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DESIGNING FOR CHANGE: IMPLEMENTING TEACHER-CENTRIC PROFESSIONAL DEVELOPMENT

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Empowering Educators: Designing Sustainable Professional Development for Enhanced Efficacy and Well-being

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ABSTRACT

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This thesis presents the development of a teacher-centric professional development (PD) model designed to enhance the well-being and pedagogical efficacy of educators. The implementation, feedback loops, and iteration of the proposed model have been piloted with teachers who have extensive experience in schools in an international context, ensuring it is adaptable to their specific needs. Leveraging design thinking and service design principles, the model emphasises educator autonomy, collaboration, and personalised learning pathways, implemented via a qualitative research methodology involving iterative workshops with international educators.

The research explores how a teacher-centric PD model can enhance the well-being and efficacy of educators in diverse teaching and learning environments. Additional inquiries focus on the influence of such models on educator well-being and the challenges encountered in diverse educational settings. Data were collected through interviews, reflective journals kept by teacher participants in the pilot phase, and feedback loops, which informed continuous refinements of the PD process.

Findings indicate that integrating design thinking into PD encourages educators to actively shape their professional growth, potentially leading to increased job satisfaction and effectiveness in diverse educational environments. While the model shows promise in fostering a supportive educational environment and improving educator engagement, the direct impact on teaching outcomes and student learning requires further exploration.

This research contributes to the field by demonstrating the potential of dynamic and responsive PD approaches that are tailored to the evolving needs of international educators. Future research should assess the long-term impacts of such models and explore their scalability across different educational systems.

Keywords: Professional Development (PD), Design Thinking, Educator Well-being, Pedagogical Efficacy, International Education, Teacher-Centric Approaches, Self-Determination

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1 INTRODUCTION

Educators in diverse settings are frequently confronted with a set of multifaceted challenges that are magnified by the dynamics of global educational environments. These challenges might include navigating cultural differences, addressing the diverse needs of students, coping with professional isolation, and engaging with often unsuitable professional development models. For example, one of the interviewees suggested that "PD can move towards models that are more adaptable, personalised, and culturally sensitive." These issues not only test the adaptability and resilience of educators but also impact their effectiveness and well-being. This thesis aims to employ design thinking as a strategic model to significantly enhance the professional development and overall well-being of educators.

By addressing the gap between traditional professional development models and the unique challenges faced in international contexts, this research proposes a new model designed to foster autonomy, encourage collaboration, and support self-directed learning among teachers. This approach seeks to better equip educators with the tools necessary to effectively navigate and thrive in diverse and challenging educational settings, including international environments.

The primary aim of this thesis is to develop and refine a comprehensive model specifically tailored to meet the unique professional needs of educators in diverse educational settings. This framework seeks to enhance pedagogical effectiveness and personal well-being by providing personalised guidance, thereby empowering educators to take ownership of their professional development journeys. By fostering an environment that supports autonomy and collaboration, the model aims to enable educators to effectively navigate their roles and contribute positively to their educational communities. Grounded in social constructivism, this approach emphasises the importance of social interactions and community in the learning process (Vygotsky, 1978). This initiative draws on the principles of Self-Determined Professional Development (SDPD), which highlights intrinsic motivation and self-directed learning as essential for sustainable professional growth (Gorecki, 2021). Additionally, the model integrates service design thinking principles to ensure adaptability and responsiveness to the evolving needs of international educators (Fazekas, 2021; Suoheimo et al., 2023). Central to this model is the application of design thinking methodologies, which focus on user-centred problem-solving and iterative development processes. These methodologies, as

detailed by Stickdorn et al. (2018), are vital for creating solutions that are specifically aligned with the practical needs and challenges faced by educators in varied educational settings.

The central focus of this research is to explore how a teacher-centric professional development model can enhance educator well-being and pedagogical efficacy in diverse teaching and learning environments. This inquiry is supported by additional investigations into the influence of such models on educator well-being and the challenges encountered in implementing them. The study was conducted with educators active in various International Baccalaureate (IB) schools, making the findings applicable to a wide range of educational contexts. The International Baccalaureate (IB) is an educational foundation that offers challenging programs of international education and rigorous assessment. According to their mission statement, the IB aims "to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect" (International Baccalaureate, 2023). The IB's mission aligns with the goals of this thesis, which seeks to enhance professional development through design thinking and service design thinking methodologies.

While the findings from this study are applicable to various educational settings, some adaptations to the process might be needed. Diverse educational environments have unique cultural and contextual factors that require tailored approaches to professional development to ensure their effectiveness and relevance.

This thesis integrates foundational and innovative educational theories to develop a professional development model specifically designed for educators. It underscores the importance of ongoing professional development, which is critical for enhancing teaching effectiveness and improving student outcomes, as established by Timperley et al. (2008). This approach draws on social constructivist principles, emphasising collaborative knowledge construction and shared learning experiences (Vygotsky, 1978). Incorporating the principles of Self-Determined Professional Development (SDPD) focuses on intrinsic motivation and personal growth (Gorecki, 2021), and harnesses the adaptive problem-solving capabilities of design thinking (Pimental, 2023). The approach is further enriched by service design thinking to address broader institutional challenges and enhance educational services (Fazekas, 2021).

Additionally, this research draws on the recent insights of John Hattie (2023), which emphasise the substantial role of teacher practices and the critical importance of tailored feedback systems in

education. Hattie highlights the necessity for professional development models that are adaptable and responsive, particularly in the complex contexts encountered by educators in diverse settings. His focus on the effectiveness of context-driven interventions supports the development of this model, which is specifically designed to enhance teacher efficacy and student outcomes. By incorporating Hattie's work, this thesis substantiates the necessity for a professional development model that is finely attuned to the specific needs and challenges of diverse educational settings.

This thesis adopts a qualitative research methodology, grounded in the principles of educational action research as outlined by Noffke and Somekh (2009). This approach facilitates a comprehensive exploration of the lived experiences of international educators, utilising detailed interviews and extensive literature reviews to illuminate the complexities of international educational settings. These tools help us assess the effectiveness and limitations of existing professional development models, with insights drawn from seminal works such as those by Timperley et al. (2008).

The in-depth interviews conducted with international educators and leaders are essential for gaining personal insights into professional development, cultural adaptation, and the broader teaching context. These discussions are integral to our action research methodology, allowing educators to critically examine their work and collaboratively seek solutions, in alignment with the reflective and collaborative principles highlighted by Feldman et al. (2018). These interviews provide rich qualitative data that help identify and develop themes critical to crafting a more effective professional development model, reflecting Guskey's (2002) emphasis on the reflective nature of educational practice improvement.

Moreover, action research's iterative cycle of planning, acting, observing, and reflecting—detailed by Stringer (2013)—is employed to continually refine the proposed model. This approach ensures that the framework remains relevant and adaptable, facilitating continuous improvement based on ongoing feedback from participants.

In summary, this introduction outlines the foundation for a comprehensive exploration of a design thinking-based professional development model tailored for international educators. By integrating insights from an extensive literature review with qualitative data from in-depth interviews, and applying an action research approach, this thesis aims to advance the field of professional development significantly. This research will explore strategies to enhance the well-being and

pedagogical efficacy of educators in diverse settings, addressing the specific challenges they face in varied educational environments.

For the purposes of this thesis, it is important to clarify the terminology used. According to Merriam-Webster, a "model" is defined as "a description or analogy used to help visualise something (such as an atom) that cannot be directly observed" (Merriam-Webster, 2023). In contrast, a "framework" is defined as "a basic conceptual structure (as of ideas)" (Merriam-Webster, 2023). While both terms could be applicable, "model" is deemed more suitable for this thesis because it aims to offer a teacher-centric and flexible approach that helps visualise a holistic picture of professional development, which might otherwise be hard to grasp. The use of the term "model" aligns with the goal of this thesis to provide a comprehensive and adaptable solution that can be visualised and understood in a practical context. Of course, throughout this thesis, frameworks, processes, approaches, and initiatives will still be referred to, as it is important to see what is out there. However, "model" is considered the most appropriate term for the proposed solution, emphasising its adaptability and comprehensive nature.

The subsequent chapters will delve into the theoretical frameworks underpinning this study, particularly focusing on the effective integration of design thinking into educational practices. The methodology chapter will detail the qualitative research methods employed, explaining how the interviews and action research were conducted to gain deep insights into the experiences of educators in diverse settings**.** After presenting the findings, the discussion will explore their implications for diverse educational environments**,** consider the study's limitations, and offer recommendations for further research.

2 THEORETICAL BACKGROUND

In the upcoming chapter, a deeper investigation into the essential elements of professional development (PD) models in education will be conducted. Building upon the theoretical background provided, the practical implications and implementation strategies of these models will be explored. Specifically, the focus will be on exploring design thinking and service design thinking as innovative approaches to professional development in education. Through an analysis of case studies, research findings, and expert insights, the ways in which these methodologies can enhance teaching effectiveness, improve student outcomes, and support educator well-being will be uncovered. Moreover, the role of stakeholders, including educators and leaders, in shaping the design and implementation of professional development programs will be examined. By the end of this chapter, readers will have gained a comprehensive understanding of the theoretical foundations and practical applications of professional development models, paving the way for transformative improvements in education.

2.1 Framing Professional Development

Professional development frameworks, or models, are essential tools designed to support educators as they navigate the complexities of constantly evolving educational environments. As outlined by Timperley et al. (2008), PD for teachers involves an ongoing process that enhances their skills, knowledge, and practices through structured activities, reflective practices, collaborative learning with peers, and the exploration of new teaching approaches. These models aim to boost teaching effectiveness, improve student outcomes, and support educator well-being by integrating tailored design features and methodologies that apply theoretical knowledge in practical contexts (Korsager et al., 2022; Colla & Mossman).

Emphasising the importance of self-directed professional development, Gorecki (2021) advocates for programs that align with teachers' individual philosophies and the specific needs of their classrooms, moving away from traditional one-size-fits-all approaches. In practice, this means creating professional development plans that are adaptable to various educational settings, including those found in international and culturally diverse schools. Insights from contemporary pedagogical research, including studies on heutagogy and blended learning (Chamo, Biberman-

Shalev, & Broza, 2023), inform these models, creating personalised learning paths tailored to each educator's professional journey. This approach ensures educators are well-equipped to face today's educational challenges, fostering an environment where both teachers and students can excel.

The primary purpose of these models is to enhance teaching effectiveness, improve student learning outcomes, and support the overall well-being of educators. Figures such as Colla & Mossman (2023) and Korsager et al. (2022) emphasise that these models bridge the gap between theoretical principles and their practical application in educational settings, thus improving the quality and effectiveness of the education provided.

Deepening this perspective, Gorecki (2021) underscores the importance of professional development initiatives being closely aligned with educators' actual needs and aspirations. He advocates for a personalised, autonomy-driven approach, which resonates with heutagogical principles of self-determined learning. This perspective challenges traditional models of professional development, promoting instead adaptable, flexible models that truly reflect the individual philosophies and classroom realities of educators.

Henriksen et al. (2018) advocate for professional development models that incorporate design thinking principles to foster creativity and adaptability among educators. They argue that conventional models often fail to recognise the importance of user-centred approaches, limiting teachers' ability to respond to unique classroom needs effectively. By implementing more personalised, adaptable models, educators can engage in meaningful, self-directed professional growth that enhances their instructional skills and improves student outcomes.

The subsequent sections will delve into Design Thinking and Service Design Thinking, exploring their potential to revolutionise professional development. Service Design Thinking, exemplified by Suoheimo and Määttä (2023), emphasises user-centred methods and collaborative creativity, aligning with modern leadership values.

These methodologies collectively aim to support educators effectively and meaningfully. By prioritising well-being, integrating theory and practice, and emphasising autonomy and personalised learning, professional development models ensure educators' growth aligns with their needs.

This cohesive approach not only enhances teaching effectiveness and student outcomes but also holds promise for fostering environments where educators can thrive. Embracing innovation and collaboration offers potential avenues for transforming educational practices, benefiting all stakeholders.

2.2 Design Thinking and Service Design Thinking in Professional Development

Design Thinking (DT) and Service Design Thinking (SDT) offer innovative models for enhancing professional development in education. These methodologies emphasise creativity, empathy, and user-centred problem-solving while prioritising collaborative creativity. They align well with leadership styles that value teamwork and collective decision-making. Together, these approaches establish impactful professional development structures that emphasise educator well-being and personalised learning paths.

Design Thinking, as articulated by Tim Brown in his seminal work *Change by Design* (2009), has become a cornerstone of innovation strategies. Originating in the 1970s, its modern iteration emphasises 'human-centred design,' prioritising rigorous observation to gather quality data on users and drive the design of products, services, and experiences (Brown, 2009). While the precise process varies among practitioners, common themes emerge, including radical collaboration, intentional team diversity, and a bias toward action.

Stanford University's d.school, known as the Hasso Plattner Institute of Design, developed a five-stage design thinking process in partnership with IDEO: Empathise, Define, Ideate, Prototype, and Test (Wolniak, 2017). This semi-linear process helps educators understand and address user needs in a human-centred manner:

- **Empathise**: Immersing oneself in the user's experience through observation and interviews to uncover deep insights. For instance, the K-12 Lab's "School Retool" exercise had principals shadow students throughout their school day to understand their challenges and moments of delight (Stanford d.school, n.d.).
- **Define**: Synthesising collected data to form a problem statement that anchors the subsequent design work. In the same exercise, one principal identified the need for

students to feel a sense of home and comfort in school, reframing the problem to guide future design efforts (Wolniak, 2017).

- **Ideate**: Generating a wide range of creative ideas for potential solutions to the defined problem. This stage emphasises open-minded exploration and collaboration without judgment (Brown, 2019).
- **Prototype**: Developing low-fidelity prototypes to quickly test and refine ideas. This stage emphasises rough, early prototypes to identify what works and doesn't (Walter, Woolery & Schaljo, 2019).
- **Test**: Implementing prototypes with real users to gather feedback and iterate further. Testing reconnects designers with the empathy phase to smooth out potential issues (Uebernickel et al., 2020).

These five stages, supported by comprehensive training resources and initiatives like the K-12 Lab, remain consistent with other methodologies that prioritise collaboration, team diversity, and a bias toward action (Kelley, 2016).

An additional useful framework in Design Thinking is the Double Diamond model, developed by the Design Council in the UK. This model visualises the process as two diamonds: the first diamond involves discovering insights about the problem (Discover) and defining the focus area (Define), while the second diamond involves developing potential solutions (Develop) and delivering the best solution (Deliver). This structured yet flexible approach ensures comprehensive exploration and refinement, helping to tackle complex problems effectively (Design Council, n.d.).

Tim Brown's focus on 'human-centred design' is exemplified through a study by Kara Dadswell et al. (2022), which explored the impact of a design thinking-based professional development workshop for outdoor educators. The workshop, structured around design thinking processes including empathy, defining problems, ideation, prototyping, and testing, demonstrated significant improvements in participants' growth mindset. This outcome not only underscores the adaptability of DT in diverse educational settings but also highlights its potential to enhance educator cognitive flexibility and resilience (Dadswell et al., 2022). The process and results from this workshop vividly demonstrate how effectively the principles of human-centred design can be applied to develop critical educator skills and foster an environment conducive to innovation and adaptive learning.

Similarly, Eraslan Taşpınar's (2022) research into the intersection of design thinking and art education provides a compelling strategy for professional development. By integrating artistic processes that naturally involve creative problem-solving and empathy, the approach encourages educators to develop innovative teaching techniques. These techniques are designed to address the diverse needs of students in international educational settings, thereby enhancing the pedagogical efficacy of educators. This methodology not only fosters a deeper engagement with educational content but also enhances educators' emotional resilience and adaptability—crucial traits for navigating the complexities of global classrooms. While Eraslan Taşpınar primarily focuses on student benefits, these principles of design thinking can similarly be applied to teacher professional development, thereby enriching their capacity to innovate and respond effectively to varied educational challenges.

Pimental's study (2023) investigated the impact of design thinking methodologies on fostering innovation within the public education system. By training educators and administrators in DT, the study revealed its ability to cultivate creativity, transform institutional cultures into solution-focused environments, and establish conditions for sustainable innovation within established structures. The research explored a group of teachers and administrators trained in DT and required to apply it in their professional practice. The data included field observations, interviews, and documents, which were analysed using a two-cycle coding process. The results showed that teachers and leaders trained in DT adopted designer mindsets, built their creative confidence, and collaborated more effectively to address persistent educational challenges. Educators embodied the skillsets and mindsets of designers, self-actualised their creative potential, and fostered universal collaboration to enhance teamwork. This transformation cultivated a culture of problem-solving and innovation, ultimately fostering an environment where sustainable innovation could thrive within educational settings. While the study showcased DT's potential benefits in education, it also underscored the need for comprehensive training and institutional support to fully realise its impact.

The Creating Active Schools Framework (CAS), developed through a multi-stakeholder experience-based design process, offers a compelling example of how the Double Diamond design approach can be utilised in education. Daly-Smith et al. (2020) used the Double Diamond model to co-develop the CAS Framework, engaging fifty stakeholders, including UK researchers, public health specialists, active school coordinators, headteachers, teachers, and international researchers. This process involved stakeholders in a six-phase Double Diamond workshop, where they created and refined the model through divergent and convergent thinking phases. The result

was a comprehensive framework that identified all components of a whole-school physical activity approach, highlighting the importance of ethos and practice, and the role of various stakeholders in delivering physical activity opportunities (Daly-Smith et al., 2020). The CAS Framework's development process underscores the potential of co-design and the Double Diamond approach to create effective, sustainable interventions in complex adaptive systems like schools.

Service Design Thinking (SDT) emphasises co-creating solutions with stakeholders and rigorously testing them in real-world settings. Unlike traditional Design Thinking, which focuses broadly on human-centred design, SDT is more specifically concerned with the interactions and experiences within service systems. Suoheimo and Määttä (2023) highlight how SDT empowers educational leaders to become agents of change by prioritising methodologies that focus on user needs and collaborative creativity. They advocate for this leadership style to amplify teamwork and collective decision-making while empowering educational leaders to design impactful solutions for learners and institutions.

A case study by Fazekas et al. (2021) demonstrates how SDT can improve student learning experiences in higher education through rigorous testing, co-creation, and user-centred approaches. Their research showed that involving students in service development leads to more relevant educational services and improved outcomes. By understanding the needs of students through direct collaboration and feedback, educational leaders could design strategies that directly address gaps in learning and improve engagement. This approach not only cultivates proactive solutions to institutional challenges but also fosters a sense of ownership among learners, encouraging their active participation in the educational process.

In "This Is Service Design Doing," Stickdorn et al. (2018) outline the basics of service design, emphasising a user-centred approach and iterative problem-solving. Although they don't specifically discuss educational institutions, their methodology applies directly to education because it is rooted in design thinking. They explain that organisations can leverage service design to improve their existing services (such as student learning and teacher functioning) while developing entirely new value propositions based on market developments. Service design helps organisations achieve an end-to-end understanding of their services, ensuring holistic, meaningful improvements. It fosters a creative, human-centred process through collaboration with users (e.g., teachers), and its cross-disciplinary, co-creative nature aligns with education. Stickdorn et al. identify six foundational principles for service design:

1. **Human-centred:** Stickdorn et al. emphasise prioritising understanding user needs in all contexts. In education, this can mean addressing the unique challenges faced by teachers and students.
2. **Collaborative:** Involves stakeholders at all levels in co-creation. By engaging educators, administrators, and experts, this principle can inform programs that fill gaps in skills and knowledge.
3. **Iterative:** Emphasises cycles of research, prototyping, and refinement. In teacher development, this can mean incorporating feedback loops and reflective practice.
4. **Sequential:** Considers the journey step by step, mapping out a user's journey. In education, this principle can inform planning a teacher's professional development journey.
5. **Real**: Roots every aspect in practical research and prototyping. In education, this can mean developing practical training exercises and classroom experiments.
6. **Holistic:** Addresses the needs of all stakeholders. In education, this could ensure training benefits individual teachers, students, colleagues, and the institution.

These principles are closely tied to the iterative problem-solving approach of DT, which Auernhammer and Roth (2021) explore in its historical evolution from Stanford University's early focus on product design to innovation management. They note that over the decades, consistent design qualities have provided valuable insights into managing design-driven innovation. The value-driven approach provides a humanistic perspective on innovation theory and practice, stressing the importance of a creative design culture where individuals collaboratively identify and solve emerging problems, thereby fostering innovation across organisations.

Integrating DT and SDT into professional development blends theory and practice to promote well-being, autonomy, and personal growth. These models help educators maintain intrinsic motivation, aligning their professional growth with their unique educational landscapes. They cultivate environments where both educators and students can thrive.

2.3 Teacher Well-being

Teacher well-being is a multifaceted construct that significantly influences educational outcomes and the quality of teaching environments. It encompasses the physical, emotional, and

psychological health of educators, affecting their ability to foster a supportive and effective learning atmosphere for students. As highlighted in the comprehensive report by Taylor et al. (2024), understanding teacher well-being requires a nuanced approach that considers both subjective experiences and objective environmental factors. This complexity is further underscored by the integration of various dimensions that impact an educator's life, ranging from personal health to professional engagement and socioeconomic conditions.

The significance of teacher well-being extends beyond individual educators, touching on broader educational objectives and the societal value of teaching as a profession. Well-supported teachers are more likely to remain in the education sector, demonstrate higher efficacy in their teaching practices, and contribute positively to their students' learning and overall school climate. Given this, the development of robust models to measure, analyse, and enhance teacher well-being is critical. The adoption of innovative strategies such as design thinking offers promising avenues for creating targeted, adaptable, and sustainable well-being initiatives within educational settings, directly addressing the needs highlighted in the OECD Well-being Framework (OECD, 2020) and emphasised by Taylor et al. (2024).

Henriksen et al. (2018) note that teachers' well-being can be significantly improved through models that encourage self-determined learning and creativity. They emphasise that empowering teachers to take control of their professional development journey enhances motivation and engagement, positively impacting teaching efficacy. Such empowerment leads to healthier teaching environments and helps reduce burnout, thus ensuring teachers remain committed to their profession and continue providing high-quality education.

Furthermore, the Wellbeing Integrated Learning Design Framework (WILD), proposed by Colla and Mossman (2023), introduces a transformative approach by making well-being an intrinsic component of educational practice, rather than merely a subject to be taught. Rooted in established psychological well-being theories, WILD provides actionable steps for integrating well-being into the fabric of educational systems, beginning with teacher training. Despite its innovative approach, the framework requires ongoing assessment. This assessment aims to fine-tune its application across varied educational contexts. It acknowledges its current limitations such as a narrow focus on selected theories and the need for contextual adaptability.

Drawing on the insights from John Hattie's *Visible Learning: The Sequel* (2023), this thesis emphasises the vital role of teacher practices and the effectiveness of tailored feedback systems in boosting educational outcomes. Hattie's detailed examination reveals that teacher effectiveness, which he closely associates with student success, is significantly amplified by professional development programs that are both specific to teacher needs and adaptable to various educational contexts. In his research, Hattie highlights the concept of 'high impact' teachers—educators who actively evaluate and refine their teaching strategies to maximise student learning. This approach aligns with the principles outlined in the International Baccalaureate (IB) report on teacher well-being by Taylor et al. (2024), which advocates for well-being-focused educational practices that improve both teacher effectiveness and student achievements.

Furthermore, Hattie underscores the importance of a supportive work environment that boosts teacher well-being, which in turn, positively impacts student performance. Well-supported teachers are more capable of employing high-impact teaching strategies effectively and sustainably. This perspective is reinforced by the IB report on teacher well-being (Taylor et al., 2024), which advocates for structured well-being frameworks within educational systems to not only improve teacher performance but also student outcomes. Both Hattie's findings and the IB report stress the need for embedding robust professional development and well-being measures into everyday school operations to foster an environment conducive to thriving for both educators and students.

Hattie (2023), in his latest book, provides a comprehensive analysis of the direct influence of teacher well-being and professional development on student performance, supporting and expanding the discussions in Taylor et al.'s report. This research aims to develop a model that not only elevates teacher efficacy but also optimises student achievements through holistic education reform, viewing teacher support systems as fundamental to elevating the overall educational quality.

2.4 A Multifaceted Approach to Professional Development

Professional development models are critical in shaping the growth and effectiveness of educators by integrating diverse strategies that respond to their varied professional needs. The core purpose of these models is multifaceted, aiming not only to elevate teaching effectiveness and improve student learning outcomes but also to enhance the overall well-being of educators. Advocates like

Colla & Mossman, alongside Korsager et al. (2022), argue for these frameworks to act as conduits between theoretical principles and their practical application in educational settings. This dual approach enhances the quality and efficacy of teacher education provided, establishing a comprehensive support system crucial for nurturing resilient and effective educators.

Deepening this approach, Gorecki (2021) emphasises the necessity for professional development initiatives to closely align with the actual needs and aspirations of educators. By advocating for a personalised, autonomy-driven approach, his insights align with the heutagogical principles of self-determined learning, challenging the conventional, one-size-fits-all models of professional development. Instead, he promotes models that are adaptable, flexible, and deeply resonant with the individual educators' philosophies and the realities of their classroom environments. This customisation ensures that professional development is not just a prescriptive experience but a transformative one that grows with the educator.

Further extending the scope of these models, recent advancements in service design thinking, as introduced by Suoheimo and Määttä (2024), offer a fresh, innovative extension. They focus on methodologies that prioritise user-centredness and collaborative creativity, providing a structured yet flexible approach to developing programs that cater to educators' needs. This progressive model fosters leadership styles that emphasise teamwork and collective decision-making.

Suoheimo and Määttä (2024) highlight how distributed leadership encourages educators at all levels to share responsibility for achieving educational goals. They note that this style involves actively participating in designing and implementing professional development initiatives, promoting ownership and a sense of purpose among educators. Alma Harris (2008) earlier underscored how distributed leadership positively influences school effectiveness, improvement, and leadership.

Moreover, transformational leadership, as described by Pennell (2023), inspires and motivates educators to work collaboratively toward a shared vision. Transformational leaders promote growth, creativity, and adaptability while empowering followers to achieve more than they initially thought possible. They focus on fostering positive change through collaboration, innovation, and continuous improvement.

As part of a multifaceted approach, teachers benefit from these leadership styles by using them to guide their professional learning. Gorecki (2021) emphasises that self-directed professional development empowers educators to align their growth with their interests and needs. Distributed and transformational leadership styles together help create environments where teachers can collaborate and guide their learning journey, enhancing their motivation and overall effectiveness. Together, these leadership styles cultivate a culture of collaboration, shared growth, and creativity within educational environments. They empower educators to lead initiatives and contribute insights that benefit students, colleagues, and institutions.

These elements collectively forge a holistic view of professional development models. By integrating well-being with a commitment to bridging theory and practice and emphasising the importance of autonomy and personalised learning paths, these models support educators in a manner that is both impactful and meaningful. The goal is to ensure that professional growth is intrinsically motivated and closely aligned with educators' unique professional landscapes, ultimately leading to a more dynamic and responsive educational system.

This multifaceted approach not only addresses immediate educational challenges but also prepares educators to anticipate and adapt to future changes in the educational landscape. It encourages a culture of continuous learning and adaptation, which are essential in today's rapidly evolving world, ensuring that educators remain at the forefront of pedagogical innovation and student engagement.

2.5 Implementation Possibilities

Diverse implementation strategies for professional development initiatives cater to the wide spectrum of educators' needs, emphasising flexibility and access to various learning modalities, including synchronous and asynchronous methods (Chamo, Biberman-Shalev, & Broza, 2023). These strategies can include structured workshops, online courses, mentoring, and collaborative communities, each offering distinct advantages to accommodate various professional growth trajectories. Insights from Gorecki (2021) suggest adding self-directed PD initiatives as part of the strategy spectrum, giving educators greater autonomy in their professional development. This aligns well with Henriksen et al. (2018), who emphasised that empowering teachers to direct their

learning journeys enhances motivation and engagement, positively impacting teaching efficacy and reducing burnout.

Guskey (2024) presents a comprehensive five-level framework for evaluating professional development by emphasising backward planning. This approach starts with defining desired student learning outcomes (Level 5) and works backwards through instructional practices (Level 4), organisational support (Level 3), knowledge and skills (Level 2), and the design of learning experiences (Level 1). Each level is interconnected to ensure cohesive implementation strategies aligned with PD goals while addressing context-specific challenges. By fostering mutual adaptation and supporting purposeful evaluation, Guskey's model provides practical guidance for refining and enhancing PD activities while supporting educators' well-being through thoughtfully designed learning experiences.

Design thinking provides an effective model for PD by incorporating user-centredness and co-creativity, enabling educators to design programmes that align with their unique needs and preferences. This approach aligns well with distributed leadership styles, emphasising collaboration and granting educators more agency over their development (Suoheimo & Määttä, 2023). Incorporating design thinking into PD initiatives fosters a culture of iterative exploration, interdisciplinary engagement, and a participatory approach to educational challenges, promoting creativity, adaptability, and ultimately, teacher well-being (Beligatamulla et al., 2019). Taylor et al. (2024) also highlight the need to consider personal health, professional engagement, and socioeconomic conditions, advocating for PD models that foster supportive learning environments.

The evolution towards a design thinking approach in professional development offers several advantages:

1. **Iterative exploration**: The iterative nature of design thinking allows for ongoing refinement and adaptation, ensuring PD programmes stay relevant (Chamo, Biberman-Shalev, & Broza, 2023).
2. **Collaborative learning**: Design thinking's focus on collaboration promotes teamwork and shared responsibility, aligning with distributed leadership (Suoheimo & Määttä, 2023).
3. **Interdisciplinary engagement**: This approach encourages collaboration across disciplines, providing educators with varied insights and methodologies (Beligatamulla et al., 2019).

4. **Empowerment and autonomy**: Design thinking's flexibility empowers educators to drive their professional growth, fostering innovation and creative problem-solving. This aligns with the principles of self-directed professional development, giving educators greater control over their learning paths (Gorecki, 2021).

The five-level framework suggested by Guskey (2024), and design thinking approaches are complementary. Guskey's model systematically plans and evaluates professional development, emphasising backward planning. Design thinking, with its creative, interdisciplinary, and iterative methodologies, enhances each level of Guskey's framework. It refines instructional practices through interdisciplinary engagement (Level 4) and strengthens organisational support by fostering teamwork and distributed leadership (Level 3). Together, these strategies align end goals with innovative methodologies to address challenges, creating a cohesive, adaptive, and innovative professional development model.

By integrating design thinking with existing PD strategies, educators can engage in more self-determined learning, collaborate across disciplines, and develop solutions rooted in real-world classroom experiences. This holistic approach signals a significant shift towards a more adaptable and innovative model for professional development, empowering educators to embrace creativity, collaboration, and continuous improvement while supporting their well-being in their educational journeys.

2.6 The Role of Teachers and Educational Leadership

The cornerstone of professional development initiatives is the continuous growth and well-being of educators. Guskey (2021) in The Past and Future of Teacher Efficacy, emphasises that fostering a strong sense of teacher efficacy is crucial for effective professional development and improved student outcomes. He highlights the reciprocal relationship between teacher efficacy and student achievement, underscoring the importance of tailoring professional development to strengthen teachers' beliefs in their capabilities.

Recognising the central role of educators, it is also critical to consider the broader ecosystem of stakeholders that significantly contribute to the design, implementation, and sustainability of professional development programs. This ecosystem includes leaders and administrators

responsible for creating environments conducive to innovative professional development practices. John Hattie (2023), in *Visible Learning: The Sequel*, reinforces the importance of effective leadership in cultivating a culture of continuous learning and growth, empowering teachers to view professional development as a transformative journey.

In Ontario, Canada, there is a recognised need to focus on educator well-being, which is crucial for achieving high levels of student achievement and equity. Theoretical frameworks of sustainable improvement, informed by environmental sustainability and sustainable development principles, are essential for evaluating the sustainability of educator well-being as a systemic quality. According to Shirley, Hargreaves, and Washington-Wangia (2020), supportive environments that promote educator well-being lead to enhanced outcomes for students, particularly in settings with diverse and demanding educational challenges. These authors emphasise that well-being among educators contributes significantly to their ability to engage students and achieve educational goals effectively.

The synergy between teacher efficacy, leadership support, and a nurturing professional development ecosystem is vital for achieving lasting educational improvements. By acknowledging the interdependence of these factors, schools can foster a culture that values educator well-being, encourages a growth mindset, and ultimately enhances student learning experiences.

At the heart of professional development, educators seek programs that resonate with their individual learning needs and professional contexts. The integration of heutagogy and design thinking principles, as highlighted by Henriksen, Gretter, & Richardson (2018), champions personalised and self-directed learning pathways. This approach aligns with educators' intrinsic motivations and the practical demands of their roles, underlining the shift towards more engaging and relevant learning experiences advocated by Gorecki (2021).

Guskey (2024) underscores that professional development models must carefully evaluate the impact on teachers, focusing on how new strategies and practices influence their growth and job satisfaction. His five-level framework encourages teachers to reflect on their progress in applying new knowledge within their unique classroom settings. This reflection, combined with robust organisational support, allows teachers to refine their skills while enhancing their morale. Guskey emphasises that strong leadership is vital in creating environments where professional development can flourish. Leaders should ensure sufficient resources, collaboration opportunities,

and eliminate barriers that hinder implementation. By cultivating a supportive culture of open communication and providing active support, leaders enhance teacher well-being, morale, and job satisfaction.

Additionally, Guskey highlights that organisational support should include providing teachers with dedicated time for collaborative planning, access to instructional coaching and mentoring, and opportunities for ongoing professional learning communities. School leadership plays a crucial role in creating a culture that values teacher growth, celebrates successes, and addresses challenges through open communication and shared decision-making. By fostering a supportive environment that empowers teachers, organisations can facilitate the effective implementation of new practices and strategies learned through professional development. In turn, their growth and well-being ultimately foster a positive learning environment that significantly impacts student achievement and attitudes.

Leaders play a pivotal role in fostering environments conducive to innovative professional development practices. Their support ensures that initiatives are aligned with institutional goals while offering the flexibility and resources necessary for educators to pursue their professional development journeys effectively. This role is amplified through the lens of service design thinking, as outlined by Suoheimo & Määttä (2023), which emphasises user-centredness and co-creativity in leadership and program development, as well as by Korsager et al. (2022), who advocate for frameworks that support evidence-based professional development opportunities.

Integrating design thinking principles into professional development models reveals a paradigm shift towards a more empathetic, collaborative, and problem-solving-oriented approach in educational leadership and teacher development. This method emphasises understanding educators' needs from multiple perspectives, encouraging stakeholder collaboration to design more effective, engaging, and personalised professional development experiences. Such an approach, supported by foundational insights from Henriksen, Gretter, & Richardson (2018), and the innovative perspectives of Suoheimo & Määttä (2023) and Korsager et al. (2022), reflects a transformative shift towards more personalised, engaging, and flexible learning experiences that cater to the evolving roles of all stakeholders in supporting educators' professional and personal well-being, particularly in the post-pandemic education landscape.

2.7 Significance of Professional Development Initiatives

Engaging with professional development models is expected to lead to many positive changes, crucial for improving education and creating a better environment for learning and teaching within schools and other educational settings. Such models help teachers become more effective, increase students' interest and participation in learning, make educators more satisfied with their jobs, and create a more positive atmosphere in schools.

Recent studies, especially the one by Chamo, Biberman-Shalev, and Broza (2023), have shown that combining heutagogy (a way of learning where learners are highly self-directed) with blended learning (a mix of online and in-person learning) can make professional development even more relevant and effective for teachers. This approach allows teachers to learn in ways that fit their personal goals and the specific needs of their classrooms, making learning more flexible and focused on long-term skills like critical thinking and adapting to change.

John Hattie (2023) provides crucial insights on the significance of professional development initiatives. He emphasises that comprehensive frameworks need to be grounded in evidence-based research and advocates for a balanced approach to different teaching methods, recognising their unique advantages. As Gorecki (2021) also points out, heutagogical approaches enable educators to tailor their professional development to their unique needs, making learning more flexible and responsive. Hattie underscores the value of integrating explicit instruction with self-directed strategies, enhancing educators' adaptability and responsiveness to student needs. By emphasising nuanced, research-driven professional development, Hattie advocates for practices that empower both educators and students to thrive in a rapidly evolving educational landscape.

Colla & Mossman (2023) and Korsager et al. (2022) also stress the importance of these development programs being closely aligned with what educators actually need, supporting not just their professional skills but also their well-being. By creating a supportive environment that values both teachers and students, these development models ensure that the educational system can adapt and thrive. This approach is key to dealing with challenges such as increasing student diversity, mental health issues, and the need to integrate technology effectively in the classroom (Heise & Rahm, 2019). Addressing these future challenges requires ongoing learning, innovation in teaching methods, and a strong focus on educator well-being to foster resilience and adaptability. The collective benefits of these models highlight the need for a system that supports teachers'

growth, well-being, and ability to create a strong learning community capable of meeting the evolving needs of students in a rapidly changing world.

Professional development models have a broad-reaching impact that transcends the personal growth of individual educators, affecting educational systems and the wider community. These models are pivotal in fostering a culture of ongoing learning and enhancement, significantly enhancing teacher competencies which, in turn, enrich students' learning experiences and benefit society overall (Hattie, 2023; Taylor et al., 2024).

The integration of heutagogy and blended learning into professional development models signifies a pivotal shift toward a more dynamic and responsive educational landscape, as identified by Chamo, Biberman-Shalev, and Broza (2023). This is further exemplified by the experiences of educators in a Pennsylvania school district (Miller et al., 2018), who demonstrated the significant impact of self-determined learning strategies. Allowing educators to chart their own professional growth paths not only enhances their teaching and learning experience but also enriches the broader community by preparing educators to adeptly meet the diverse needs of learners in a rapidly evolving world.

Building on this, the application of self-determined learning practices, as observed in Pennsylvania, vividly shows how professional development that embraces both heutagogy and blended learning transcends traditional teacher training. This forward-thinking educational approach promises to cultivate a more informed, adaptive, and innovative teaching force, equipped to guide learners through the complexities of the modern educational landscape.

Further enriching this model, Lisa Marie Blaschke's work (2021) in a higher education setting in Israel underscores the importance of learner autonomy, which is a core principle of heutagogy. Blaschke highlights how self-determined learning fosters an environment where educators not only engage deeply with their professional development but also become catalysts for transformative learning experiences in their own classrooms.

Additionally, Colla & Mossman (2023) in their Australian university study, emphasise integrating self-determination theory within professional development models. Their Wellbeing Integrated Learning Design (WILD) Framework demonstrates how creating enabling environments that support the basic psychological needs of autonomy, competence, and relatedness can significantly

enhance educator effectiveness and well-being. This approach not only aids educators in their professional endeavours but also has a profound impact on their ability to foster inclusive and adaptable learning environments.

This nuanced approach to professional development, underscored by practical outcomes seen in the research by Miller et al. (2018) and further developed through the application by Colla & Mossman (2023), indicates a broader movement toward empowering educators. By extension, it enriches their students and communities, reinforcing the essential role of continuous learning and innovation in shaping the future of education. This demonstrates that professional development can indeed be a transformative force, preparing educators to thrive in and contribute to a rapidly changing world.

2.8 Essential Elements of a Professional Development Model

Integrating the essential elements of a Professional Development (PD) model for international educators involves synthesising theoretical and practical insights gathered from a range of educational models and principles previously discussed. This section outlines the potential core components that could constitute an effective PD model, emphasising customisation, responsiveness, and sustainability to address the unique needs of international educational environments. These elements are suggested based on current research and are subject to further empirical validation through this study.

1. **Autonomy and self-directed learning:** At the core of the proposed PD model is the principle of Self-Determined Professional Development (SDPD), which underscores the importance of intrinsic motivation and self-directed learning (Gorecki, 2021). This element suggests that PD activities should align with individual educators' goals and philosophies, empowering them to take ownership of their professional growth. An environment that supports autonomy enables educators to select, manage, and assess their own learning processes, which is crucial for sustaining motivation and engagement.

2. **Collaborative and reflective practices:** Collaboration is identified as a fundamental pillar of the model, drawing on service design thinking principles that advocate for collective creativity and user-centred problem-solving (Suoheimo et al., 2023; Fazekas, 2021). This

proposes encouraging educators to work together, share experiences, and develop solutions collectively, thus enhancing the learning experience and fostering a supportive professional community. Integrating reflective practices, as advocated by Timperley et al. (2008), could facilitate ongoing self-evaluation and adaptation, enabling active reflection on experiences and outcomes.

3. **Cultural and contextual responsiveness:** The various settings of the educators necessitate a model that is adaptable to diverse cultural and educational contexts. Designing PD activities that are sensitive to cultural nuances and responsive to specific educational demands and challenges of diverse environments could make PD models more effective and relevant (Hattie, 2023), ultimately improving educational outcomes.

4. **Iterative development and feedback mechanisms:** Incorporating an iterative approach, grounded in design thinking methodologies, is proposed as a pivotal strategy to ensure that the professional development (PD) model remains adaptable and responsive to the evolving needs of educators. This process involves continuous testing, feedback collection, and refinement, allowing the model to dynamically adjust to the changing dynamics of educational settings.

   According to Stickdorn et al. (2018), such an approach is suggested to not only enhance the practical utility of the PD model but also foster a culture of innovation and continuous improvement. Aligning with John Hattie's insights on the power of evaluative practice, integrating regular feedback and adjustments is expected to ensure that the model remains effective and relevant, supporting educators' professional growth and addressing their specific challenges (Hattie, 2023). This methodology, while grounded in robust principles, will be further explored and potentially validated through the application within this research, underscoring its adaptability and effectiveness in real-world educational settings.

5. **Integration of theory and practice:** The model emphasises applying theoretical knowledge to practical challenges in the classroom. Leveraging insights from recent educational research, such as the work by Hattie (2023) and Gorecki (2021), could inform the development of PD activities that enhance both pedagogical effectiveness and educator well-being. Bridging the gap between theory and practice ensures that PD efforts

are proposed to contribute directly to improved teaching efficacy and student learning outcomes.

6. **Adaptive and flexible models:** As outlined by Korsager et al. (2022), PD approaches should be adaptable and flexible, allowing customisation to fit the diverse needs of educators across different contexts. This flexibility is crucial in international settings where educators face varied challenges and educational environments. The model must evolve in response to new insights, changing educational demands, and the specific needs of the educators it serves, ensuring the PD remains relevant and effective over time.

These potential elements collectively form the foundation of a comprehensive PD model designed for international educators. By addressing the multifaceted needs of these educators through a structured yet flexible approach, the model aims to enhance professional capabilities and well-being, ultimately leading to more effective educational practices across diverse global contexts.

3 METHODOLOGY

This chapter outlines the research methods used to investigate professional development models in education. The study adopts a qualitative approach, chosen for uncovering the complex experiences and opinions of educators as they interact with professional development programs (Feldman et al., 2018). Qualitative methods are ideal for this research because they allow for an in-depth exploration of how professional development affects teaching practices, educator well-being, and student outcomes. Through interviews and a practical experiment with a professional development cycle based on the Stanford-inspired model detailed in Appendix 2, this study aims to gather detailed insights into the effectiveness of different professional development strategies. The qualitative approach helps to understand the nuanced impacts of these models, providing valuable information that can guide future improvements in professional development for educators.

This study employs flexible interviews and direct observations to gather qualitative data during the professional development sessions with two participants. The workbook extracts, detailed in Appendix 5, complement these methods by providing concrete evidence of participant interactions and the adaptations made based on their feedback. These extracts are instrumental in illustrating the dynamic and participant-driven adjustments within the PD sessions, reflecting the principles of the iterative 'research through design' methodology emphasised by Zimmerman et al. (2007), and directly aligning with the action research approach used to enhance and refine the professional development process.

3.1 Qualitative Research & Action Research

This study adopts a qualitative research approach to delve deeply into educators' professional development experiences and the contextual dynamics that shape these processes. The methodology aligns with the reflective and collaborative principles emphasised by Feldman et al. (2018) and Noffke and Somekh (2009), capturing the nuanced perspectives and intricate realities faced by teachers.

Incorporating 'research through design,' as outlined by Zimmerman et al. (2007), the methodology leverages both the Double Diamond (DD) and Design Thinking (DT) models, following an iterative

process that includes (1) discovering, (2) defining, (3) developing, and (4) delivering solutions. Through interviews and observational methods, this approach aims to uncover rich narratives that quantitative methods might overlook, following Guskey's (2002) emphasis on reflection and improvement. The specific adaptations made in response to participant feedback, as demonstrated by the workbook extracts in Appendix 5, highlight the practical application of these methodologies, showcasing how the sessions were dynamically tailored to meet the educators' needs and enhance their engagement in the professional development process. Stringer's (2013) iterative cycle of planning, acting, observing, and reflecting provides a guiding model for addressing educators' challenges and opportunities.

Action research serves as the central methodology for iteratively understanding and improving a professional development cycle designed for teachers. Noffke and Somekh (2009) emphasise the importance of engaging directly with educators' experiences and insights through reflective, participatory inquiry. Similarly, Efron and Ravid (2019) advocate for iterative reflection and practical models. Following these principles, the workshops aim to enhance teacher well-being and growth through empathetic problem-solving and collaborative ideation. The cycle emphasises an adaptive, flexible process that empowers educators by actively involving them in each phase of design and evaluation.

This comprehensive exploration enables us to understand the tangible outcomes of professional development initiatives and the subjective experiences of educators. This lens highlights the complexity of professional development, offering insights into designing and implementing programs that meet the nuanced needs of educators.

3.1.1 Phase 1: Interviews

The first phase involved comprehensive interviews with six educational professionals, including three teachers and three educational leaders. These interviews lasted between thirty minutes and one hour and were conducted online via video calls and in person during January and February 2024. Prior to the interviews, participants were provided with a detailed consent form that outlined the objectives of the research and their rights as participants, emphasising the voluntary nature of their involvement and their right to withdraw at any time. A flexible set of questions (see Appendix 1) was used to guide discussions and gain insights from both groups. Noffke and Somekh (2009)

emphasise the importance of collaborative, reflective inquiry, which aligns with Feldman et al.'s (2018) principles.

These interviews explored professional learning needs through the perspectives of teachers and educational leaders. The questions were designed to reflect John Hattie's emphasis on the power of evaluative practice, aiming to integrate regular feedback and adjustments to ensure the model's effectiveness and relevance. The interviews also aimed to understand how stakeholders identified and addressed cross-cultural challenges, barriers to professional development, and strategies for improvement, thereby supporting educators' professional growth and addressing their specific challenges (Hattie, 2023). This approach reflects Guskey's (2002) emphasis on the reflective nature of educational practice improvement. Stringer's (2013) iterative cycle of planning, acting, observing, and reflecting informed the methodology, ensuring continuous refinement. All interviews were recorded with the consent of the participants, and these recordings were automatically transcribed by a built-in transcription feature of the communication platform used. I manually verified each transcription to correct any errors, which further familiarised me with the data before analysis. By interviewing educators first to prioritise their perspectives and educational leaders to gain holistic insights, this model offered rich information to tailor a methodology for the next pilot phase. The combined results of these interviews had a significant impact on the methodology of the subsequent phase.

3.1.2 Phase 2: Pilot Phase (Research Experiment)

This section introduces the professional development model conducted with two teachers over several weeks during March, April, and May 2024. The aforementioned PD model was based on the Stanford-inspired model (Appendix 2) and was continuously refined and adapted based on the needs of the participants. The model comprised four workshops, each lasting two hours and held in an educational setting designed to foster a hands-on learning environment. Prior to participation, participants were provided with a detailed consent form. This form outlined the objectives of the research, their rights as participants, the voluntary nature of their involvement, their right to withdraw at any time, and consent for using photos, video, and audio recordings, with the assurance that any possible identifiers would be blocked out or removed to protect privacy. It also covered the use of extracts from their online workbooks for research and support purposes, as requested by the participants, with similar precautions taken to ensure anonymity.

The objective of this pilot phase was to understand and iteratively enhance the design thinking-based methodology by directly involving teachers in creating and refining their professional development trajectory. The workshops were structured to align with the iterative stages defined by Zimmerman et al. (2007) in their "research through design" methodology and Stanford's Design Thinking model, as clarified by Shanks (n.d). Samples of the workbook use can be seen in (Appendix 5).

Wolniak (2017) provides further insights into its structure, describing how its stages—Empathise, Define, Ideate, Prototype, and Test—offer a flexible path for innovation. This process underscored the importance of adapting the model to emphasise flexibility and address the specific needs of educators, positioning them at the centre of the development process, similar to the user in typical design thinking scenarios.

The overall objective was to empower teachers' self-efficacy, well-being, and professional growth by using an adaptive and collaborative process that could inform future professional development initiatives. This process aimed to enhance teacher self-efficacy through design thinking and reflective practices while implementing an adaptive professional development process. As an iterative intervention, the cycle adhered to Noffke and Somekh's (2009) guidelines for reflective, participatory inquiry and drew from Efron and Ravid's (2019) framework to maintain a comprehensive plan, leveraging ongoing feedback to adjust each phase based on participant needs. The workshops aimed to guide participants through each phase of development while leveraging creativity, feedback, and iterative refinement. Ultimately, these workshops sought to establish a methodology that could enhance educators' overall growth and the effectiveness of professional development programs. The content of the interviews was used to make essential adaptations to the process, ensuring it was tailored to the specific needs of the participants.

Week 1: Orientation and Co-Creation (Session 1, 2 hours):
During the first session, two models were reviewed: the original Stanford Design Thinking model and the Stickdorn-inspired service design thinking method presented in (Appendix 3). Both participants opted for Stanford's approach (Shanks, n.d.), having also considered the Stanford-inspired model detailed during the initial interviews (Appendix 2). The condensed version of the Stanford Design Thinking model, shown in the image below (Figure 1), was presented to the participants in the first phase of the pilot project. This version, based on the model discussed during

the interviews, was chosen by the participants and formed the basis for the approach. They collaborated through guided interviews and identified problem statements based on their unique professional challenges. As a guide, I encouraged them to define their problem statements independently. This session aligns with the discovery and problem framing stages emphasised by Zimmerman et al., as well as the "Empathise" stage in the Stanford model, where understanding user needs is crucial (Shanks, n.d.).

FIGURE 1. Condensed version of Stanford-inspired model used in the pilot project

Week 2: Ideation (Session 2, 2 hours):
In the second session, participants were given preparatory tasks to research sources related to their challenges. They began brainstorming using sketching, Lego modelling, and clay prototyping, ideating solutions for each other before developing their own prototypes. The workshop concluded with refining problem statements to lay the foundation for deeper exploration in the prototyping phase. This session corresponds to the "Ideate" stage in Stanford's model and Zimmerman's

exploration and ideation stages, emphasising creative exploration (Shanks, n.d.; Zimmerman et al., 2007).

Week 3: Prototyping (Session 3, 2 hours):
The third session focused on refining prototypes into practical, test-ready solutions. Each teacher iteratively improved their ideas using peer feedback and visual tools like gallery walks and storyboards. My role was to guide them through open-ended questions and offer choices to clarify their strategies. This stage aligns with both Zimmerman's design and development stages and Stanford's "Prototype" step, which encourages iterative improvement (Shanks, n.d.; Zimmerman et al., 2007).

Week 4: Testing and Refinement (Session 4, 2 hours):
In the final session, participants refined their prototypes further at home and presented their solutions for peer review. They were asked to test their ideas with a selected audience and reflect on their impact. I facilitated this phase by offering feedback loops and refining their action plans, ensuring that their ideas were ready for implementation. This session correlates to the evaluation and testing stages of Zimmerman's model and the "Test" stage of Stanford's Design Thinking process (Shanks, n.d.; Zimmerman et al., 2007). Participants could opt for a fifth session if required.

By adopting the Stanford model, participants were able to align their professional development with research through design principles, iteratively refining their approaches with guidance from these models. This adaptation process involved closely reviewing the Stanford model (Shanks, n.d.) and making necessary adjustments to ensure it met the specific educational and developmental needs of the participants, emphasising flexibility and educator-centric approaches in the application.

3.1.3 Continuous Feedback Integration Throughout the Pilot Phase

Feedback integration was not confined to the final phase but was a continuous process throughout the professional development model, precisely as detailed in Appendix 5. After each workshop session, feedback was actively solicited to ensure that our interventions were continuously adapted to meet the evolving needs and contexts of the participants. This feedback, ranging from content relevance to facilitation effectiveness, was integral to fostering an environment conducive to professional growth and self-directed learning.

The pilot phase was designed as an experiment to test and refine the professional development methodology, with the potential to evolve into a self-directed model for teachers or include features that allow teachers to independently tailor their development paths. Consistent with Guskey's (2002) emphasis on reflection and continuous improvement, feedback mechanisms were implemented at each stage—from orientation to testing and refinement—to ensure the relevance and effectiveness of the interventions. The qualitative data gathered through diverse methods, including questionnaires and reflective journals, provided comprehensive insights into the effectiveness and impact of the professional development cycle. This approach aligns with the principles of Zimmerman et al. (2007), who advocate for an adaptive, responsive "research through design" methodology.

Interviews and continuous feedback were pivotal in developing and refining the professional development cycle. Initial interviews with international educators and leaders captured a wide array of needs, challenges, and aspirations. This foundational data shaped the initial design and objectives of the professional development model. Emphasising the importance of reflective inquiry, Noffke and Somekh (2009) advocate for capturing these insights to ensure collaborative and participatory processes are adopted. As the cycle progressed, follow-up interviews were supplemented with anecdotes shared by participants during the workshops or through questionnaires. These anecdotes enabled a dynamic and adaptive process that provided not just feedback but real-time adjustments to the program. This method aligns with Stringer's (2013) iterative cycle of planning, acting, observing, and reflecting, allowing for ongoing adjustments that enhance the relevance and effectiveness of the PD model.

This study integrates action research principles with qualitative interviews and iterative feedback to create a dynamic and responsive model for professional development. The iterative "research through design" approach, advocated by Zimmerman et al. (2007), underscores the adaptability of our interventions. The objective is to enhance not only the pedagogical skills of international educators but also to foster a culture of continuous improvement and innovation within the teaching profession.

By employing an iterative cycle of engagement, reflection, and refinement, this model is designed to be highly relevant, effective, and tailored to significant professional growth and well-being among educators. The emphasis on continuous feedback and adaptation ensures that the professional

development remains aligned with the evolving needs and contexts of the participants, leading to sustained improvements in practice and outcomes. Additionally, the increased levels of choice during the workshops, as detailed through anecdotes and facilitated by continuous feedback, contributed to a more customised and participant-driven learning experience. This customisation aligns with the principles laid out by Stringer (2013) for effective action research.

Building on this, by integrating the principles of action research with qualitative interviews and iterative feedback, this study aims to create a dynamic and responsive model for professional development. Drawing on the iterative cycles of planning, acting, observing, and reflecting outlined by Stringer (2013), and incorporating the action research principles advocated by Noffke and Somekh (2009), the objective is not only to enhance the pedagogical skills and well-being of international educators but also to foster a culture of continuous improvement and innovation within the teaching profession. This approach aligns with Zimmerman et al. (2007), who emphasise the adaptability and responsive nature of educational research through design.

3.1.4 Post-Pilot Phase: Extended Evaluation and Continuous Engagement

The post-pilot phase of the study, which is ongoing as of June 2024, incorporates both structured and informal interactions, primarily through online communications and a brief informal session. This phase is designed to extend the evaluation of the professional development initiatives beyond the initial implementation, focusing on their long-term impacts and the ongoing evolution of the practices introduced. The underlying key activities and inquiry for this phase include:

Reflect on Long-term Changes: Participants are engaged in ongoing discussions to reflect on how their initiatives may continue to influence student engagement and learning. This reflection is crucial as the full impacts of professional development often require time to fully manifest and be accurately assessed (Guskey, 2002; Guskey, 2021). These reflections focus on recognising mastery experiences where teachers see their efforts translating into positive student outcomes.

Assess Personal and Professional Growth: Assessing how participants' roles in the projects have contributed to their development as educators and their overall well-being, aligning with the empathetic and user-centred principles of design thinking is integral (Efron & Ravid, 2019;

Stickdorn, 2018). Regular, specific feedback on how their actions affect students is gathered to facilitate a data-informed approach to growth (Guskey, 2021).

Gather Comprehensive Feedback: Comprehensive feedback is gathered through follow-up interviews and a final questionnaire completed by the pilot participants. This aims to capture holistic insights into the impact from multiple stakeholders, providing a broad base of feedback to inform ongoing adjustments (Noffke & Somekh, 2009).

Plan Future Directions: Participants discuss potential adjustments or new directions for their projects based on the feedback and insights obtained. This planning session is informed by Guskey's recommendation to shift from traditional workshops to opportunities for teachers to experiment with new strategies and reflect on the outcomes, fostering a cyclical process of trying, observing, and reflecting to refine practice based on its impact (Guskey, 2021).

Informal Follow-up and Flexible Engagement: The flexibility during this phase allows participants to choose their preferred mode of interaction, which includes an informal check-in to discuss the initial impacts and gather insights. This session was crucial for understanding that while brief impacts were already visible, the full scope of the process and its results would require more time to fully understand and evaluate. This acknowledgment sets the stage for future analyses, highlighting the need for continued observation and reflection to capture the complete effects of the interventions.

This post-pilot phase serves as a critical reflective and evaluative space, ensuring participants have the insights needed to continue refining and expanding their educational practices effectively. By emphasising the need for time in understanding the full effects of the interventions, this phase is vital for capturing the complete scope of the impact of the professional development initiatives. It adheres to the study's goals to foster a culture of continuous improvement and innovation within the teaching profession, upholding the reflective and participatory principles of action research as advocated by Noffke and Somekh (2009) and Stringer (2013), and integrating Guskey's (2021) framework for iterative and reflective professional development.

3.1.5 Participants

This study engaged a purposefully selected group of six educational professionals to provide diverse insights into the professional development process within the context of international schools. The group included three teachers and three educational leaders, comprising a balanced gender mix and offering a wide range of perspectives from the educational ecosystem. This strategic selection aimed to capture a comprehensive view of professional development activities, from both the perspectives of delivery and receipt.

To select participants, specific criteria were established, focusing on their roles and their level of experience, particularly seeking those with extensive backgrounds in International Baccalaureate programs to ensure relevance and substantial contribution to the research objectives. Participants included educational professionals from various international settings in Europe, with at least two of them also having significant teaching and leadership experience in other parts of the world, such as Asia and North America, which further enriched the study's insights. The recruitment process emphasised voluntary participation, informed consent, and confidentiality, adhering to ethical standards for research involving human subjects. These steps ensured that the participants were fully aware of the research goals and their rights within the study. Participants' identities were carefully anonymised to maintain confidentiality, referring to them by their role and context without revealing specific identifiers.

A pilot trial of the proposed professional development cycle was conducted with two teachers, representing typical cases as described by Efron and Ravid (2019). These participants were selected based on their significant experience in teaching across various levels of international schools, which provided initial data and feedback that informed the refinement of the professional development model. This pilot served as a preliminary assessment of the model's applicability and effectiveness.

This section outlines the rationale behind participant selection, the recruitment process, and the ethical considerations that guided engagement with participants throughout the study. The involvement of both teaching and leadership roles not only enriched the data with multifaceted insights but also aligned with the study's objective to explore professional development from a holistic perspective. The careful selection and ethical engagement with participants ensured the study maintained a focus on improving practice collaboratively and inclusively, reflecting the core

tenets of action research as outlined by Stringer (2013) and the principles of participatory research advocated by Noffke and Somekh (2009).

3.2 Data Collection and Analysis

The data collection and analysis for this study were carefully designed to align with the professional development process, ensuring that each phase was reflective of and responsive to the educators' experiences and the overarching research aims. This section outlines the methodologies employed to gather and analyse data, focusing on how these methods address the central research question and support the objectives of enhancing educator well-being and pedagogical efficacy in international settings.

3.2.1 Data Collection

Data collection in this study was carefully aligned with the stages of the professional development cycle, ensuring seamless integration into learning activities and maintaining the natural flow of workshops. This process aimed to explore ways in which a teacher-centric professional development model might enhance educator well-being and pedagogical efficacy in diverse educational settings.

Initial Interviews & Workshop Preparation: Comprehensive semi-structured interviews were conducted with six educational professionals to understand their professional learning needs and initial perspectives (see Appendix 1 for the interview questions). These interviews allowed flexibility while maintaining a structured format to ensure consistency across all responses, reflecting the principles of collaborative, reflective inquiry foundational in educational action research, as detailed by Feldman et al. (2018) and Noffke & Somekh (2009) (Feldman et al., 2018; Noffke & Somekh, 2009). This method is particularly effective in exploring the dynamics of educational contexts and the specific needs of educators, aligning with Feldman's emphasis on participatory and contextual inquiry.

To prepare for the workshops, participants were granted early access to the materials, responding to their request for more time to prepare, which reflects a teacher-centric approach. This early engagement strategy aligns with the principles of self-determination in professional development

as discussed by Gorecki, highlighting the importance of empowering educators by involving them actively in their own professional growth processes (Gorecki, 2021). Such empowerment is crucial in enhancing the relevance and impact of professional development, supporting the subsidiary research question on how teacher-centric models influence educator well-being and efficacy.

Additionally, the proactive engagement and preparation phase was designed to enhance teacher efficacy, a key component of successful educational outcomes as explored in Guskey's 2021 paper. Guskey emphasises the significance of efficacy in professional development, arguing that effective training must not only provide knowledge and skills but also boost the confidence of educators in their practice (Guskey, 2021).

Furthermore, Efron & Ravid (2019) advocate for continuous engagement and feedback in professional development, suggesting that such practices help refine and adapt educational strategies to meet the evolving needs of teachers and educational settings. This reflects in the flexible use of the workbook journals during the workshops, allowing educators to reflect, jot down, and visually represent their learning journey, thus catering to diverse learning styles and needs.

During the Cycle: Throughout the professional development cycle, observational methods, participant workbooks, and feedback forms were effectively utilised to foster a reflective practice among educators. The observational methods were non-intrusive, capturing dynamic insights into the application and impacts of new strategies. The workbooks, serving both as reflective journals and a repository for feedback forms, included guided open questions and space for visual representations of the participants' journeys. This multifaceted tool facilitated deep reflection on experiences, in line with the contemporary recommendations for engaging educators in reflective practice, as highlighted by Efron & Ravid (2019). The flexible use of these workbooks underscores the diverse ways educators interact with reflective practices and provides valuable insights into the challenges and effective strategies for implementing teacher-centric models in international contexts.

Post-Cycle Feedback: After the completion of the professional development cycle, unstructured follow-up interviews and questionnaires were strategically employed to gather retrospective insights and feedback from participants. This phase of data collection, seamlessly integrated into the workshop phases, was critical for evaluating the long-term impacts of the interventions and assessing the sustainability of the changes observed. By ensuring confidentiality and conducting

data gathering in a consent-based atmosphere, these tools directly addressed subsidiary research questions related to the challenges and effective strategies in implementing educational frameworks. Such assessments are key to understanding the dynamics within educational environments, aligning with the methodologies recommended by Guskey (2002) and further explored in Feldman et al. (2018).

In conclusion, the research data consists of comprehensive qualitative inputs gathered through multiple methods to capture the complex experiences and insights of educators regarding professional development models. Initially, semi-structured interviews with six educational professionals provided foundational perspectives on their professional learning needs and challenges. Throughout the professional development cycle, ongoing feedback was systematically collected via workbook entries, observational methods, and anecdotal records. This iterative feedback process allowed for real-time adaptations and refinements to the PD model, ensuring it remained responsive to participant needs (Guskey, 2002; Feldman et al., 2018). Additionally, final feedback was obtained through follow-up discussions and questionnaires, offering retrospective insights into the long-term impacts of the interventions. These diverse data sources collectively provide a robust understanding of the nuanced impacts of professional development strategies on teaching practices, educator well-being, and student outcomes.

3.2.2 Data Analysis

Data analysis employed thematic analysis to identify, analyse, and report patterns (themes) within the data. This method was selected for its flexibility and its effectiveness in providing rich, detailed, and complex accounts of data:

Thematic Coding: Data from interviews, workbook entries, and observational notes were systematically coded to identify recurring themes. This process involved initial coding followed by more focused analysis to develop significant themes related to the effectiveness of the professional development strategies. The approach aligns with Feldman's method of thematic analysis, which emphasises constructing meaning through iterative categorisation of data (Feldman, 2018).

Effectiveness Assessment: The impact of the professional development on participants' efficacy, well-being, and professional growth was assessed by comparing themes that emerged before,

during, and after the intervention. This comparative analysis was integral to measuring the tangible impacts of the interventions, underscoring the importance of observing and reflecting on outcomes in action research (Stringer, 2013).

Continuous Iterative Analysis: Reflecting the iterative nature of the professional development model, the data analysis process was also iterative, with initial findings feeding back into ongoing data collection to refine further data gathering and analysis. This iterative approach supports continuous reflection in educational practice, enhancing teacher efficacy and facilitating ongoing adjustments to the development cycle (Efron & Ravid, 2019).

4 RESULTS

This section presents the comprehensive findings from both the initial qualitative interviews conducted with a diverse group of educators in an international setting and the subsequent pilot testing of the teacher-centric PD model with selected participants. These phases were instrumental in assessing the initial perceptions, challenges, and needs regarding professional development and in evaluating the practical application and effectiveness of the newly developed model.

The results highlight key insights into PD practices, the integration of design thinking principles, and the practical implications for enhancing educator well-being and pedagogical efficacy. These findings provide a foundation for understanding how adaptive and responsive PD models can be effectively implemented in diverse educational contexts.

4.1 Initial Interview Findings

The initial interviews with six education professionals, including those in dual roles as trainers and leaders, revealed comprehensive insights into professional development (PD) practices across diverse international educational settings. These discussions effectively bridged theoretical concepts with practical applications, highlighting crucial themes that call for PD systems to be more flexible, adaptive, and centred around the teacher's evolving needs. A particular emphasis was placed on how these PD systems can be structured to maintain teacher motivation and well-being while fostering continuous professional growth. Figure 1 summarises the key themes and insights from these initial interviews. This section synthesises these insights and discusses their implications for potential adjustments to the PD model, directly addressing the central research question of how a teacher-centric professional development model can enhance educator well-being and pedagogical efficacy in international settings.

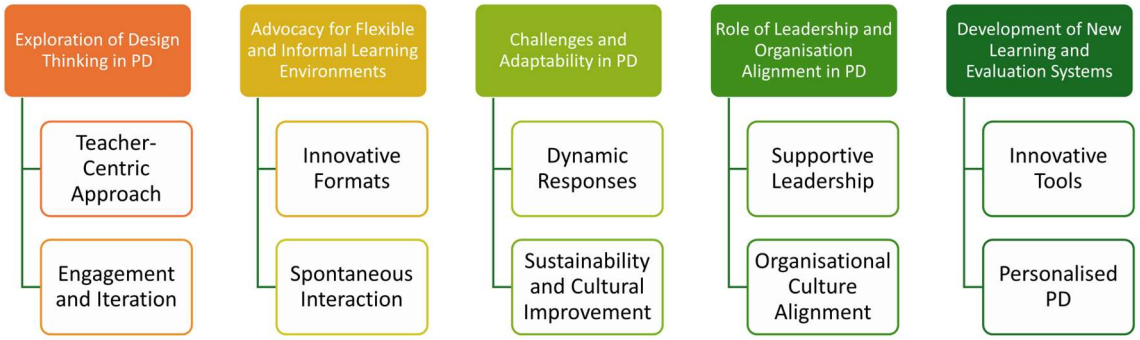

FIGURE 2. Key Themes and Insights from Initial Interviews on Professional Development Practices

4.1.1 Exploration of Design Thinking in PD

The potential integration of design thinking into PD was a focal point, discussed for its capacity to foster a more teacher-centric approach. Although the systematic application of design thinking varies, the consensus supported its use as a means to enhance the relevance and impact of PD by aligning it more closely with actual teaching scenarios. This approach was particularly noted for its ability to facilitate a more engaging and iterative professional development process, encouraging educators to become active participants in their own growth.

One educator elaborated on the benefits, stating, *"Exploring design thinking in PD might allow us to really tailor programs that meet the actual needs of teachers, enhancing their practicality and relevance."* This perspective underscores the desire to make PD more responsive to direct educator needs, thereby potentially increasing its effectiveness and directly impacting pedagogical efficacy as per our central research question.

4.1.2 Advocacy for Flexible and Informal Learning Environments

Participants advocated strongly for PD formats that extend beyond traditional boundaries, suggesting environments that promote informal, organic interaction among educators. Ideas such as outdoor conferences, café-style meetups, or 'walk and talk' sessions were discussed as methods to make PD more engaging and enjoyable, drawing inspiration from participatory methods like the World Café (Löhr et al., 2020). An educator highlighted the potential benefits of these less formal settings, noting, *"Why not have more informal PD meetings, like World Café style sessions, or even a walking meeting? It could lighten the mood and make the learning more enjoyable and effective."* This comment aligns with the subsidiary research question regarding how teacher-centric PD

models influence educator well-being by creating more enjoyable and emotionally enriching PD experiences. Additionally, these formats were seen as opportunities for spontaneous idea sharing and collaborative problem-solving, which are often missing in more structured PD environments.

4.1.3 Challenges and Adaptability in PD

The need for adaptability in PD was a recurring theme, particularly considering the challenges posed by rigid traditional PD programs. The diverse educational backgrounds and career trajectories of teachers call for PD models that can respond dynamically to these variations. Reflecting on this, an educator emphasised, *"As we evolve professionally, so should our PD. Adapting PD to our changing roles and educational environments is crucial for effective professional development."* This statement captures the essential need for PD systems to remain flexible and responsive to the changing landscapes of educational careers, directly addressing the subsidiary question concerning challenges in implementing such models. Furthermore, the adaptability of PD models was highlighted as a critical factor in ensuring their relevance and sustainability over time, allowing for continuous improvement and alignment with evolving educational standards and practices.

4.1.4 Role of Leadership and Organisational Alignment in PD

The alignment of professional development (PD) initiatives with organisational goals and the indispensable role of supportive leadership emerged as foundational themes from the initial interviews with education professionals. These discussions highlighted how leadership practices and the broader organisational culture profoundly influence the efficacy and sustainability of PD efforts. The influence of leadership extends beyond mere administrative support; it involves fostering a culture that is conducive to ongoing learning and growth. Effective leadership is characterised not just by its ability to direct but also by its capacity to inspire and sustain engagement and commitment among educators. This aspect of leadership is critical, as it directly impacts the receptiveness of staff to new PD strategies and their overall effectiveness.

Educators and leaders alike emphasised the necessity for strong, supportive leadership in the successful implementation of PD programmes. One educational leader succinctly expressed, *“Effective PD requires strong leadership coupled with a supportive culture that actively encourages*

continuous professional growth. Our role in cultivating such an environment is paramount." Another leader reinforced this view, adding, *"Strong leadership is essential not just for initiating but also for maintaining effective PD. It ensures that PD practices are not only introduced but are also embedded within our organisational culture, facilitating sustained professional growth."*

These reflections underscore the vital role that robust and dynamic leadership plays in creating and maintaining environments that foster professional growth. Effective leadership ensures that PD programmes are not only aligned with current educational needs but are also adaptable to future changes, effectively addressing the challenges and strategies necessary for implementing responsive, teacher-centric PD models. Additionally, leadership involvement in PD was seen as crucial for ensuring that these initiatives receive the necessary resources and support to thrive, further emphasising the role of leadership in promoting a culture of continuous improvement. The emergence of this theme from the interviews underscores its significance in shaping the dynamics of professional development across diverse educational settings.

4.1.5 Development of New Learning and Evaluation Systems

The discussion also turned to innovative learning and evaluation systems, such as self-evaluation rubrics and digital platforms like Blue Sky. These tools are seen as part of a shift toward more structured yet flexible approaches to monitoring and evaluating PD outcomes, which enable continuous alignment with both personal growth needs and organisational strategies. The integration of these tools was viewed as a way to personalise PD experiences, allowing educators to track their progress, and set goals that are closely aligned with their individual professional journeys.

An educational leader elaborated, *"We're innovating with new systems that allow continuous documentation and review of professional goals, aligning these with both personal growth needs and our school's strategic objectives."* This quote emphasises the movement towards integrating technological solutions to enhance the structuring and tracking of PD goals, which supports the implementation of adaptive and effective PD models. Such systems were also noted for their potential to facilitate more transparent and collaborative PD processes, enabling educators to share their progress and insights with colleagues, thereby fostering a more supportive professional community.

The findings from these initial interviews clearly support the need for adaptable, teacher-centric PD models that align with educators' evolving professional roles and personal growth trajectories. These insights substantiate the research questions posed, emphasising the importance of flexible learning environments and effective leadership in PD settings. As the investigation progresses into the discussion phase, these themes will be further explored to uncover their broader implications for policy and practice in international educational settings, aiming to offer practical recommendations for enhancing PD efficacy.

4.2 Evaluating Potential Professional Development Models

During the initial interviews, participants were presented with two potential models for professional development that integrate educational practices with design thinking philosophies. These models, detailed in Appendix 2 (Stanford-inspired) and Appendix 3 (Stickdorn-inspired), were adapted from established methodologies: the first drawing inspiration from the Stanford Design Thinking Process (Shanks, n.d.), and the second modelled after Stickdorn's approach from 2018. For this study, specific adaptations were made to these models to better align with the unique needs and contexts of international educators. Each model was assessed for its potential impact and applicability in a school setting, with feedback solicited both during initial interviews and through subsequent online communications after the models were shared with the participants.

The Stanford-inspired model (Appendix 2) was particularly favoured by those involved in a pilot project, who appreciated its structured approach to problem-solving and development. Participants highlighted the model's effectiveness in incorporating stages that align well with educational norms and practices. However, it was crucial, as one participant noted during online feedback, to ensure the model "does not make it too time-consuming and connects with the passion and what sparks joy for educators in their workplace." This perspective underlines the importance of maintaining a positive focus within professional development to enhance engagement and efficacy.

On the other hand, the Stickdorn-inspired model (Appendix 3), which embraces the principles of service design thinking—a component and extension of design thinking—was noted for its flexibility and empathetic approach to professional growth. Developed through a crowdsourcing effort involving 150 designers, this model defines design thinking not only as a mindset but also as a

toolset and process tailored for designing experiences that unfold over time and across various touchpoints (Stickdorn, 2018). While it did not receive a definitive preference among most participants, it was praised in feedback for its ability to accommodate teacher choice and effectively address systemic barriers during the defining phase. One participant expressed preference for this model in an online comment, noting, *"It feels like there is more dialogue with the trainee, and it's a model one should follow themselves in the first place."* This feedback points to the model's suitability for fostering a reflective and iterative process among educators.

Significant insights emerged from the discussion and online feedback, especially regarding leadership involvement in professional development. It was recommended that "*school leaders should participate in this kind of process themselves every school year and present their process or product to their teams,"* which would promote accountability and leadership by example. Such involvement is seen as essential for cultivating a culture of continuous improvement and reflective practice within educational institutions.

In summary, the collection of feedback from various participants during the interviews, supplemented by ongoing online discussions, underscored the essential need for professional development models to be adaptable, engaging, and closely aligned with educators' needs and challenges. While the Stanford-inspired model (Appendix 2) was noted for its structured approach, the Stickdorn-inspired model (Appendix 3) was favoured for its flexibility and capacity to foster dialogue and iterative problem-solving. These discussions reflect a deep commitment to developing functional and resonant tools that not only support educators' growth and well-being but are also tailored to meet the unique demands of the educational environment. This emphasis on the overlapping models and tools in the design and service design thinking processes underscores the complexity and dynamic nature of crafting educational experiences that are impactful and sustainable over time.

4.3 Pilot Testing & Initial Feedback

This section presents the results and insights from the condensed pilot testing of the PD model, which was initially based on the Stanford-inspired model (Appendix 3) and then further refined during the pilot testing process. It allowed for quick collection of results and feedback that were instrumental in refining the model's applicability and effectiveness. This section details the selection

process for participants, the methodologies applied, and the modifications made based on feedback. Further discussions on expanding this approach in more typical, less time-restricted educational environments, and using a wider selection of tools and more extensive participant interaction, will be explored in the implications section.

4.3.1 Selection Process for Pilot Participants

For the pilot phase of the PD model, two educators with extensive experience across various international school levels were selected. These participants, representing typical cases as outlined by Efron and Ravid (2019), demonstrated a readiness to engage with innovative PD approaches. Their diverse educational backgrounds and openness to new methodologies were crucial for dynamically applying the PD model, providing foundational data to assess its initial applicability and effectiveness.

4.3.2 Methodology Used for Testing the PD Model

The pilot testing included a series of structured workshops designed to seamlessly integrate the PD model into the participants' daily practices. Utilising design thinking principles, these workshops aimed to foster empathy, define PD needs, ideate solutions, prototype, and test these solutions in real-world settings. Activities such as PD journey mapping helped visualise and articulate each educator's professional growth and challenges, while defining the problem statement rapidly identified personal PD objectives. These sessions promoted critical thinking, risk-taking, and collaboration, emphasising the development of curiosity, creativity, and open-mindedness.

The pilot phase also included reflective journals in the form of workbooks. The workbook extracts from Appendix 5 provide clear evidence of how participant feedback shaped the PD sessions, reflecting the adaptability and responsiveness of the PD model detailed in Phase 2 (Research Experiment). These adjustments, documented in the extracts, showcase the practical implementation of the Design Thinking model and emphasise the efficacy of our participant-centred approach.

4.3.3 Detailed Feedback and Model Modifications

Feedback from participants during and after the workshops was pivotal in refining the PD model. Participants appreciated the hands-on approach, which allowed them to immediately apply and experiment with creative solutions. They valued the model's support in fostering self-reflection and enhancing their engagement but suggested improvements to make the PD experience more personalised and collaborative.

Building on the insights gained, the selected workbook extracts in Appendix 5 clearly demonstrate how participant feedback shaped the PD sessions. These extracts, though few, effectively highlight the adaptability of the PD model as detailed in Section 3.1.2 Phase 2 (Research Experiment). This focused selection underscores the practical application of the Design Thinking model and our participant-centred approach, consistent with the methods outlined by Noffke and Somekh (2009) and Shanks (n.d.).

Adaptive Responses to Participant Initiatives During Pilot Phase

During the pilot phase, participants' feedback, influenced by insights akin to those explored in well-known personality typing systems (University of Essex, 2007), played a pivotal role in shaping the PD sessions. One participant advocated for the inclusion of more visual aids, inspired by diverse learning preferences reminiscent of personality typing models. Consequently, graphic facilitation techniques were implemented in subsequent workshops, significantly enhancing interactivity and accessibility of the content for all attendees. Additionally, recognising the value of reflection in professional growth, another participant suggested the introduction of designated times for reflection before and after sessions, drawing on the initiative seen in leveraging Myers-Briggs Type Indicator results during collaborative efforts (Myers and Myers, 1995). This feedback prompted the integration of scheduled 'pre-flection' and reflection periods, deepening individual and collective insights and enriching the learning experience for all involved.

Facilitator's Role and Adaptations

As the facilitator, I continuously adapted the professional development (PD) process in real-time to address the evolving needs of participants. This adaptation involved several key actions to enhance the effectiveness of the PD sessions. Firstly, I focused on reviewing and refining the problem statements. This step was crucial to ensure that the statements were clear and relevant, which

helped participants articulate their professional challenges with greater precision. Additionally, by sharing materials before the sessions, participants were able to prepare more effectively, thereby enhancing their engagement and productivity during the workshops. I also facilitated access to specific resources that supported the participants' ongoing professional development, ensuring they could directly apply new learnings in their practice. Lastly, visualisation techniques such as mind mapping were employed to help participants visualise their learning journeys. These techniques made abstract concepts more tangible and actionable, aiding in the deeper comprehension and retention of the new strategies being introduced.

Reflective and Confident Atmosphere

The workshops fostered a calm and supportive setting, facilitating deep, reflective conversations among participants about personal and professional growth. Participants displayed clear, confident opinions, indicating robust engagement with the topics explored. This reflective atmosphere underscored the depth and importance of the discussions, significantly enhancing the learning experience.

The pilot phase was instrumental in testing the initial assumptions of the PD model and provided significant insights into its effectiveness and areas for improvement. The active participation and feedback led to several adjustments that made the model more flexible, interactive, and tailored to the specific needs of the participants. This phase demonstrated that ongoing feedback and adaptation are crucial for the successful implementation and sustainability of PD initiatives. Insights from this pilot will guide further refinement of the PD model, ensuring it remains responsive and effective in enhancing professional growth across diverse educational contexts.

4.3.4 Illustrative Examples of Participant Contributions

Participants demonstrated their active engagement with the PD model through significant personal initiatives that exemplified innovative practices and self-determination. During the pilot phase, participants developed notable initiatives that showcased the practical application of the PD model.

One educator aimed to reframe a professional outlook by creating a professional development timeline. This individual initiated a blog alongside a journal, focusing on multilingualism in international education. Sharing the work with a trusted audience at the workplace allowed for

reflections on the potential impacts on students and the professional environment. This educator also took the initiative to design the journal for other educators to capture their professional reflections, a spontaneous reaction indicating an impact and heightened level of confidence and self-efficacy. Additionally, a logo was created for the blog, further showcasing the educator's commitment and innovative spirit. This project was not only a practical application of design thinking principles but also a clear manifestation of self-directed professional development (SDPD). The creation of the blog and journal was particularly noteworthy as it allowed the educator to guide their own learning and development, perfectly aligning with the PD model's emphasis on a teacher-centric approach. Content from the blog was also used in teaching practice, role modelling self-reflection for students. This initiative, reflecting Gorecki's (2020) emphasis on the importance of self-determination in educational settings, showcases the PD model's impact on enhancing educational practices.

Another participant concentrated on incorporating child-centred learning principles within an international school setting. This educator established a small network of professional educators to compare findings and created an online questionnaire to gather insights from colleagues both within and outside the workplace. This proactive approach helped refine objectives and laid a solid foundation for building a robust educational community. The initiative inspired new ideas and strategies, which were planned to be implemented in practice and shared through online forums. This participant investigated different tools to capture information about the child-centred approach and brainstormed making word clouds, leading to the decision to start the online questionnaire. The insights gained through this process were instrumental in developing strategies that foster trust and openness, further enriching the educational landscape for peers. This process not only reflected on the impact and potential impact on the students and the professional workplace but also demonstrated how findings from a professional inquiry could inspire other educators to adapt their teaching practices or approaches.

These examples underscore how the PD model fostered innovative, self-directed professional growth and community engagement among educators. They highlight the practical application of design thinking principles and the creation of self-directed professional development tools. These initiatives reflect the importance of self-determination in educational settings and demonstrate the potential impact on learners as perceived by the participants, enhancing the educational experience within an international school context. By sharing findings with other educators, knowledge

spreads, inspiring adaptations in teaching practices and approaches, ultimately impacting the learning environment.

4.4 Final Feedback Implementation and Reflections

After integrating initial refinements made during the pilot process into the professional development (PD) model, participants reported significant improvements in their ability to implement changes and monitor their professional growth. A post-pilot questionnaire, detailed in Appendix 4, was used to gather crucial concluding feedback from participants after working with this PD model. This feedback systematically explored and addressed the specific needs of the participants.

These final reflections were crucial in validating the effectiveness of the adjustments, highlighting the model's enhanced capacity to support a community of practice and boost engagement with PD activities. These outcomes suggest that the applied PD model significantly aligns with the unique needs and expectations of international educators, supporting their professional development in dynamic and culturally diverse environments.

4.4.1 Enhanced Engagement and Empowerment through Design Thinking

Participants in the professional development (PD) model experienced the transformative power of design thinking firsthand, finding it instrumental in identifying and addressing their professional learning needs. Initially unfamiliar with this problem-solving approach, they benefited significantly from advanced access to plans and content, which facilitated better preparation and understanding of each phase. One participant reflected, "It took me some time to understand each step as it was the first trial, but since receiving the plans/contents in advance, it helped me to get prepared a bit better." This enhanced preparation allowed participants to uncover personal PD objectives and gain new perspectives on effectively tackling their professional development challenges.

As the participants grew more familiar with the design thinking process, they reported an increase in confidence, appreciating its role in fostering a self-directed approach to professional development. This increased confidence was particularly noticeable as they became more adept at defining and refining their PD goals, which led to significant increases in self-motivation and

innovative thinking. This process not only empowered them but also instilled a strong sense of ownership over their professional growth, demonstrating the effectiveness of design thinking in fostering professional autonomy and continuous improvement.

Through their engagement with the PD model, participants actively applied their new insights in various impactful ways, extending their learning beyond the confines of formal sessions and deeply influencing their daily educational practices and interactions with colleagues. This journey of personal and professional transformation underscored the critical role of structured yet flexible models in supporting educators' ongoing development and adaptation to dynamic educational environments.

4.4.2 Implementation of Insights and Self-Directed Tools

Participants applied their new insights through various initiatives, significantly extending their learning beyond the PD sessions. This included the creation of tools such as reflective journals and the design of online questionnaires to gather peer input—activities that greatly enhanced their professional interactions and daily educational practices. Tools like Google Surveys and online workbooks were essential in facilitating their engagement and organisation, supporting their ongoing professional growth.

A notable instance of self-guided learning involved one participant who embraced journaling as part of their self-identified PD process. This participant undertook multiple iterations to refine their problem statement, incorporating an individual analysis of strengths and weaknesses and addressing institutional constraints like financial limitations and philosophical differences with leadership. To guide this exploration, they developed a new process similar to a journey map, viewing themselves as a user persona to encourage out-of-the-box thinking.

During this phase, journey maps and system maps, as discussed by Stickdorn et al. (2018), were utilised to better identify and understand these constraints. This methodological approach emphasised the importance of divergent and convergent thinking, necessary for narrowing down the problem and adapting the process, highlighting the critical role of self-determination in professional development.

In the prototyping stage, participants experimented with several channels themselves, from online tools to in-person meetings aimed at building connections with like-minded educators. Observing participants realise the potential of their defined problems and begin spontaneously planning their next steps was a testament to the effectiveness of the self-guided approach.

This active engagement underscores the importance of maintaining open communication channels, as outlined in the methodology section 3.1.4, post-pilot phase, to ensure that the PD process remains responsive and adaptable to participant needs and evolving educational environments. Through these activities, participants not only engaged deeply with the material but also demonstrated the significant impact of self-determination in fostering continuous professional growth and adaptation.

4.4.3 Reflection on Personal and Professional Impact

Throughout the pilot phase of the professional development program, significant shifts in professional outlook and attitudes were noted among participants, although immediate changes in teaching practices were subtle. These shifts, driven by a deeper engagement with the design thinking process, not only enhanced participants' self-direction but also fostered a sense of professional well-being. The concept of "happy teacher, happy student" was frequently highlighted, underscoring the belief that educators' well-being and job satisfaction have a direct and positive impact on their students.

Participants appreciated the personalised and self-guided nature of the professional development, which contrasted sharply with more traditional, less interactive PD experiences. This approach allowed them to deeply explore their professional interests and challenges. Although they valued the tailored guidance, some participants noted that additional examples and further personalisation could enhance their understanding, especially for those new to the design thinking approach. The autonomy provided by this method not only fostered self-reflection but also encouraged participants to take proactive steps toward achieving their professional goals, including sharing their insights within the educational community.

This renewed enthusiasm for professional growth underscored the effectiveness of the PD model in reinvigorating participants' careers, promising long-term improvements in job satisfaction and

overall well-being. One participant, inspired by their newfound autonomy and insights, implemented a new activity related to their PD focus into their teaching, indicating an anticipated positive ripple effect on student engagement and learning outcomes.

The support from peers and the community of practice was pivotal in helping participants navigate initial uncertainties and maximise the benefits of the PD program. This collaborative environment not only helped them address challenges such as defining clear problem statements and managing professional frustrations but also enhanced their overall satisfaction and efficacy within the program.

The personalised and self-guided nature of the professional development was highly valued, contrasting sharply with more traditional, less interactive PD experiences. Participants appreciated the tailored approach which allowed them to explore their professional interests and challenges deeply. However, some noted that further personalisation and more concrete examples could enhance understanding, particularly for those new to design thinking. The autonomy afforded by this approach not only fostered self-reflection but also motivated participants to plan proactive steps towards their professional goals, such as sharing insights with a broader educational community.

This renewed enthusiasm and strategic approach to professional growth underscored the effectiveness of the PD model in reinvigorating participants' careers, promising long-term improvements in job satisfaction and overall well-being. The support from peers and the opportunity to engage in a community of practice were instrumental in navigating the initial uncertainties and contributing to a robust professional development journey. Participants expressed a new appreciation for their developmental trajectories, inspired by specific educational methodologies, and looked forward to applying their learnings in dynamic and meaningful ways within their educational contexts.

One participant, reflecting on the self-guided nature of the PD, highlighted the importance of autonomy in professional development, stating that the process allowed for a significant reflection on personal and professional goals which, although initially challenging, ultimately led to a greater motivation to think outside the box and plan beyond conventional boundaries. This strategic, self-directed approach helped participants like this to visualise a more dynamic career path and anticipate the positive impacts of their newly acquired skills and insights on their teaching practices and interactions with students.

4.4.4 Challenges and Adaptive Solutions

Throughout the pilot phase of the professional development program, participants faced significant challenges, including defining clear problem statements and managing the emotional toll of professional frustrations. The structured design thinking activities, such as mapping out confinements and positive experiences in previous PD experiences and the iterative process of defining problem statements, provided crucial support in helping participants articulate and refine their professional challenges.

The facilitation and community support, including feedback from a peer, were pivotal in navigating these hurdles. Participants engaged in deep self-analysis, including strengths and weaknesses assessments, which were instrumental in addressing institutional constraints and personal professional barriers. One participant's effort to refine their problem statement multiple times exemplifies the dynamic and responsive nature of the support provided, underscoring the value of a collaborative learning environment.

Moreover, the iterative nature of the sessions allowed for continuous refinement of approaches, which was essential in managing the complexities of professional development. The support from the facilitator and community was not only crucial in overcoming these initial challenges but also enhanced participants' satisfaction and efficacy within the program. For instance, a participant noted, "With the support of the facilitator and community, it was possible to overcome the steep learning curve of the design process."

These adaptive solutions and the support system in place effectively addressed the challenges encountered, as outlined in the central research questions of the investigation. This reflective and responsive approach to professional development, emphasising the importance of community support and iterative refinement, aligns with the inquiry's aim to enhance educator well-being and pedagogical efficacy in international educational settings. This process not only facilitated participants' professional growth but also highlighted the effectiveness of tailored, supportive PD models in dynamic educational environments.

4.4.5 Impact on the Educational Ecosystem

The professional development (PD) model has notably influenced the educational ecosystem by fostering an open, collaborative environment where participants felt supported in sharing their professional experiences and challenges. This enhancement of communication and collaboration within the educational community is crucial for cultivating a culture of continuous improvement and support among educators.

Participants reported that the openness fostered by the PD sessions led to enhanced interactions among educators, which is essential for building a resilient educational community. They were encouraged to share not just successes but also their struggles, creating a more authentic and supportive network. This approach aligns with the broader goal of fostering an educational environment where the well-being of educators directly contributes to positive student outcomes, echoing the often-mentioned concept of "happy teacher, happy student."

Furthermore, the PD model's focus on self-directed learning and autonomy allowed participants to explore and implement new strategies within their teaching contexts. For instance, one participant described being motivated to connect with people outside their comfort zone and collaborate closely with peers in ways they had not before, marking a new and positive experience. Such proactive applications underscore the potential long-term impact of the PD on educational practices and student engagement.

While the long-term effects on the educational ecosystem are still being assessed, the initial changes suggest a promising shift towards a more collaborative and supportive educational environment. Reflecting on the need to evaluate the long-term impact continuously, the methodology section 3.1.4 "Post-Pilot Phase: Extended Evaluation and Continuous Engagement" outlines our commitment to maintaining open channels for feedback and ongoing engagement. This commitment ensures that the PD model remains adaptable and responsive to both the evolving needs of educators and the dynamic conditions of international educational settings.

Participants also expressed a renewed appreciation for their developmental trajectories, inspired by specific educational methodologies, and looked forward to applying their learnings in dynamic and meaningful ways within their educational contexts. Peer feedback has been particularly

positive, further enhancing the supportive atmosphere and encouraging a continuous exchange of insights and strategies among educators.

This continuous cycle of feedback and adaptation aims to sustain the PD model's impact on the educational ecosystem, fostering an environment that supports the professional growth and well-being of educators. Through this process, the model promotes a culture where educators are equipped and motivated to contribute positively to their educational communities, thereby enhancing the overall learning experience for both teachers and students.

4.4.6 Proposed Model Enhancements

Reflecting on the feedback and insights gathered during the pilot phase of the professional development (PD) model, it's evident that flexibility and adaptability are crucial for scaling the initiative to broader and more diverse educational settings. Despite being constrained by time and resources; the pilot underscored the inherent value of the model and highlighted the necessity for thoughtful adaptations when expanding its application. In light of these considerations, the following enhancements are proposed based on insights gleaned from the pilot phase:

Induction step for newcomers: An induction step incorporating visual aids and explanatory videos will be introduced to assist those unfamiliar with design thinking. This step is designed to demystify the process and ensure that all participants start with a clear understanding, thereby enhancing the inclusivity and effectiveness of the sessions.

Adaptable support for diverse groups: The pilot's success has demonstrated the need for a framework to be versatile enough to cater to both large teams and individual participants. This involves offering tailored experiences that can adapt to varying levels of familiarity with the methodologies. Especially for larger groups, the model should promote a collaborative and peer-supported learning environment that diminishes the hierarchical barriers often encountered in traditional PD settings.

Flexible session formats: Recognising the diverse schedules and learning preferences of educators, the model will include a variety of learning opportunities. This can range from live

workshops to digital modules that participants can engage with at their convenience, ensuring that PD opportunities are accessible to all, regardless of their time constraints or geographic location.

The insights from the pilot and subsequent interviews underscore the importance of maintaining an open channel for continuous feedback and dialogue in real-life educational settings. This ongoing dialogue, which was evident when initial interviewees reviewed and responded to the models, is crucial for adapting the PD process to meet the evolving needs of educators. Leaders, coaches, and peers play a vital role in this adaptive process, offering the necessary support to ensure the model remains flexible, customisable, and centred around the teacher's needs.

These suggested enhancements aim not only to make the PD model more robust and responsive but also to ensure it aligns closely with a teacher-centric approach, avoiding the often organisational-centric perspective that can dominate traditional PD settings. By promoting a culture where continuous improvement and adaptation are integral, the model empowers educators to actively participate in shaping their professional development journey. This approach ensures that the PD model remains a dynamic and living model, responsive to the unique contexts and challenges of diverse educational environments.

4.5 Conclusion of Results

The results from the qualitative interviews and the pilot testing of the teacher-centric professional development (PD) model have substantially enriched our understanding of PD within international educational contexts. These investigative phases have demonstrated the efficacy and transformative potential of placing educators at the heart of their professional growth, highlighting the adaptability and responsiveness of the model to the nuanced needs of educators globally.

Key findings underscore the importance of integrating theoretical insights with practical, real-world applications to ensure that PD initiatives are both relevant and directly beneficial. This approach not only reinforces educator-centric strategies, enhancing engagement and motivation, but also supports the alignment of PD activities with educators' actual needs and professional contexts. Additionally, the model promotes a reflective and collaborative learning environment, which is vital for both individual growth and institutional advancement.

Looking ahead, it is essential to continuously evaluate and adapt the model as it expands and responds to new challenges and changing educational dynamics. Future research should also focus on exploring the application of this approach across more diverse educational settings to confirm its efficacy and adaptability, a task particularly pertinent for educators working in multicultural environments. Understanding cultural nuances, as elucidated by Meyer (2016) in 'The Culture Map', becomes paramount not only for leaders but also for all educators striving to foster effective collaboration within highly diverse school settings. Investigating the long-term impacts on educator efficacy and well-being will provide deeper insights into the sustained benefits of such PD initiatives, especially when informed by insights from cross-cultural communication tools like those offered by Meyer.

This study lays a robust foundation for future exploration and development in PD, advocating for models that are adaptable, responsive, and fundamentally designed to enhance the professional lives of educators globally.

5 CONCLUSION

This chapter summarises the findings of a small-scale study aimed at developing and refining a teacher-centric professional development (PD) model to enhance educator well-being and pedagogical efficacy within international contexts. Using qualitative research methods and action research, this study has iteratively improved a PD model tailored to meet the specific needs of educators.

The initial sections reviewed the theoretical foundations and practical implications of applying innovative approaches like design thinking to PD models. Supported by the works of Timperley et al. (2008), Korsager et al. (2022), and Colla & Mossman, the importance of customising these models to address educators' unique challenges is highlighted, aligning closely with the study's objectives.

The study recognises the unique challenges faced by international educators, including cultural differences and diverse student needs. By employing design thinking, it bridges the gap between traditional PD models and the complex international contexts, aiming to improve educator well-being and effectiveness significantly. Additionally, the integration of heutagogy and blended learning into PD models marks a pivotal shift towards a more dynamic and responsive educational landscape. This approach empowers educators to chart their own professional growth paths, enhancing their adaptability and responsiveness to diverse educational needs (Chamo, Biberman-Shalev, & Broza, 2023; Miller et al., 2018).

The insights gained from interviews with a diverse, yet a limited number of a group of international educators and leaders have substantially enriched our understanding of the nuanced benefits and challenges associated with implementing tailored professional development (PD) models in varied educational contexts. These conversations revealed effective strategies for ongoing improvement and adaptability.

Integrating design thinking principles into PD models has proven to significantly enhance teaching effectiveness and adapt to educators' needs, supporting a cycle of continuous improvement and responsiveness. This alignment with effective strategies identified in the research is supported by

the principles of Self-Determined Professional Development (SDPD), which emphasise intrinsic motivation and self-directed learning (Gorecki, 2021).

Additionally, the incorporation of service design thinking helps to ensure that PD models remain adaptable and responsive to the evolving needs of international educators (Fazekas, 2021; Suoheimo et al., 2023). The effectiveness of these models is further demonstrated by the application of self-determined learning practices, which have been shown to transcend traditional approaches to teacher training, preparing educators to effectively navigate complex educational landscapes. This approach aligns with findings from studies such as those by Miller et al. (2018) and the insights of Blaschke (2021), highlighting the transformative potential of combining heutagogy and blended learning in professional development.

This study supports the development of flexible and sustainable professional development models that effectively address educators' needs and enhance educational outcomes. Addressing the challenges of implementing such adaptable PD models is essential, as they must meet the diverse needs of educators to ensure long-term sustainability, as highlighted by Suoheimo & Määttä (2023). The proposed model is designed to promote autonomy, encourage collaboration, and support self-directed learning, helping teachers to succeed in various and challenging educational settings. Grounded in design thinking, this approach focuses on user-centred problem-solving and iterative development processes, crucial for devising solutions that meet the actual needs and challenges faced by educators. Moreover, the integration of self-determination theory in professional development, demonstrated by the Wellbeing Integrated Learning Design Framework by Colla & Mossman, emphasises the importance of creating environments that bolster autonomy, competence, and relatedness. This not only boosts educator effectiveness but also significantly enhances their well-being, emphasising the need for PD models to be adaptable and deeply supportive of educators' psychological needs (Colla & Mossman, 2023). As summarised in Figure 2, the key findings of this study illustrate the importance of integrating design thinking and self-determined professional development principles to address the diverse needs of educators.

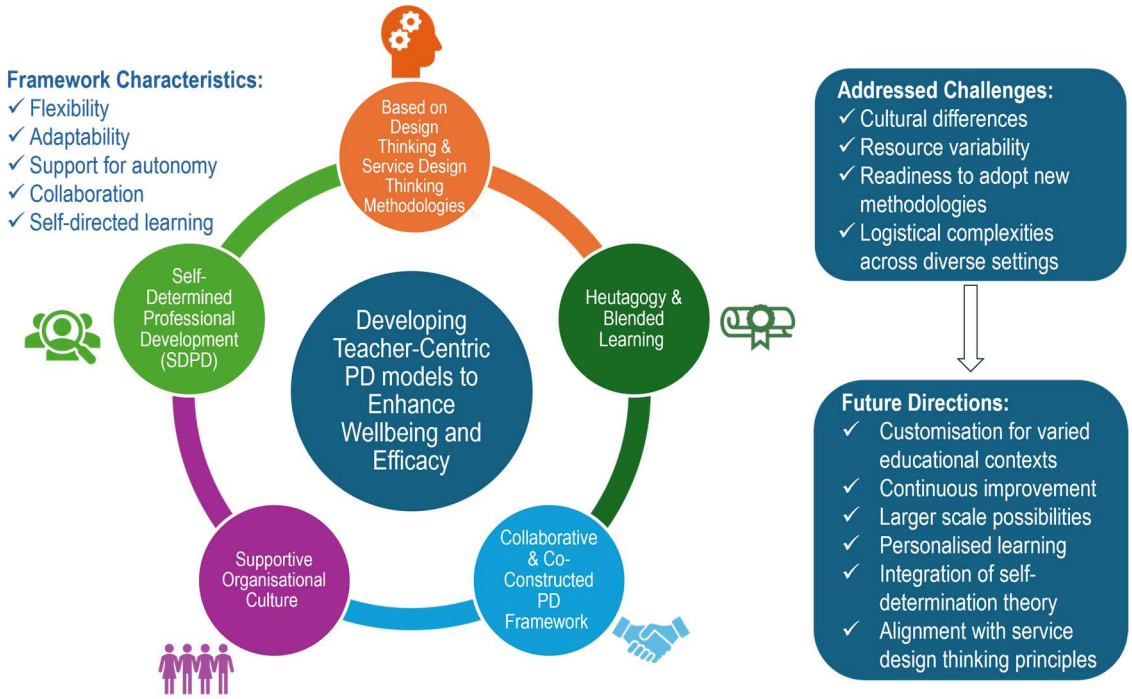

FIGURE 3. Key Findings on Teacher-Centric Professional Development

This study investigates how a teacher-centric professional development model can enhance educator well-being and pedagogical efficacy in international educational settings. This question is thoroughly examined through the lens of design thinking and service design thinking methodologies. These methodologies are essential for creating environments that prioritise educator autonomy, collaboration, and personalised learning experiences, directly addressing the objectives of this research (Gorecki, 2021; Hattie, 2023; Taylor et al., 2024). Gorecki's work emphasises the significance of self-determined professional development in supporting these environments. Meanwhile, Hattie's research highlights the critical role of tailored professional learning in improving educational outcomes. Additionally, Taylor et al.'s insights from the IB report on teacher wellbeing reinforce the need for well-being-focused PD models that adapt to educators' individual needs and contexts. The integration of these approaches is supported by foundational and innovative educational theories that underscore the necessity of ongoing PD for enhancing teaching effectiveness and student outcomes (Timperley et al., 2008). Moreover, the adoption of design thinking ensures that the solutions developed are specifically tailored to meet the practical challenges faced by educators, thus significantly enhancing both their well-being and pedagogical efficacy (Pimental, 2023). This approach not only addresses the dynamic needs of international education systems but also establishes a robust model for PD programs that are both impactful and sustainable.

A key area of investigation is understanding how teacher-centric professional development models influence educators' well-being and pedagogical efficacy in diverse contexts. This inquiry delves into the role of leadership and collaborative practices within PD models, revealing how these elements can be effectively harnessed to enhance both educator well-being and efficacy. Research by Korsager et al. (2022) and Guskey (2021) supports the notion that PD models are instrumental in helping educators develop their skills through continuous professional engagement and growth. Educators involved in the study reported enhanced job satisfaction and effectiveness, highlighting the significance of models that bolster self-efficacy and provide regular feedback, collaborative learning opportunities, and alignment with educators' intrinsic motivations.

Furthermore, the integration of heutagogy and blended learning, as discussed by Chamo, Biberman-Shalev, and Broza (2023), underscores a pivotal shift towards a more dynamic and responsive educational approach. This approach not only aligns with the findings regarding the efficacy of collaborative and aligned PD models in promoting long-term well-being and effectiveness but also illustrates how such methodologies enhance the adaptability and responsiveness of educational practices. The theoretical underpinnings of self-determined learning strategies, as showcased in the broader study, empower educators to optimally engage with and benefit from their professional development, potentially leading to improved teaching outcomes and job satisfaction. This is an area that needs further research in order to confirm some of these initial findings.

This study is also focused on identifying the challenges encountered in implementing teacher-centric professional development models in diverse educational settings and exploring the strategies that effectively address these challenges. This analysis reveals that educators frequently encounter issues such as cultural differences, which may include variations in closeness to power, differences in teaching and learning styles, and levels of supportive leadership (Henriksen et al., 2018; Taylor et al., 2024; Colla & Mossman, 2023). Additionally, challenges like resource variability and discrepancies in readiness to adopt new methodologies are common, further complicated by the logistical complexities of standardising PD across diverse educational systems. These cultural differences can impact communication and collaboration, making it difficult to create a cohesive PD framework that suits all educators. Hattie (2023) highlights the importance of adaptable PD models that foster educator autonomy, competence, and relatedness, enhancing both well-being and effectiveness. He emphasises tailored, personalised professional learning opportunities, which can boost intrinsic motivation and a sense of competence. In some cultures, there is a higher

expectation for decisive leadership, while in others, a more collaborative approach is preferred. Distance between leaders and teachers can also hinder the effective implementation of PD initiatives, as it may reduce the opportunities for regular feedback and support (Henriksen et al., 2018). Understanding cultural nuances, as elucidated by Meyer (2016) in "The Culture Map," becomes paramount for fostering effective collaboration within diverse school settings.

To counter these challenges, the study endorses the adoption of flexible, scalable PD models that can be tailored to meet the specific needs of varied educational environments. This strategy draws on the principles of service design thinking as discussed by Stickdorn (2018), which emphasises customisation, adaptability, and the iterative solving of problems to enhance service delivery. Incorporating design thinking principles from Stanford (Shanks, n.d.), such as empathy, defining problems, ideation, prototyping, and testing, further supports the development of effective PD models. In the context of education, applying these service design principles facilitates the development of PD models that are responsive to the unique cultural and operational challenges present in diverse settings.

Looking ahead, it is essential to continuously evaluate and adapt the model as it expands and responds to new challenges and changing educational dynamics. Future research should also focus on exploring the application of this model across more diverse educational settings to confirm its efficacy and adaptability, a task particularly pertinent for educators working in multicultural environments. Understanding cultural nuances, as elucidated by Meyer (2016) becomes paramount not only for leaders but also for all educators striving to foster effective collaboration within highly diverse school settings. Investigating the long-term impacts on educator efficacy and well-being will provide deeper insights into the sustained benefits of such PD initiatives, especially when informed by insights from cross-cultural communication tools like those offered by Meyer.

Further, fostering a supportive culture within educational institutions is crucial, as advocated by Taylor et al. (2024). Their report Wellbeing for Schoolteachers (2024) for the International Baccalaureate highlights the importance of understanding and enhancing teacher well-being to create an environment conducive to the successful adoption and implementation of innovative PD strategies. Moreover, integrating self-determination theory within PD models, highlighted through the work of Lisa Marie Blaschke (2021) and the Wellbeing Integrated Learning Design (WILD) Framework by Colla & Mossman (2023), addresses crucial aspects of educator autonomy, competence, and relatedness. These elements are essential for empowering educators to actively

engage in and benefit from their professional development, enhancing their ability to address personal and professional challenges effectively.

By aligning Stickdorn's service design thinking with the practical needs of educational PD, this approach not only tackles the inherent challenges of diverse educational settings but also promotes a culture of continuous improvement and personalised learning among educators. This ultimately supports the strategic goal of customising PD models to suit various educational contexts, thereby facilitating cultural adaptation and logistical management within diverse, including international, educational landscapes.

This study underscores the need for future research to systematically explore the longitudinal impact of professional development (PD) models on educator well-being and pedagogical efficacy. Longitudinal studies are crucial as they provide insights into the sustained effects of PD initiatives over time, which can help in understanding the durability and evolution of educational improvements fostered by such models.

Additionally, the application of service design thinking principles, as advocated by Fazekas (2021) and Suoheimo et al. (2023), should be further investigated to determine how these methodologies can enhance the adaptability and responsiveness of PD models. Service design thinking's focus on user-centred problem-solving and iterative development processes provides a robust methodological basis for refining PD strategies to ensure they remain effective amid the rapidly evolving educational landscape.

Finally, the emerging emphasis on heutagogy and blended learning strategies points towards a transformative shift in PD approaches. These strategies support the development of more self-directed, autonomous professional learning experiences, which are increasingly necessary in today's diverse and dynamic educational environments. Future research should thus examine how these pedagogical approaches can be integrated into broader PD models to better support educators' continuous growth and adaptation to global educational challenges.

6 DISCUSSION

This thesis investigates the development of a teacher-centric professional development (PD) model designed to enhance educator well-being and pedagogical efficacy within diverse international contexts. Through qualitative and action research methodologies, the model was refined iteratively, focusing deeply on aligning with the unique needs and challenges of educators. This study leverages the principles of design thinking and service design to foster an empathetic understanding of educators, involving them as central figures in every step of the development process.

However, it is crucial to acknowledge certain limitations. The study's small scale may impact the validity and reliability of the findings across broader educational landscapes. Additionally, while design thinking and service design thinking offer innovative approaches to enhancing user experiences, their application in educational settings presents unique challenges. This adaptation raises critical questions regarding the role of educational leaders in facilitating PD. Future research should investigate alternative models where PD can be driven by coaches, colleagues, or teams instead of relying solely on leadership figures, particularly in environments where PD outcomes may influence salary raises or other significant benefits. Feldman et al. (2018) emphasise the significance of contextual factors such as cultural norms, institutional policies, and available resources, which influence the implementation of new methodologies in diverse educational settings. They highlight the value of collaborative inquiry and peer support, suggesting that PD led by teams or coaches can effectively address these specific challenges and improve overall efficacy.

Future research should also include longitudinal studies to assess the enduring effects of these approaches on educator well-being and pedagogical effectiveness. Further exploration into how deeply design thinking and service design principles can be integrated within PD models could significantly enhance their adaptability and effectiveness. The transformative potential of incorporating heutagogy and blended learning strategies into broader PD models is also a vital area for further investigation.

To provide a holistic picture and further validate the findings, this discussion comprehensively integrates the professional development (PD) models explored throughout the thesis. Options 1 and 2, detailed in the appendices, have been foundational in shaping the suggested models. Option

3 is an author-suggested model, inspired by extensive literature review, interviews, and pilot findings, which synthesises the strengths of both foundational models to address diverse educational needs. Options 4 and 5 further blend the approaches of Options 1 and 2, offering more open and flexible pathways that allow for tailored adaptation by educators. All models are represented in a matrix form or as tiles to emphasise their iterative nature. While there might be a natural flow, the order of the phases can be adapted depending on the context—whether working with individuals, groups, progressive organisations, teams new to design thinking, etc. It might be necessary for some teams to tackle all the phases, while for others, the order could change. This adaptability and flexibility are key to the effectiveness of each model, allowing for customisation to meet unique educational challenges and contexts.

Option 1: Stanford-Inspired Model

The Stanford-inspired model is designed for flexibility, allowing educators to select phases that best suit their needs during trial implementations. This iterative process emphasises continuous evaluation and feedback to ensure ongoing improvement and adaptation. The phases in this model include empathise, define, ideate, prototype, test, and evaluate (see Figure 4) (Shanks, n.d.).

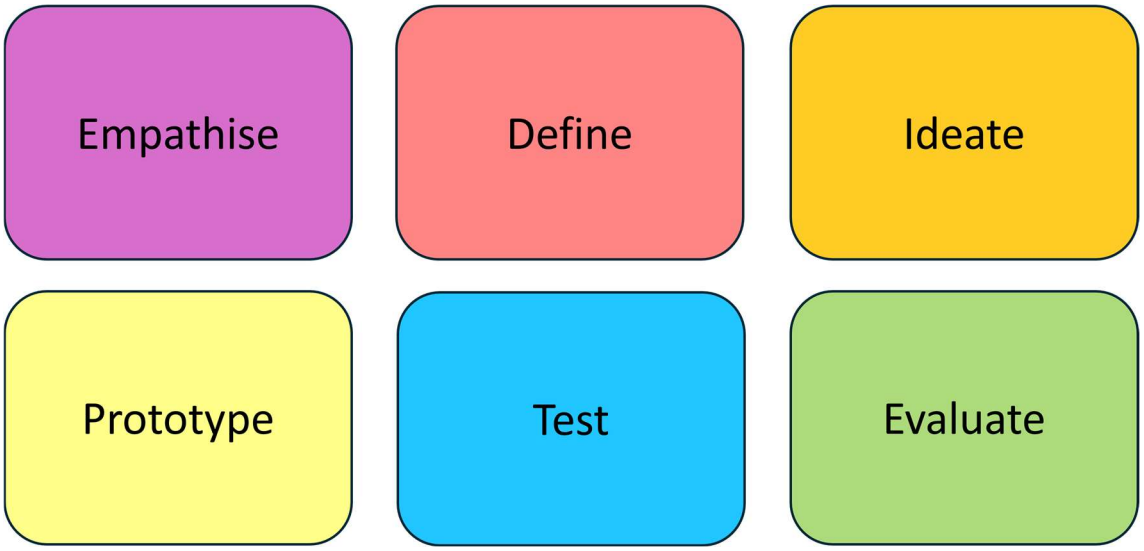

FIGURE 4. Stanford-Inspired Model

Option 2: Stickdorn-Inspired Model

The Stickdorn-inspired model emphasises empathy, co-creation, and iterative learning to meet the dynamic needs of educators. This model highlights the importance of flexibility and continuous stakeholder involvement, with phases that include define & frame, explore & research, gain insights, imagine & ideate, prototype & test, and transform & implement (see Figure 5).

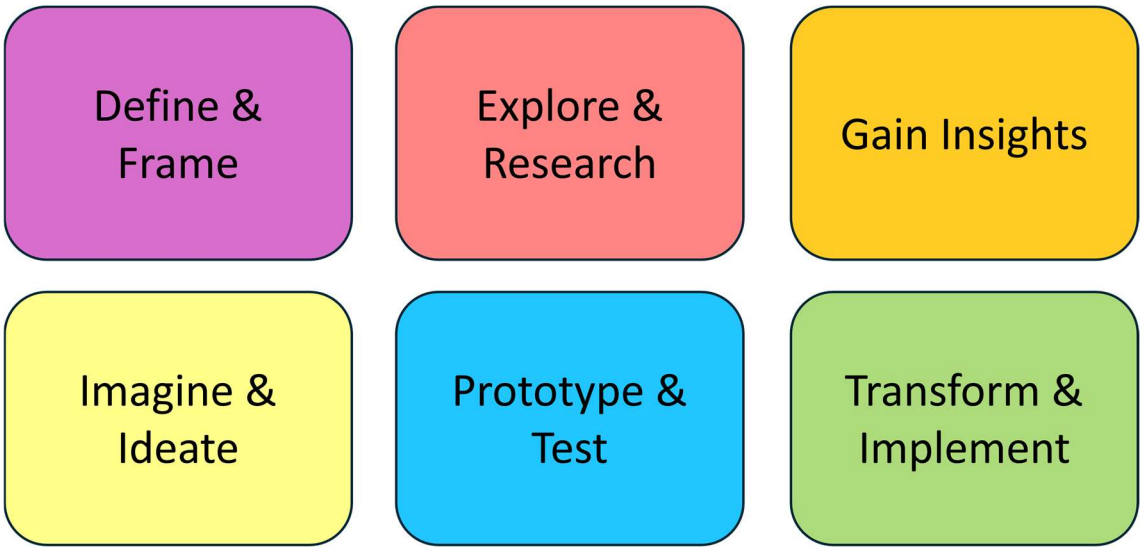

FIGURE 5. Stickdorn Inspired Model

Option 3: Hybrid design model

The hybrid design model, an author interpretation, synthesises the strengths of both the Stanford-inspired and Stickdorn-inspired models, providing a holistic and flexible model that emphasises teacher autonomy. This approach is developed from a thorough literature review, interviews, pilot findings, and participant feedback. The hybrid design model is visually represented in Figure 6. It follows a comprehensive, multi-step process similar to its predecessors. The process begins by understanding each educator's unique challenges and deepening insights, then progresses to generating innovative solutions, developing and testing these solutions, scaling successful ones, and assessing their impact. This model integrates the continuous evaluation and feedback cycle characteristic of the Stanford-inspired version with the empathetic, co-creation approach central to the Stickdorn-inspired model. While promising, this model could benefit from further testing and validation in diverse educational settings.

In the first phase, **Discover**, the focus is on understanding the unique needs and challenges of each educator using tools like surveys, SWOT analysis, and MBTI indicators. This phase supports autonomy and self-directed learning (Gorecki, 2021), allowing educators to set their own

professional development goals while tailoring approaches to individual practices and institutional goals.

The second phase, **Investigate**, involves deepening insights into challenges, defining the problem statement, and conducting research. This phase emphasises collaborative and reflective practices (Timperley et al., 2008), encouraging educators to share experiences and insights. It includes cultural and contextual responsiveness (Hattie, 2023) to adapt to different settings, with iteration to explore needs further.

In the **Create** phase, educators generate and refine solutions, applying theoretical knowledge to practical challenges (Hattie, 2023; Gorecki, 2021). This phase balances personal insights with institutional constraints and remains adaptive and flexible (Korsager et al., 2022).

The **Experiment** phase focuses on developing and testing PD solutions through quick prototyping. Feedback from stakeholders, including students, helps refine approaches. This phase incorporates iterative development and feedback mechanisms (Stickdorn et al., 2018), ensuring continuous improvement.

In the **Implement** phase, successful solutions are scaled and adapted, considering individual and organisational contexts. Broader implementations are planned, adjusting resources and strategies as needed. This phase ensures adaptive and flexible frameworks (Korsager et al., 2022) and allows iteration back to earlier phases for refinement.

Finally, the **Reflect** phase assesses the impact of PD initiatives on personal growth, student outcomes, and institutional goals. Ongoing reflection and discussions gather comprehensive feedback for iterative improvements. This phase supports collaborative and reflective practices (Timperley et al., 2008) and promotes continuous improvement (Stickdorn et al., 2018).

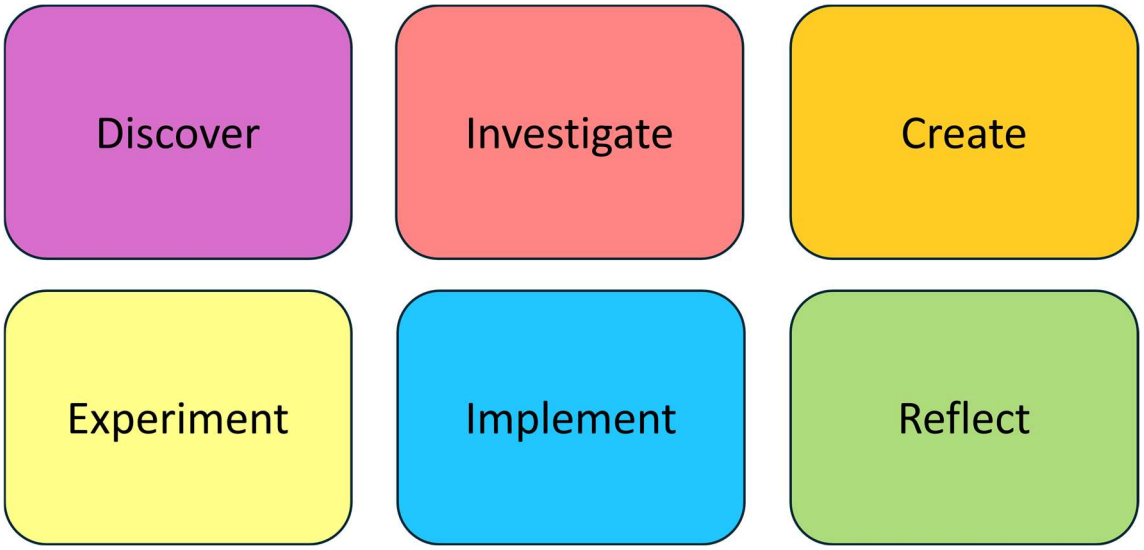

FIGURE 6. Hybrid Design Model

Option 4: Stanford and Stickdorn Mix with Guided Choice

The Stanford and Stickdorn mix with guided choice is a synthesis of both foundational models, enabling structured yet flexible phase selection tailored to individual needs. This model is depicted in Figure 7. It utilises a colour-coded system to guide educators through the selection process, enhancing user-friendliness while maintaining the core principles of empathy, co-creation, and iterative feedback inherent in the original models. It particularly emphasises self-determination, providing educators the autonomy to navigate through the phases that best address their unique contexts and challenges.

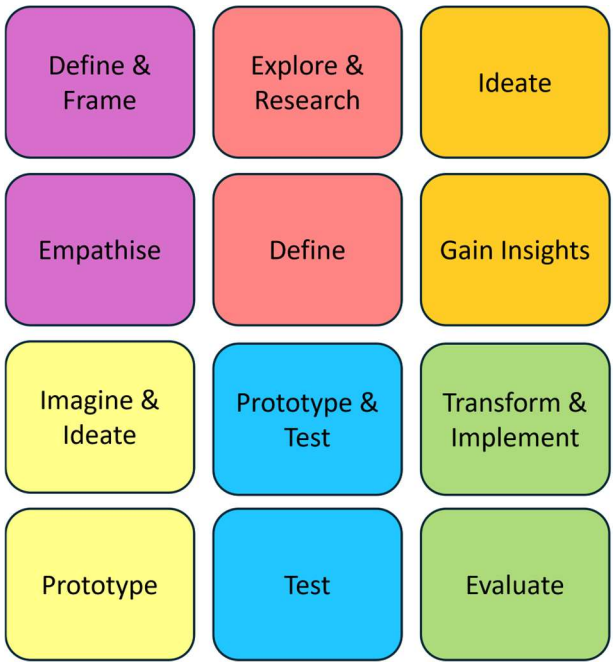

FIGURE 7. Stanford and Stickdorn Mixed Model with Guided Choice

Option 5: Open Model for Confident Users

The 'Open Model for Confident Users,' shown in Figure 8, builds upon the flexibility of the Stanford and Stickdorn-inspired models. It offers the most adaptable model designed for educators who are experienced with PD principles. This model allows for completely independent phase selection and sequencing, giving users the freedom to tailor their professional development journey without predefined constraints. It continues to build on the empathetic and collaborative foundations of the earlier models, but places greater emphasis on autonomy and self-determination.

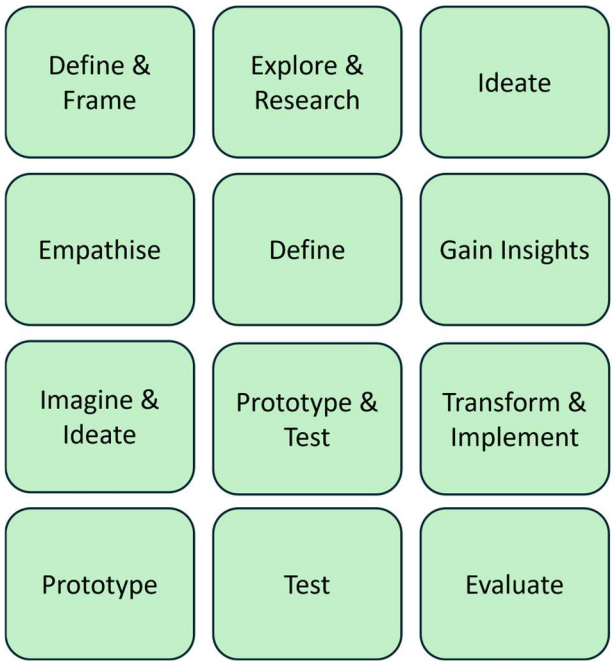

FIGURE 8. Open Model for Confident Users

While options 1 and 2 have established their efficacy in practical applications, options 3, 4, and 5 further expand these approaches. These newer options not only inherit the iterative, empathetic, and flexible qualities of the Stanford-inspired and Stickdorn-inspired models but also introduce more open frameworks that align closely with principles of self-determination. This evolution allows for greater autonomy and adaptability in professional development, catering to educators' specific needs and dynamic educational environments. By blending and extending the foundational models, options 4 and 5 offer educators innovative ways to tailor their professional growth trajectories, reflecting the continuous evolution of educational practices and the increasing emphasis on personalised learning experiences.

Practically, teams, individuals, and institutions looking to adopt these PD models could consider staged implementations, beginning with small-scale pilot programs to tailor the models to specific

contexts through iterative feedback. This structured approach allows each model to be adapted effectively to meet diverse educational needs and challenges. Leveraging the iterative nature of design thinking and service design, solutions are co-created with teachers and continuously refined, ensuring the PD models not only meet immediate needs but also evolve to address ongoing challenges effectively. As Tim Brown highlights in *Change by Design, Revised and Updated* (2019), the optimism inherent in design thinking can drive significant and positive change within organisations, teams, and personal practices, making it a critical element in reimagining educational practices. By providing a selection of potential models, this approach empowers teams, individuals, and institutions to choose the one that best aligns with their goals and needs, ensuring a tailored fit that can dynamically respond to diverse organisational dynamics and personal development objectives.

In conclusion, this thesis underscores the importance of teacher-centric PD models, demonstrating their significant potential to enhance educational outcomes. By prioritising educator autonomy and collaborative design, these models not only meet immediate educational needs but also adapt to ongoing changes and challenges. Emphasising the centrality of teachers in these models aligns with the principles of self-determination theory, which advocates for enhancing autonomy, competence, and relatedness to empower educators. This approach ensures the long-term viability of the models by addressing adaptability challenges. Ultimately, this study advocates a sustainable, flexible, and adaptive approach, highlighting the transformative potential that teacher-centred design can bring to educational innovation.

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APPENDICES

Interview Guide for Initial Interviews

Stanford-Inspired Model

Stickdorn-Inspired Model

Post-Pilot Program Evaluation Questions

Sample Extracts of Online Workbook

INTERVIEW GUIDE FOR INITIAL INTERVIEWS APPENDIX 1

Core Question	Optional Follow-Up
Please introduce yourself, including your professional background and any experience you have with professional development and professional development frameworks.	Not applicable.
Can you describe any step-by-step methods or approaches that teachers use to systematically identify areas for professional development in their jobs?	How does design thinking, as one of these step-by-step approaches, assist in identifying and addressing professional development needs? What advantages does personalised guidance offer in this context?
Can you describe some of the challenges international teachers might encounter as they seek to identify and improve on areas within their teaching?	In what ways do you think approaches like design thinking and personalised support can help address these challenges?
How can PD initiatives encourage educators to take the lead and guide their own learning through self-determination and self-guiding principles?	How can various PD initiatives foster self-determination among educators, empowering them to design their own professional development experiences with personalised guidance where needed?
How do teachers use reflection on past teaching experiences to identify potential improvements in their practice?	How might integrating design thinking with personalised support enhance this self-reflective process for teachers?
What are the essential elements of a plan that help teachers identify areas for professional improvement?	How could a design thinking-based model be structured to help teachers define and meet their professional development objectives? In what ways can this model be tailored to individual needs?

How can we create a culture where teachers are always looking for ways to improve and use creative thinking to do that?	How can we foster a culture of continuous professional development using design thinking among international teachers, and what collaborative opportunities and knowledge-sharing mechanisms can support this culture?
What strategies can be employed to cultivate a culture among teachers that encourages continual improvement and creative thinking?	How can design thinking be integrated into this cultural framework to support continuous professional development, especially among international teachers? What collaborative opportunities and mechanisms for knowledge sharing could be effective in this context?
What indicators or metrics can be used to evaluate the impact of creative problem-solving methods on teachers' professional practices?	What outcomes might be expected from a design thinking and heutagogical approach in professional development? How could these outcomes demonstrate the importance of personalised guidance and collaboration?
How can the insights of experienced teachers contribute to the enhancement of professional development plans?	How can the expertise of experienced teachers be utilised to improve design thinking approaches in professional development? What specific benefits can their insights bring?
Based on the PD processes we've discussed, which one do you prefer, and could you provide feedback on these approaches?	Can you suggest improvements or share additional ideas that could make these processes more effective for educators like yourself?

STANFORD-INSPIRED MODEL APPENDIX 2

This appendix details a Stanford-Inspired Model adapted for educational professional development, encompassing stages from 'Empathise' to 'Evaluate'. Designed for flexibility, it allows educators to select phases that best suit their needs during trial implementations. Each stage is aligned with educational practices and aims to effectively respond to the dynamic needs of educators through structured feedback and continuous evaluation.

Please note: the process is iterative and does not have to be linear. This is only a way to show the different stages.

Stage	Objective	Potential Actions
Empathise	Understand the specific needs and challenges faced by the teacher.	Conduct surveys or interviews to explore teachers' PD goals, interests, and areas for improvement. Identify major challenges and opportunities for growth in their teaching practice.
Define	Clearly articulate the PD problem or opportunity.	Summarise the insights gathered to define the core problem or opportunity for PD. Identify the stakeholders affected and the desired outcomes. Acknowledge any constraints impacting PD implementation.
Ideate	Generate a range of creative and effective PD solutions.	Brainstorm potential solutions and innovative ideas to address the defined problem or opportunity. Consider how these solutions can benefit both the teacher and their students.
Prototype	Develop and test preliminary versions of PD solutions.	Create low-cost, easy-to-use prototypes of selected PD solutions. Involve teachers, students, and other stakeholders in testing these prototypes.

		Collect initial feedback to inform further development.
Test	Refine PD solutions based on feedback and prepare for larger-scale implementation.	Implement the refined solutions on a broader scale within the educational setting. Collect feedback from a wider user base to fine-tune the solutions further. Measure the impact on teaching practices and student learning outcomes.
Evaluate	Assess the overall impact of PD initiatives on teacher well-being and professional growth.	Utilise both quantitative and qualitative data collection methods to evaluate the effectiveness of PD on teacher well-being and professional development. most helpful for assessing the impact of the initiatives.

Integration of regular iteration checkpoints into the PD process for revisiting and refining goals and activities. Promoting an iterative mindset, emphasising that professional development is a continuous cycle of growth, feedback, and adaptation.

STICKDORN-INSPIRED MODEL APPENDIX 3

This appendix outlines a professional development model adapted from Stickdorn's design thinking principles, tailored for education. It emphasises empathy, co-creation, and iterative learning to meet educators' dynamic needs. This model highlights the importance of flexibility and continuous stakeholder involvement, promoting an ongoing cycle of development and feedback within educational settings.

Please note: the process is iterative and does not have to be linear. This is only a way to show the different stages.

Stage	Objective	Potential Actions
Define & Frame	Reframe a problem as an opportunity for change.	Identify challenges and articulate them as opportunities for growth. Analyse the root causes and potential consequences of challenges. Explore opportunities for positive change by addressing these challenges.
Explore & Research	Build a deeper understanding of your challenge.	Document what is already known and identify gaps in understanding. Seek insights from other educators, experts, and resources. Utilise available resources to deepen knowledge about the challenges.
Gain Insights	Make sense of what you are learning.	Summarise key learnings and insights gained from the exploration stage. Interpret findings from multiple perspectives. Consider the implications of these findings for understanding the challenges and identifying potential solutions.

Imagine & Ideate	Generate meaningful ideas.	Brainstorm creative and innovative solutions to the challenges. Consider the potential impact of these solutions on students and teaching practice. Think about sustainability and scalability of the solutions.
Prototype & test	Develop and test your idea.	Design low-cost, low-risk prototypes or pilots of the solutions. Involve stakeholders (teachers, students, parents, administrators) in testing. Collect feedback to refine and improve the solutions.
Transform & Implement	Grow your solution and advance your personal journey.	Plan for larger-scale implementation of the solutions. Identify necessary resources and support for implementation. Measure the impact of the solutions and adjust as needed. Reflect on the learning journey and plan for ongoing growth and adaptation.

Integration of regular iteration checkpoints into the PD process for revisiting and refining goals and activities. Promoting an iterative mindset, emphasising that professional development is a continuous cycle of growth, feedback, and adaptation.

POST-PILOT PROGRAM EVALUATION QUESTIONS APPENDIX 4

Holistic Process Evaluation

1. How did the step-by-step problem-solving approach (design thinking) help you identify and address your professional learning needs? What insights did this method provide that you hadn't considered before?
2. On a scale of 1 to 10, how effective was the design thinking process in helping you define and tackle your professional development requirements? Why/how?
3. On a scale of 1 to 10, how effective was the design thinking process in fostering your ability to self-direct and refine your professional development objectives? Why/how?
4. Reflecting on the entire process, how effectively did the personalised guidance support your learning journey? How did this support contrast with previous professional development experiences?
5. How has the self-guided approach to professional development influenced your ability to meet personal and professional goals, and what impact has this autonomy had on your effectiveness as an educator?

Results and Personal Impact

6. Can you describe specific changes in your teaching practices or professional behaviours as a result of participating in this program? What were some pivotal moments during the program that influenced these changes?
7. Did you make any specific intentional changes to your teaching practice? What unintentional changes have you noticed during and after the process?
8. How much has your personal well-being and job satisfaction improved on a scale from 1 to 10 since participating in the program? Why/how?
9. What challenges did you encounter during this program, and how were you able to overcome them? How do these solutions reflect on your scores of efficacy and satisfaction?
10. Impact on Educational Ecosystem
11. How has the program influenced your interactions with colleagues and the broader educational community? Can you provide specific examples or anecdotes where these changes were particularly evident?
12. Using a scale from 1 to 10, how would you rate the level of positive change in your educational community as a direct result of implementations from this program? Why/how?

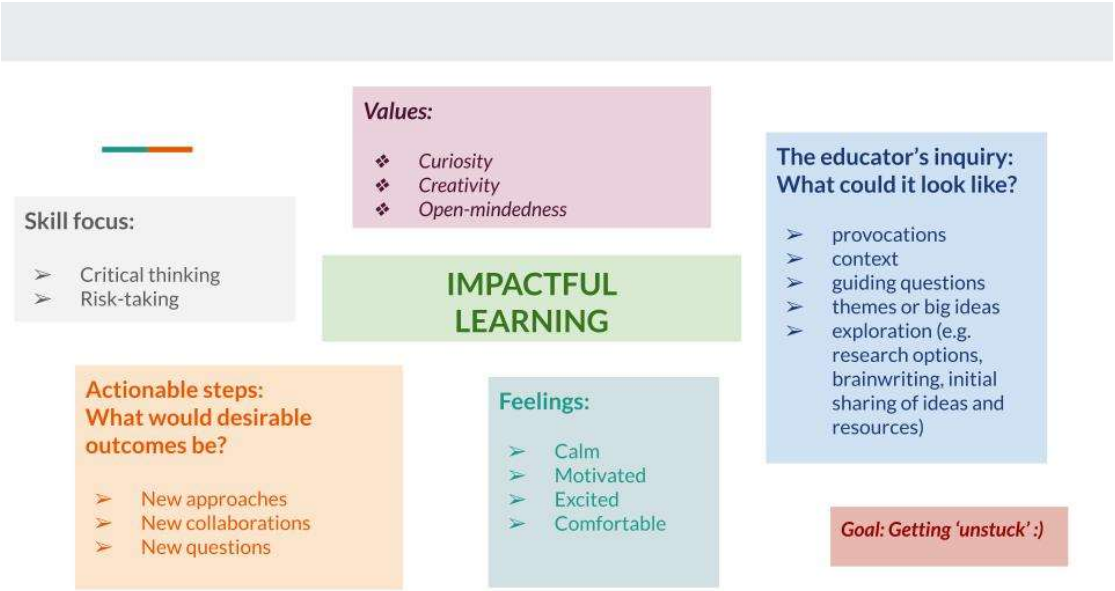
13. In what ways have you been able to apply the outcomes of this professional development to benefit your students or fellow educators? How does peer or student feedback correlate with changes you've implemented?
14. What tools or technologies were integral to your learning and development during the program, and how did they facilitate your professional growth and application of the training?

General Feedback

15. Anything else that you'd like to share?

SAMPLE EXTRACTS OF ONLINE WORKBOOK APPENDIX 5

Professional Learning Mapping: This extract displays a mapping exercise completed during the first session of the workshop cycle, emphasising the empathising phase. Participants chose this method to reflect on meaningful professional development experiences, illustrating the level of agency and choice integral to the workshop design.

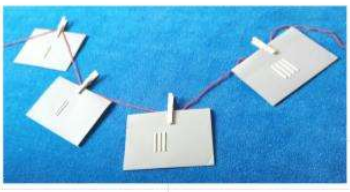


Preparation Task for Upcoming Sessions: This sample features a preparatory task tailored from participant feedback, blending their suggestions with structured guidance to enhance preparedness and support self-directed learning.

Session 3 Preparation: Navigating Horizons

(Refining Prototyping and Preparing for Testing)

To ensure a productive session, please complete the following preparation tasks. These are designed to poke your thoughts and ideas, setting a solid foundation for our next meeting. An optional challenge is also available in case you'd wish to further explore and apply your concepts in a practical context.



Preparation Steps	For [redacted]	For [redacted]
Reflect	Think about options for a possible change. Be ready to discuss these.	Consider the core values driving your community efforts. Prepare to share and explore these.
Quick research	Identify one or two blogs that inspire you. Note what you like about them.	Find one community or network where similar philosophies are implemented. Note key insights.
Draft outline	Outline the main points for a potential first blog post	Jot down a few sentences about your educational philosophy to share during the session.
Prepare to share	Think of how you can visually represent your professional path during the session…	Consider how you might briefly explain your artwork's significance in building community. What real-life steps does it involve? Could you make a flowchart.
Extra optional challenge	Blog post draft.	Community interaction: Optionally, initiate a discussion or attend a virtual meetup related to your educational philosophy. Share insights gained during the session. OR Anything else physical…

Overview of Workshop Session Content: This extract presents session objectives shared in advance, tailored based on participant feedback to enhance engagement and inform the workshop's responsive design.

Session 3 Introduction: Navigating Horizons

(Refining Prototyping and Preparing for Testing)

In this session, we'll focus on turning our creative prototypes into practical, test-ready solutions. This session is designed not only to refine your ideas but also to prepare them for a practical evaluation to ensure they effectively address the challenges identified in your professional development.

Inquiry Objectives:

- How can we enhance our prototypes to ensure functionality for real-world application?
- What are the necessary steps to prepare our prototypes for comprehensive testing?
- How does the mid-session review help us identify and implement needed adjustments?
- In what ways can exchanging peer feedback refine our understanding and approach?
- What final modifications are required to make our prototypes ready for the testing phase?

Today's objectives are to refine, review, and ready our prototypes for the next crucial steps. We'll engage with these questions, collaborate on solutions, and prepare to test our innovations effectively. Get ready to enhance, critique, and finalize your projects as we navigate closer to realizing our visions!

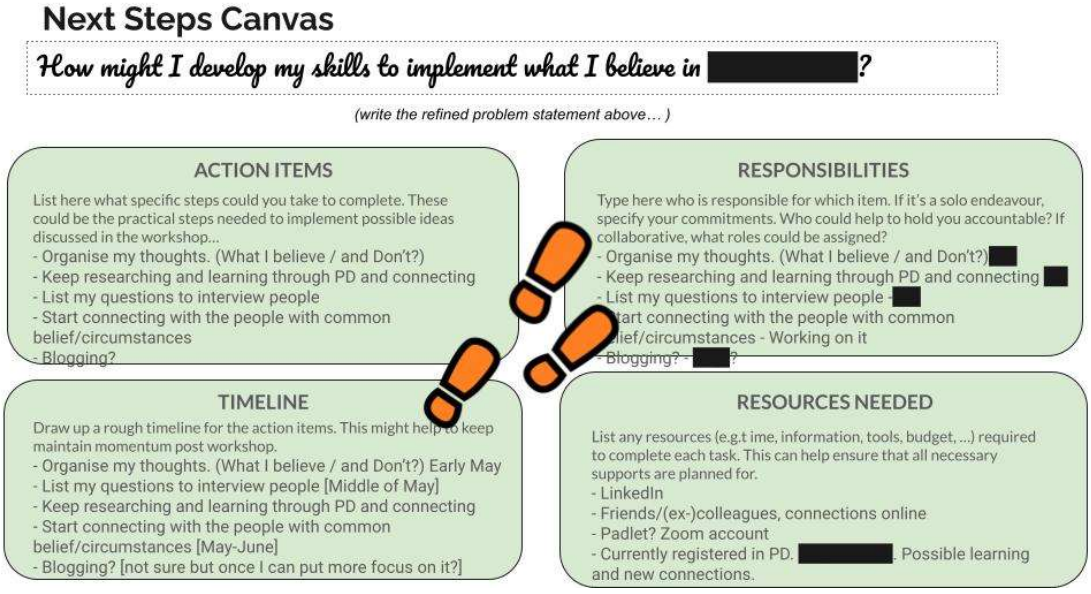
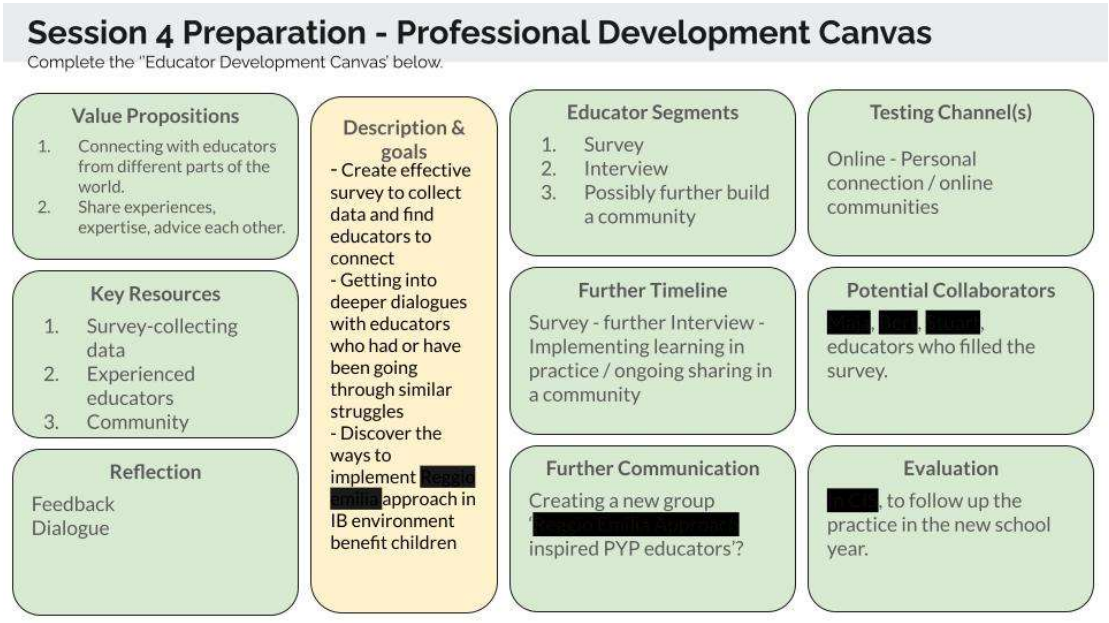
Reflection Form Post-Workshop Session: Highlighted here is a sample of the reflection form used after each workshop session. Participants selected specific questions to include, fostering a personalised reflection process that catered to their individual and collective learning journeys.

Session 3 Reflection: Navigating Horizons

(Refining Prototyping and Preparing for Testing)

Feedback Category	Your Feedback
How would you rate the session from 1 to 5? What made you choose that rating?	5. Really enjoyed the flow, and the activities and materials were well-chosen.
Which prototyping activity was most impactful for you? Why?	It was useful to get feedback and ask further questions. I had 2 prototypes already when I joined the session. That helped me to feel prepared.
How was the choice factor in selecting materials or methods? When do you prefer working alone, under guidance, or with a peer?	Great combination of working with others and refining own work.
How valuable was the interaction with your peers during prototyping?	Really valuable! It helped me to plan next steps.
Were the thinking prompts and guiding questions effective in guiding your prototype development and reflection?	Yes.
How effective did you find refining the problem statement during this session?	Liked the visualization techniques used.
How clear was my communication? Did my guidance enhance your learning and creativity? Was I responsive to your needs throughout the session?	Thoughtfully designed session with personal insights, creative input, and humor. The pacing was very effective.Fantastic to get work with someone who knows their participants well and is not afraid to step back, co-construct, and be vulnerable.
How could I improve my facilitation for future sessions?	Simplify written instructions. Less can be more!
What do you hope to explore in our next session? Any specific wishes or areas of focus?	Thinking about possible audiences. Planning follow-up.

Next Steps Canvas: In the early prototyping stages of the PD process, this tool helped participants turn refined problem statements into actionable plans. It outlined tasks, assigned responsibilities, set timelines, and listed needed resources, creating a structured model for efficient planning and execution. Crucial for guiding participants, the canvas facilitated both individual and team organisation and progress monitoring.



Professional Development Canvas: This appendix a strategic tool that helps articulate objectives, identify resources, and outline strategies. It enhances process efficiency, promotes collaboration, and focuses efforts effectively, serving as a roadmap for advancing teaching practices and professional goals.