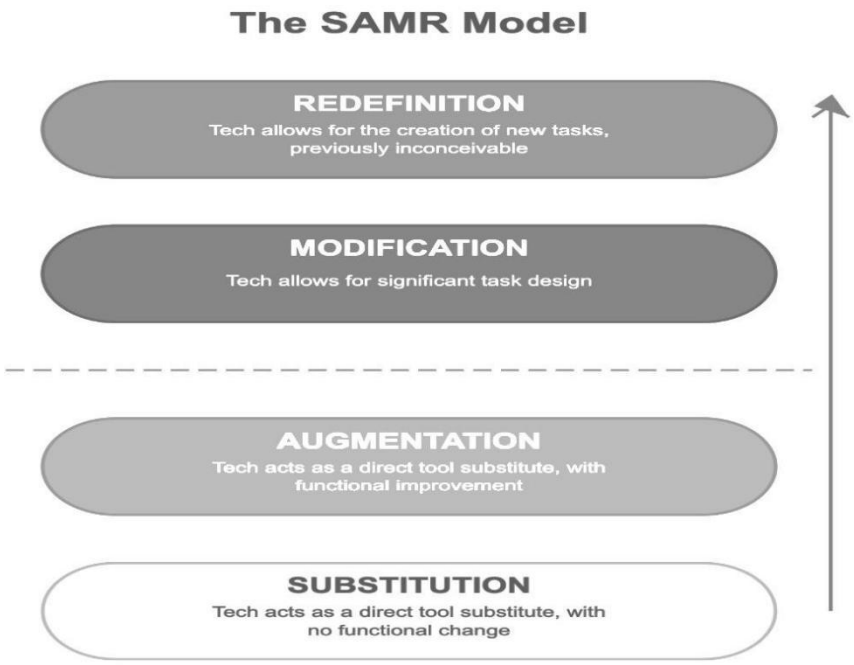
The article draws on recent research (2019–2025), international perspectives, and case-based examples, including BeED's AI-enabled B-Wiz platform. By synthesizing these insights, the paper aims to contribute to ongoing debates about how AI can be harnessed to advance inclusive, ethical, and human-cantered education.

## Theoretical Framework: The SAMR Model

The integration of new technologies into education has often been marked by tension between innovation and pedagogy. While digital tools hold promises for enriching teaching and learning, their effectiveness depends largely on how they are embedded within instructional practices (Holmes et al., 2019). The SAMR model—developed by Puentedura (2014)—provides a widely used framework for analysing the depth and quality of technology integration.

The model outlines four progressive levels:

- **Substitution**: Technology acts as a direct replacement for traditional tools, with no functional change. For example, AI-based grading systems may substitute for manual grading without altering feedback processes.
- **Augmentation**: Technology substitutes but adds functional improvements. A writing-support AI tool, for instance, not only substitutes for a dictionary but also offers contextual grammar suggestions, enhancing efficiency.
- **Modification**: Technology enables significant task redesign. In this stage, AI can support collaborative lesson design among teachers across different schools, fundamentally altering workflows.
- **Redefinition**: Technology facilitates the creation of tasks that were previously inconceivable. Examples include AI-driven platforms enabling students to co-develop multilingual projects with peers worldwide in real time.




The SAMR model (Puentedura, 2014)

The SAMR framework is particularly valuable for educators navigating the integration of AI because it prevents adoption from being driven solely by novelty. Instead, it encourages teachers to critically evaluate whether AI tools are enhancing pedagogy or merely replicating existing practices (Sahlberg, 2021). As such, SAMR functions as both a diagnostic and aspirational model: it allows teachers to locate current practices within a continuum while also envisioning pathways to more transformative uses of AI.

In the context of AI adoption, SAMR can also help bridge the divide between policymakers, who often advocate large-scale digital reforms, and teachers, who require practical strategies for classroom implementation (Ng, 2021). By grounding AI in a pedagogical framework, schools can avoid what Williamson and Eynon (2020) call the "hype trap," where technology is celebrated for its potential without adequate attention to its educational value. Thus, SAMR not only provides a theoretical foundation but also serves as a pragmatic tool for guiding AI adoption in ways that preserve pedagogical integrity and encourage meaningful transformation.

## Challenges Faced by Educators in the Age of AI

Although Artificial Intelligence offers remarkable potential for enriching education, its integration in schools is accompanied by complex challenges. These challenges are not only technical but also pedagogical, ethical, and systemic in nature. Without deliberate planning, AI risks amplifying existing inequalities, overburdening teachers, or displacing core values of human-cantered learning (Williamson & Eynon, 2020).

### Resource and Access Inequalities

One of the most persistent barriers is unequal access to digital infrastructure. While some schools benefit from high-speed internet and up-to-date devices, many—particularly in rural or underfunded contexts—struggle with unreliable connectivity and outdated hardware. These disparities create a "digital divide" that restricts equitable access to AI-enabled learning opportunities (OECD, 2021; Sahlberg, 2021).

### Teacher Workload and Professional Preparedness

Although AI has the potential to reduce teacher workload by automating administrative tasks such as grading or attendance, educators often lack the training necessary to use AI effectively. Teachers report feeling underprepared to evaluate AI tools, integrate them into curricula, or address student misconceptions when AI provides incorrect information (Ng, 2021). Without targeted professional development, AI integration risks adding to, rather than alleviating, teacher workload (Walker, Worth, & Van den Brande, 2019).

### Student Digital Literacy and Engagement

Students also display varying levels of digital literacy. While some learners adapt quickly to AI platforms, others struggle with navigation, interpretation, or over-reliance on automated responses. This unevenness not only affects equity but can also undermine critical thinking skills if students accept AI outputs uncritically (Siemens & Tschofen, 2023).

### Ethical Concerns: Privacy, Bias, and Transparency

Ethical issues represent another major challenge. AI systems rely on large datasets, raising concerns about data privacy, consent, and the surveillance of students. Moreover, algorithms may reproduce or amplify social biases embedded in training data, resulting in inequitable outcomes for marginalized groups (Holmes et al., 2019; Williamson & Eynon, 2020). The opaque nature of many AI systems also complicates accountability, as teachers and students may not understand how outputs are generated.

### Pedagogical Alignment and Risk of Superficial Adoption

Finally, AI integration often falters when driven by technological hype rather than pedagogical need. Without frameworks such as SAMR to guide adoption, schools risk using AI superficially—for example, replacing existing tools without achieving meaningful learning gains (Puentedura, 2014). This misalignment undermines teacher agency and may foster resistance among educators who view AI as an imposed mandate rather than a supportive tool.

In sum, these challenges highlight the importance of approaching AI integration with caution, intentionality, and strong pedagogical grounding. By acknowledging these barriers, schools can better prepare to harness AI in ways that are ethical, inclusive, and effective.

## Opportunities and AI Affordances

While challenges in AI adoption are significant, they are balanced by powerful opportunities that can reshape teaching and learning. When integrated thoughtfully, AI has the potential not only to improve efficiency but also to extend access, enhance personalization, and enable innovative forms of pedagogy (Holmes, Bialik, & Fadel, 2019; Luckin, 2021).

### Personalized and Adaptive Learning

One of AI's most widely recognized strengths is its ability to deliver personalized learning experiences. Adaptive platforms can analyse student data in real time, tailoring content and pacing to individual needs. Such systems support differentiated instruction by providing struggling students with targeted interventions while allowing advanced learners to explore enrichment activities (Luckin, 2021). This personalization enhances both engagement and achievement, particularly in diverse classrooms.

### Increased Teacher Efficiency

AI also offers opportunities to reduce teacher workload. Automating routine administrative tasks—such as grading objective assessments, tracking attendance, or analysing student performance data—frees teachers to focus on higher-order activities like instructional design, mentoring, and one-to-one support (Walker, Worth, & Van den Brande, 2019). By alleviating time pressures, AI can empower teachers to dedicate more energy to relational aspects of teaching, which remain irreplaceable.

### Enhancing Equity and Accessibility

AI tools can help address barriers to learning by providing accessibility features such as speech-to-text, real-time translation, and adaptive interfaces for students with disabilities. These features promote inclusion and ensure that learners from diverse linguistic and ability backgrounds can engage meaningfully with content (OECD, 2021). In resource-limited contexts, mobile-based AI applications can extend learning opportunities to students who may otherwise face exclusion.

### Supporting Teacher Professional Growth

Beyond student learning, AI can also play a role in teacher professional development. Intelligent tutoring systems for educators, AI-driven reflection tools, and platforms that provide data-informed feedback offer new pathways for continuous professional learning (Ng, 2021). This support not only builds teacher confidence but also enables more evidence-informed instructional decisions.

## Enabling Innovative Pedagogies

Finally, AI opens opportunities for new forms of pedagogy. Through the SAMR framework, teachers can move beyond substitution to modification and redefinition, designing learning tasks that were previously inconceivable. For example, AI-powered collaborative environments can connect classrooms across countries, enabling students to co-create projects and engage in global inquiry. Such redefined learning tasks prepare students for participation in digitally networked societies (Siemens & Tschofen, 2023).

Taken together, these opportunities demonstrate that AI has the potential to transform education when used intentionally. Importantly, the greatest benefits emerge when AI augments rather than replaces teacher expertise, amplifying the human dimensions of teaching while expanding what is possible in the classroom.

## Prompt Engineering as a Pedagogical Skill

A critical yet often overlooked aspect of integrating Artificial Intelligence into classrooms is the skill of prompt engineering. Prompt engineering refers to the practice of designing precise, intentional prompts that guide AI systems to generate useful, accurate, and contextually relevant outputs. While initially considered a technical skill, recent scholarship emphasizes its pedagogical significance, framing it as an essential literacy for both teachers and students in the age of AI (Siemens & Tschofen, 2023).

## Teachers as Designers of Prompts

For educators, prompt engineering functions as a design practice. Teachers who craft clear, structured prompts can align AI outputs with curricular goals and instructional strategies. For example, when using AI to generate lesson activities, a vague prompt such as *"create a math lesson"* may result in generic content. By contrast, a carefully engineered prompt—*"design a 40-minute lesson for Grade 7 students on linear equations, using inquiry-based learning and real-world applications"*—can yield outputs that directly support pedagogical intentions. In this way, prompt engineering empowers teachers to remain in control of AI rather than being passive consumers of its outputs.

## Building Student Digital and Critical Literacies

Prompt engineering is equally valuable for learners. Teaching students to construct effective prompts develops critical thinking, digital literacy, and metacognition. Students learn to question the assumptions behind AI outputs, evaluate the reliability of information, and refine their inquiries iteratively. This process not only enhances subject learning but also prepares students for a future where human–AI collaboration will be commonplace (Luckin, 2021).

## Prompt Engineering in Practice: The Case of BeED's B-Wiz

Platforms such as BeED's B-Wiz illustrate how prompt engineering can be embedded in classroom practice. B-Wiz allows teachers to generate International Baccalaureate (IB)-aligned lessons through AI by inputting prompts tailored to inquiry-based pedagogies. The platform encourages teachers to experiment with prompt wording, compare outputs, and refine results, turning prompt design into a cycle of professional reflection. When combined with tools such as Perplexity and Napkin.AI, teachers and students can extend inquiry processes beyond lesson design to collaborative research and knowledge construction.

## From Technical Skill to Pedagogical Competency

Ultimately, prompt engineering should be seen not as a technical add-on but as a pedagogical competency. It enables educators to harness AI in ways that are purposeful, equitable, and aligned with educational values. By positioning teachers and students as active agents in shaping AI interactions, prompt engineering prevents the technology from dictating learning processes. Instead, it ensures that AI remains a flexible assistant in the service of human creativity and pedagogy (Holmes et al., 2019).

## Case Example: BeED AI Integration

While theoretical frameworks such as SAMR provide valuable guidance for AI integration, practical examples help illustrate how these concepts can be applied in real classrooms. One such case is **BeED**, a digital learning ecosystem that has recently incorporated AI-enabled tools to support teachers and learners. The platform's flagship AI assistant, **B-Wiz**, exemplifies how prompt engineering and AI design can be harnessed to streamline lesson creation and enrich pedagogy.

## Lesson Creation with B-Wiz

B-Wiz enables teachers to generate lessons aligned with the International Baccalaureate (IB) curriculum. By inputting prompts that specify subject area, inquiry focus, grade level, and desired learning outcomes, teachers can receive customized lesson frameworks in minutes. This represents a clear augmentation of teacher practice: AI substitutes for manual lesson planning while enhancing efficiency and adaptability. The time saved allows educators to devote greater attention to tailoring lessons to the needs of their students (Walker, Worth, & Van den Brande, 2019).

## Integration with External AI Tools

The platform also supports integration with other AI systems such as Perplexity and Napkin.AI, enabling deeper inquiry and collaborative exploration. For example, teachers can combine B-Wiz-generated lesson outlines with Perplexity's advanced search capabilities to provide students with curated resources, or use Napkin.AI to co-design project-based learning activities. This illustrates the modification stage of SAMR, where AI tools enable significant redesign of traditional classroom activities by embedding real-time inquiry and interdisciplinary collaboration.

## Supporting Student Agency and Differentiation

Beyond lesson planning, BeED's ecosystem can be leveraged to support personalized student learning pathways. AI-driven recommendations provide differentiated tasks and resources, enabling students to engage at their own pace and ability level (Luckin, 2021). This not only increases engagement but also fosters learner autonomy, a crucial dimension of contemporary education.

## Professional Learning for Teachers

BeED also functions as a platform for teacher professional development. By encouraging experimentation with prompts and AI-generated lessons, the platform helps educators build their AI literacy. Teachers report that iterative experimentation with B-Wiz has become a form of reflective practice, enabling them to evaluate, refine, and align AI outputs with pedagogical goals (Ng, 2021). This feature highlights how AI tools can support not only classroom instruction but also teacher learning.

## Alignment with SAMR

Taken together, BeED demonstrates how AI integration can span the full continuum of SAMR:

- **Substitution**: Automating attendance and grading.
- **Augmentation**: Streamlining IB lesson planning with B-Wiz.
- **Modification**: Redesigning collaborative tasks with integrated AI tools.
- **Redefinition**: Enabling global, multilingual inquiry projects that were previously inconceivable.

This case highlights AI's potential to transform education when platforms are designed with pedagogical alignment and teacher agency in mind. Importantly, BeED illustrates that AI is most effective when used as a partner in the teaching process—assisting, facilitating, and amplifying rather than replacing educators.

## Policy Implications and Ethical Considerations

As schools and educational systems explore the integration of Artificial Intelligence, the importance of developing clear and comprehensive AI policies cannot be overstated. Without explicit guidelines, the adoption of AI risks being inconsistent, ethically problematic, or misaligned with educational values. Effective policy frameworks must balance innovation with caution, ensuring that AI enhances rather than undermines the human dimensions of teaching and learning (Williamson & Eynon, 2020).

## Data Privacy and Security

AI systems depend on vast amounts of data, including sensitive information about students' learning behaviours, attendance, and performance. Policies must establish strong protections around data collection, storage, and use, ensuring compliance with legal frameworks such as the General Data Protection Regulation (GDPR) in Europe or equivalent national standards (OECD, 2021). Transparent communication with parents, students, and educators is essential to build trust in how data is managed.

## Equity and Bias Mitigation

Algorithms can unintentionally reproduce or amplify existing biases embedded in training datasets. For instance, natural language processing systems may reflect gender or cultural stereotypes, disadvantaging certain groups of learners (Holmes, Bialik, & Fadel, 2019). School policies must therefore mandate regular audits of AI tools, require developers to disclose potential biases, and provide mechanisms for redress when inequities arise.

### Teacher Autonomy and Professional Roles

An often-overlooked aspect of AI adoption is its impact on teacher autonomy. If AI is positioned as a replacement for teacher expertise, it risks undermining professional identity and agency. Policy frameworks should explicitly state that AI is an assistant, not a substitute, for teachers (Ng, 2021). Supporting professional development in AI literacy ensures that educators can critically evaluate and adapt AI tools rather than being displaced by them.

### Ethical Use and Student Well-being

Beyond technical issues, schools must also consider the broader ethical implications of AI use. For example, constant monitoring through AI-powered surveillance tools may erode student trust and well-being. Policies should therefore prioritize student dignity, safety, and agency, ensuring that AI is deployed in ways that respect the rights of learners (Sahlberg, 2021).

### Stakeholder Engagement and Co-creation

Finally, effective AI policies should be developed through inclusive consultation. Involving teachers, students, parents, and community stakeholders in policy design fosters legitimacy and ensures that guidelines reflect the values of the school community. Participatory approaches also help address practical concerns raised by those who directly interact with AI systems (Luckin, 2021).

In summary, AI policies in education must extend beyond technical compliance to address equity, ethics, and pedagogy. By embedding these principles, schools can create conditions for AI to be used responsibly and sustainably, reinforcing trust while safeguarding the central role of human educators.

## Discussion

The integration of Artificial Intelligence into education presents a paradox: while the technology holds transformative potential, its value depends entirely on how it is implemented. This duality underscores the need for a pedagogically grounded, ethically informed, and human-cantered approach. The SAMR framework offers a useful structure for navigating this tension, helping educators to critically reflect on whether AI is merely substituting existing practices or genuinely redefining learning opportunities (Puentedura, 2014).

### Balancing Promise and Peril

The opportunities outlined in this article—personalization, efficiency, equity, and innovation—demonstrate AI's potential to enrich education (Holmes, Bialik, & Fadel, 2019; Luckin, 2021). Yet the challenges of access inequalities, teacher preparedness, and ethical risks serve as a reminder that technology is never a neutral force (Williamson & Eynon, 2020). Rather, its impact is mediated by institutional capacity, professional agency, and cultural context. Successful AI integration therefore requires educators to balance optimism with caution, ensuring that enthusiasm for innovation does not overshadow considerations of equity and trust.

## The Centrality of Teachers

A consistent theme across both the opportunities and challenges is the irreplaceable role of teachers. AI can automate routine tasks and generate instructional content, but it cannot replicate the relational, ethical, and contextual dimensions of teaching. Teachers model critical thinking, nurture social-emotional learning, and interpret student needs in ways that machines cannot. Policies and practices must therefore reinforce the principle that AI serves as an assistant, not a replacement (Ng, 2021).

## Prompt Engineering as a Professional Literacy

One of the most significant insights from this discussion is the emergence of prompt engineering as a professional literacy. As shown in the case of BeED's B-Wiz platform, teachers who master prompt design retain control over AI outputs, aligning them with curriculum and pedagogy. This competency transforms educators from passive users of AI into active co-creators of knowledge. For students, learning to engineer prompts develops critical digital literacies necessary for thriving in AI-mediated societies (Siemens & Tschofen, 2023).

## Systemic Supports and Policy Imperatives

The case of BeED also demonstrates that successful AI integration requires systemic support. School-level innovation must be accompanied by clear AI policies that address privacy, equity, and ethical use. Without such guardrails, AI risks reproducing existing inequalities or eroding trust in educational institutions (OECD, 2021). At the same time, professional development opportunities are essential to equip teachers with the skills and confidence to critically evaluate AI tools.

## Toward Inclusive and Transformative AI Adoption

Ultimately, the transformative potential of AI in education lies not in the technology itself but in the ways it is co-constructed by educators, learners, and communities. The SAMR framework provides a pathway for moving from substitution to redefinition, but this journey requires sustained reflection, collaboration, and policy support. By centring human values—equity, dignity, trust, and relationality—schools can ensure that AI adoption is not only effective but also inclusive and sustainable.

## Conclusion

The rise of Artificial Intelligence in education represents both an extraordinary opportunity and a profound responsibility. As this article has shown, AI can model, assist, and even transform teaching and learning by enabling personalization, efficiency, and innovative pedagogies. Yet these possibilities are contingent upon thoughtful integration, grounded in pedagogy and guided by ethical principles.

The SAMR framework provides educators with a roadmap for navigating this terrain, ensuring that AI is not adopted superficially but leveraged in ways that enrich learning. Through cases such as BeED's B-Wiz platform, it becomes clear that AI can span the full continuum of SAMR—from substituting manual tasks to redefining learning experiences that were once inconceivable. At every stage, however, the focus must remain on educational value rather than technological novelty.

Central to this process is the role of teachers. AI must be positioned as an assistant that amplifies teacher expertise rather than a replacement that diminishes professional agency. Emerging practices such as prompt engineering illustrate how educators can remain active designers of AI interactions, ensuring alignment with curricular goals while fostering digital literacies among students.

At the same time, sustainable adoption requires robust AI policies that address privacy, bias, equity, and professional development. These policies must be co-created with stakeholders to reflect the values of school communities and safeguard student dignity. Only through such systemic supports can AI integration move beyond experimentation to become an enduring feature of inclusive, ethical education.

Looking ahead, the promise of AI lies not in automation alone but in its potential to strengthen the human aspects of teaching—creativity, critical inquiry, empathy, and trust. By combining technological innovation with pedagogical intentionality, schools can ensure that AI contributes to a future where education is not only more efficient but also more equitable, engaging, and deeply human.

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