
“FROM TRADITIONAL TO HYBRID TEACHING: A SYSTEMATIC REVIEW OF TEACHERS’ PROFESSIONAL DEVELOPMENT NEEDS IN CONTEMPORARY EDUCATION”

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ABSTRACT

With the swift shift from classroom to hybrid teaching, the education system has undergone a significant transformation across the globe, bringing about new requirements for teachers. As hybrid learning models gain popularity, there are still obstacles for educators in the areas of digital literacy, pedagogical adjustment, and instructional effectiveness. So the aim of this study was to review the most important themes that emerged in the literature and that are related to teachers' PD needs when adopting a hybrid approach to teaching. This study followed qualitative and inductive research methodology and employed systematic literature review technique. Major academic databases such as Scopus, Web of Science, ERIC, ScienceDirect and Google Scholar were searched for peer-reviewed journal articles published between the years 2016 and 2026. After applying the criteria for inclusion and exclusion, 42 articles were chosen for detailed analysis. Thematic analysis was used to sift through the collected data and to identify common patterns and themes in the literature.

The results identified five key areas that impact teacher professional learning in hybrid learning settings: development of digital and technological competencies, pedagogical adaptations and instructional redesigns, emotional and workload pressures, institutional and collaborative support systems, and continuous and flexible professional learning. The review also showed that the development of technological, pedagogical and reflective teaching skills, which is supported by continuous institutional and professional support, is essential for effective hybrid teaching. The study concludes that comprehensive, context-sensitive professional development frameworks are needed to improve teachers' readiness and effectiveness in the changing hybrid education contexts.

KEYWORDS: Hybrid teaching; Teacher professional development; Systematic review; Thematic analysis; Digital pedagogy.

1. INTRODUCTION

Educational systems worldwide are evolving rapidly over the past decade, especially since the onset of the COVID-19 pandemic, which has profoundly impacted the way educators and learners engage in the classroom and beyond. Classroom-based learning and teaching has become more and more a hybrid learning and teaching model employing physical classroom, online and technology-mediated learning environment. The hybrid teaching appeared in many cases is synonymous with blended teaching; it is an educational model that combines in-person and online learning to provide flexible and interactive teaching methods (Graham, 2013). This shift has put new expectations on teachers to adjust their teaching methods, technological skills, assessment techniques and classroom management in an environment of digital tools. Consequently, teacher professional development (TPD) is currently a key element in ensuring the successful implementation of hybrid teaching practices.

Teacher professional development refers to organized activities or learning experiences that facilitate teachers' growth in knowledge, teaching methods, professional abilities, and effectiveness in teaching during their careers (Desimone and Garet, 2015). There are many ways to engage in professional development other than traditional workshops and training, such as collaborative learning, digital communities of practice, coaching, reflective teaching, and technology-based learning opportunities. In the context of hybrid teaching, professional development is now more related to digital literacy, online pedagogy, instructional design, student engagement, and the use of educational technologies, among other issues (Trust et al., 2016). The recent research suggests that, especially with online and/or blended learning, educator support is necessary to address the complexities of this learning modality, and this support comes from effective professional development (Ventista and Brown, 2023).

The world of education has seen significant transformations due to the impact of technology and emergency remote learning during the pandemic. In North America and Europe, universities and schools quickly embraced hybrid and online learning systems with enhanced digital infrastructure and institutional investment. Yet, there were certain problems involving the use of technology, digital pedagogy, workload, and student engagement (Li, Hassan and Jalil, 2023). In addition, teachers were found to need ongoing professional development to successfully move from traditional to hybrid teaching.

The shift has been more complicated in Asian contexts, as there are differences in capabilities of

the technological infrastructure, digital accessibility, institutional readiness, and teachers' competency levels. The implementation of hybrid education was faced with noteworthy difficulties in countries like China, India, Sri Lanka, Indonesia and Malaysia, especially in under-resourced and remote educational areas. Governments, educational authorities implemented digital learning initiatives, but teachers had not received sufficient online pedagogy or educational technology integration training. Research in Asian education contexts identified several challenges that teachers faced when using technology, including technological confidence, assessment adaptation, student engagement, and integration of synchronous and asynchronous learning (Huang et al., 2023). Moreover, there were some obstacles in the implementation of hybrid pedagogies that relied on learner-centered approach, as cultural expectations of the teachers' role in teaching were also an obstacle.

Teachers also face various inequities in professional development opportunities given the advent of hybrid education. Teachers working in urban settings may be better equipped with technological resources, institutional support and training in digital skills than those in rural and low-income areas. Especially in developing countries, the effectiveness of the implementation of hybrid teaching is still hampered by the various factors of the internet, the small number of digital devices, and the limited support of policies. Elmahdi and AbdAlgane (2025) highlight recent systematic reviews that highlight the importance of considering the contextual realities, technological readiness, teacher well-being and fostering long-term digital pedagogical competence in sustainable professional development programs.

A second critical point is that there are many current professional development programs that offer technical training, but fail to result in pedagogic change. Although digital platforms may be made available for teachers to use, they may not receive adequate training and support for creating meaningful lessons for blended teaching, on-line collaborative learning, authentic assessments, and meeting the varied needs of learners in an on-line environment. The study suggests that the successful implementation of hybrid teaching needs to integrate the elements of technological knowledge and pedagogical knowledge, as well as content knowledge, which can be understood in terms of the TPACK model (Mishra and Koehler, 2006). Professional development, therefore, should not only be technical in nature, but more long-term, reflective, and practice-based.

Although many studies have been conducted on professional learning in online and blended education, there is a lack of detailed synthesis on the specific professional learning needs of teachers in the shift from traditional to hybrid teaching. Existing literature tends to deal

separately with the aspects of technology integration, challenges of online teaching or effectiveness of digital learning without systematically identifying the themes associated with the teacher professional development needs. In addition, there is a lack of evidence synthesis across educational contexts and geographical regions for the themes. This leads to a major research deficit on how educators' abilities, problems, and supports change as they move to a hybrid learning context.

Hence, the objective of this study is to systematically review the literature to identify and examine the key themes for teachers' professional development needs in the context of transitioning from conventional to blended/alternative learning environments. The study aims to analyze and synthesize current research and literature using thematic analysis and give a full account of the ways in which professional development can help teachers to adapt to the current changes in education. The results of this review are hoped to be used for teacher training, future research, and education policy.

Objectives of the Study

1. To systematically review existing literature on the transition from traditional to hybrid teaching in contemporary education.
2. To identify and analyze the major themes related to teachers' professional development needs within hybrid teaching environments.
3. To examine the challenges, competencies, and support mechanisms influencing teachers' adaptation to hybrid teaching practices across different educational contexts.

2. MATERIALS AND METHODS

2.1 Research Design and Approach

The study used a qualitative research approach and employed an inductive method to learn or synthesize the existing scholarly evidence about teachers' needs for professional development in the process of shifting from traditional classroom-based teaching to hybrid teaching. For this reason, a qualitative approach was deemed suitable because it was intended to uncover patterns, meanings, experiences and emerging themes within the existing literature as opposed to quantify statistical relationships between variables (Creswell and Poth, 2018). The researchers used the inductive orientation to extract themes directly from the reviewed studies without any preconceived theoretical assumptions. This is an appropriate method for systematic reviews that aim to develop conceptual understanding and thematize from a variety of educational settings (Thomas and Harden, 2008).

A systematic literature review (SLR) methodology was used as the study approach. A systematic review is a structured and transparent method for searching, evaluating and synthesizing relevant published research literature on a particular research problem (Snyder, 2019). Systematic reviews use standardized procedures to enhance the credibility, rigor and repeatability of the review process, compared to narrative reviews. Given that the topic of hybrid teaching and teacher professional development has rapidly grown in various educational contexts in recent years, the use of an SLR was an appropriate approach in this study as it creates a need to synthesize current knowledge.

2.2 Literature Search Strategy

The literature search was done in several international academic databases like Scopus, Web of Science, Google Scholar, ScienceDirect and ERIC. These databases have been chosen because they allow access to journal articles in the field of education that are published and high quality. The use of keywords and boolean operators helped narrow down the search process. The most frequently used keywords were: the transition to online teaching, teacher professional development, blended learning, teacher training, digital pedagogy and hybrid teaching.

To capture recent and relevant literature germane to the post-digital educational transformation and the changes in education during the Covid-19 pandemic, the review was restricted to articles published within the 10-year span from 2016 to 2026. The chosen timeframe also relates to the growing scholarly focus after the COVID-19 pandemic on the hybrid learning models. International and Asian contexts were consulted to get a more comprehensive sense of the professional development needs of education systems. To make sure there is contextual diversity and a comparative point of view, studies from countries like China, India, Sri Lanka, Malaysia, Indonesia, the United States, the United Kingdom, and Australia were included.

2.3 Inclusion and Exclusion Criteria

To ensure quality and relevance in the review process, clear criteria for inclusion and exclusion were developed. The following criteria were used to include the articles: (1) peer-reviewed journal articles, (2) studies published in English, (3) studies related to hybrid or blended and online teaching transitions, (4) studies focusing on teacher professional development or teacher competency, and (5) studies published within the selected timeframe. Empirical and conceptual studies were taken into consideration if relevant to the research objectives.

Studies focusing exclusively on the perceptions of students but not on teachers, those that addressed only educational technology and not the professional development aspects, conference abstracts, dissertations, and unpublished manuscripts, and studies that did not provide enough methodological clarity, were excluded. One more step in the screening process

was to remove duplicate articles found in different databases.

In the first step, about 145 articles were found by searching on databases. Duplicate studies and screening titles and abstracts resulted in 78 articles remaining for further evaluation. A full-text evaluation following inclusion criteria identified 42 articles for detailed evaluation. The selected studies were taken as the main data for the systematic review.

2.4 Thematic Analysis

Thematic analysis was used to analyse the selected literature. Thematic analysis is a qualitative analytical technique for the purpose of identifying, condensing and categorizing patterns and/or themes that appear within a data set (Braun and Clarke, 2006). This approach was deemed suitable since the study aimed to investigate the common professional development needs, problems, and skills that are present throughout all contexts and research results.

There were several stages in the thematic analysis. The selected articles were first read several times to get data familiarisation. Second, the meaningful concepts and recurring ideas related to teacher professional development were systematically coded. Third, codes were summarized into categories that have a higher level of abstraction than the codes themselves, for the purpose of creating themes. Lastly, the themes were discussed, developed, and elaborated based on the research purposes and literature. Thematic analysis is an inductive approach that enabled themes to emerge from the reviewed studies that were not limited to the pre-specified categories.

The use of thematic analysis strengthened the study by enabling an in-depth synthesis of complex qualitative findings across multiple contexts. Moreover, it helped to identify key thematic areas such as digital competency development, pedagogical adaptation, technological challenges, emotional resilience, institutional supports, and collaborative professional learning. Thematic analysis was therefore used to analyse the teachers' changing professional learning needs in the context of hybrid learning environments in a rigorous and flexible manner.

3. RESULTS

A thematic analysis of 42 selected studies identified some common themes related to teachers' needs for professional development during the shift to hybrid teaching. The literature surveyed was drawn from various educational settings across the globe, including Asia, Europe, North America, and Oceania, and had a prominent post-COVID-19 period of publications. The results show that the shift to hybrid learning has affected the roles, activities, and expectations of teachers, as well as the responsibilities of institutions. The analysis revealed five major themes: (1) the development of digital and technological skills, (2) pedagogical adaptations and

instructional redesign, (3) issues of teacher confidence and workload, (4) institutional and collaborative support systems, and (5) the increasing relevance of the need for continuous and flexible professional learning.

Development of Digital and Technological Competencies

Among all the themes that were found in the literature reviewed, there was an overwhelming consensus that teachers need to become digitally literate and technological. A number of studies focused on the fact that many teachers were not well prepared technologically to cope with effective management of blended learning. In the initial phases of hybrid and online teaching, teachers in many countries in Europe reported challenges in embedding digital tools into teaching (König et al., 2020). There was also a similar study in Asian settings where teachers faced a challenge with educational software, virtual classroom management and online assessment system (Dhawan, 2020).

Studies in China, India, and Indonesia found the need for teachers to be trained in LMS, digital communication, multimedia integration and how to engage students online (Moorhouse and Wong, 2022). Yet, a lack of technological infrastructure compounds teachers' difficulties in Sri Lanka and other educational settings in the developing world, especially in rural schools where internet connections and devices are less accessible (Rasmitadila et al., 2020). The results indicate that the implementation of hybrid teaching not only needs technical skills but also pedagogical skills in the selection and application of technology.

The importance of the Technological Pedagogical Content Knowledge (TPACK) framework for developing the skills of hybrid teaching was also reflected in several studies. According to Mishra and Koehler (2006), the integration of technology is only effective when technological knowledge, pedagogical knowledge, and content knowledge play together. Thus, the reviewed studies all called for professional development programs that incorporate pedagogy and technology, as opposed to only technical training.

Pedagogical Adaptation and Instructional Redesign

One more important theme that has come forth from the analysis is pedagogical transformation in HYBRID teaching environments. Old-fashioned teacher-centred teaching methods were frequently not suitable for the digital learning environment. Research has shown that professional development on learner-centred practices, collaborative learning approaches, formative assessment and interactive digital pedagogy was required (Trust and Whalen, 2020). Cutri, Mena and Whiting (2020) discovered that teachers faced significant obstacles in the

process of redesigning their lessons for hybrid instruction as online learning contexts demanded a different approach to the structure of instruction than traditional ones. The teachers' role was to synchronize and use a mix of synchronous and asynchronous learning but also to ensure the students' participation and engagement. Likewise, Hodges et al. (2020) noted that during the pandemic emergency remote teaching, there were significant differences between teachers' readiness to teach remotely.

The literature also showed that with the development of hybrid teaching, the importance of differentiated teaching and flexible learning design has been enhanced. Adapting to the needs of a wide variety of learners and operating two classrooms at once. Meeting the needs of the variety of learners and having to deal with 2 classrooms at once. Research conducted in Australia and the UK indicated that PD programs specifically designed around digital pedagogy, engaging students and adapting assessment methods had a positive impact on the confidence and instructional effectiveness of teachers (Philipsen et al., 2019).

Moreover, some studies highlighted that the assessment practices have to be significantly changed in the context of hybrid learning. Academic integrity, participation assessment and authentic assessment online were commonly cited challenges by teachers (Moorhouse, 2020). As such, professional development programs gradually came to emphasize formative assessment strategies, digital feedback mechanisms, and project-based learning approaches.

Teacher Confidence, Emotional Challenges, and Workload

Teachers also experienced high emotional and psychological pressures as a result of the shift to blended learning. A range of studies has documented that educational change at fast pace has been linked to higher levels of stress, anxiety, uncertainty, and professional burnout. The study results by MacIntyre et al. (2020) revealed that teachers felt greater emotional stress from the technology adaptation, workload, and instructional effectiveness concerns.

Teachers noted their difficulties with learning content preparation, technology management, communication with students, and institutional expectations in several Asian countries (Jelińska and Paradowski, 2021). Teachers had to invest much more time in preparing teaching materials, recording lessons, and dealing with technical problems due to the sudden switch to hybrid teaching. This added stress adversely impacted the well-being of teachers and their professional satisfaction.

Moreover, the literature showed that the teachers' self-efficacy for Hybrid teaching was significantly related to their experiences with technologies and their access to professional support. Previous experience with digital training programs was correlated with teachers'

adaptability and resilience in the transition process (Ertmer and Ottenbreit-Leftwich, 2019). In contrast, the teachers who were not very exposed to digital resources had lower feelings of self-efficacy and less acceptance of hybrid teaching.

Emotional support and well-being of teachers in professional development was brought to light in several studies. A growing body of research indicates that, in addition to technological and pedagogical skills, psychological resilience, stress management and work-life balance are also essential areas that need to be included in professional learning for sustainability (Kim and Asbury, 2020).

Institutional Support and Collaborative Professional Learning

Another key point that was raised in regard to the effectiveness of teachers' transition to hybrid learning was institutional support. Administrative leadership, technical assistance, allocation of resources, and policy guidance were all found in all of the studies reviewed to be critical factors in the successful professional adaptation process.

Trust et al. (2016) found that collaborative professional learning communities was an effective method for teachers to share knowledge, address instructional issues, and share digital teaching practices. Teachers with experience of peer mentoring, online community of practice and collaborative workshops showed greater professional confidence and innovation in the hybrid context of teaching.

Singapore and Malaysia studies indicated that better institutional leadership and professional development systems in the schools were more effective at supporting teachers in educational transitions (Tan, 2021). Investment in digital infrastructure, training programs and technical support services in institutions, greatly enhanced teachers' capacity to effectively implement hybrid learning strategies.

The literature also suggested that professional development worked best when it was ongoing, embedded in the context of the lesson, and applied to actual practice as opposed to traditional one-off workshops. Darling-Hammond, Hyler and Gardner (2017) noted that PD, collaboration and reflection make a significant impact on the growth of instructional practices and teacher competence.

Continuous and Flexible Professional Development

The last theme emerged from the thematic analysis was the increasing need for ongoing and flexible models of professional learning. The studies reviewed indicated that one-off training sessions were not adequate for the changing needs in hybrid teaching. Rather, teachers needed

ongoing professional development opportunities that would be flexible in front of developing new technologies and teaching methods in the field of education.

Others mentioned the benefits of self-directed learning, online professional development, webinars, mentoring, and micro-credentialing systems for teacher development (Rapanta et al., 2020). Flexible professional learning modalities enabled teachers to build their skills as they went and to work through context-specific issues in their institutions.

In addition, research highlighted reflective teaching and lifelong learning culture among teachers as the area of professional development. Teachers had to have more opportunities to assess the effectiveness of their teaching, to try out new teaching techniques, and to continue to investigate new ways of teaching. This result is consistent with a shift from being a static profession to a more dynamic and adaptive professional practice in digital education environments.

In summary, the analysis shows that the shift from a traditional to a hybrid teaching approach has significantly impacted teachers' professional development needs. The literature reviewed clearly suggests that successful hybrid education requires a robust support system for teachers that combines technical training, pedagogical transformation, emotional strength and supportive cooperation.

4. DISCUSSION

The aim of the identified research problem was addressed by carrying out this systematic review by comprehensively reviewing teachers' professional learning needs in the shift to blended learning. The study met the goals by systematically reviewing the literature on recent research, finding thematic areas with a focus on teacher professional development, and analysing the problems and measures affecting teachers' adaptation to hybrid learning contexts. The review was conducted using thematic analysis, which synthesized the results from various educational contexts to present a broad picture of the changes of professional expectations in the era of hybrid teaching.

The results show that teachers have greatly broadened their professional skills in the shift to hybrid teaching. The most salient result that emerged was the increased role of digital and technological skills. In both developed and developing educational environments, teachers encountered significant issues in incorporating educational technologies, conducting virtual classrooms and assisting with online engagement. This aligns with the previous arguments that digital competency is a key aspect of the teaching profession in the current day and age, not a choice (Mishra and Koehler, 2006). The results also indicate that professional learning

programs with only technical training content are not enough for developing effective hybrid teaching practices.

Another significant discovery was the requirement to make pedagogical adjustments and redesign instructional practices. Teachers needed to shift from teacher-centered to learner-centered, and technology-enhanced teaching and learning approaches. The review showed that the mixture of in-person and online teaching requires a range of skills in collaborative learning design, digital assessment, differentiated instruction, and student engagement strategies. The study's results are consistent with recent studies that highlight the interdependence of pedagogy, technology, and reflective teaching in the context of effective hybrid education (Philipsen et al., 2019).

The study additionally established emotional and psychological challenges of educational transformation. The increased workload, stress, uncertainty, and decreased professional confidence also appeared in a consistent manner in the studies reviewed. The findings reveal that teacher professional development should not only be focused on technical and pedagogical skills but also teacher well-being, resilience and emotional support. The importance of institutional leadership and professional learning communities for their collaborative efforts was also determined to play a pivotal role in enabling successful adaptation to hybrid teaching. Furthermore, the results reveal the need for context specific and ongoing professional development for sustainable educational change. Mentoring, peer collaboration, online professional learning communities, and self-directed digital training were identified as flexible learning opportunities that can greatly increase the confidence and effectiveness of teachers. Based on that, it is not only significant to enrich the existing knowledge but also thematic synthesis of the changing needs of professional development with hybrid education. The review also provides practical recommendations for the policy makers, educational institutions and trainers who want to enhance the hybrid teaching practice in various educational environments.

5. CONCLUSION

The shift from traditional teaching to hybrid teaching has brought about a dramatic change in the way education is taught and given, and has also profoundly changed teachers' professional development needs. Thematic areas identified in this systematic review that have the greatest influence on teacher adaptation in the hybrid learning environment are: developing digital competency, pedagogical transformation, emotional resilience, institutional support, and continuous professional learning. The results indicate that teachers need extensive and ongoing

professional development in order to integrate technology and effective teaching into the learning process.

The study also revealed that, during the switch to hybrid teaching, many educators around the world found it difficult to handle technological readiness, to redesign their instruction, to manage their workload or to engage their students. These obstacles were especially acute in the context of educational environments with limited technologies and institutional support. As a result, professional learning programs with a contextually grounded and collaborative approach that can tackle the technical and emotional aspects of teaching transformation are highlighted. In summary, this research is a valuable contribution to the ongoing educational research literature as a synthesis of current findings on the changing needs of teachers' professional learning in the context of a hybrid education. The results offer implications for teachers and teacher educators as well as policy makers to develop sustainable professional development programs that enable effective hybrid teaching. With the increasing global adoption of hybrid education, teacher preparedness and adaptability will continue to be vital in supporting education that is of high quality and inclusive.

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