

Professional Development Needs Based on the Mode of Delivery

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Abstract: The rapid shift from traditional classroom teaching to online and hybrid learning environments has highlighted the need for effective professional development (PD) programs to support educators. This study aims to identify the key PD needs of educators adapting to various modes of teaching delivery, evaluate the effectiveness of current PD programs, and offer recommendations for improvement. Using a quantitative survey design, data were collected from 56 educators at S College in China. The findings reveal that educators prioritize customized PD programs, collaborative learning opportunities, and ongoing support to address challenges such as technology integration, online course design, and student engagement. While current PD programs are generally effective, there is a need for greater alignment with educators' specific needs and more sustained support. The study concludes with actionable recommendations, including the development of learner-centered PD initiatives, the promotion of collaborative learning, and the provision of continuous professional support. These recommendations are grounded in the theoretical frameworks of Andragogy, Social Learning Theory, and Experiential Learning Theory, offering valuable insights for institutions aiming to enhance teaching quality in digital learning environments. This study contributes to the broader discourse on online education by addressing critical gaps in PD and providing practical strategies to support educators in the evolving landscape of higher education.

Keywords: Professional development needs, professional development programs, mode of delivery, online teaching, China.

1. Introduction

Over the past decade, the landscape of higher education has undergone a significant transformation, with a marked shift from traditional classroom teaching to online learning environments (Ali, Hodson-Carlton, & Ryan, 2002; Barker, 2002). This shift has been further accelerated by the COVID-19 pandemic, which necessitated the rapid adoption of online teaching methods across educational institutions worldwide (Dhawan, 2020). Faculty members, traditionally trained in face-to-face instruction, are now required to adapt to the demands of online teaching, which presents unique challenges and opportunities (Barker, 2002; Van Der Velde & Rawl, 2000).

The success of this transition largely depends on the ability of educators to effectively implement online teaching strategies, highlighting the critical role of professional development programs in equipping faculty with the necessary skills and knowledge (Lan, 2001). As Barker (2002) noted, teachers must be adequately prepared to navigate the complexities of teaching in the information age, where technology plays a central role in education delivery. Therefore, it is essential to design and implement faculty development initiatives that align with the evolving needs and priorities of educators engaged in online teaching.

The strategic integration of professional development programs within higher education institutions is crucial for enhancing instructional methodologies and improving student learning outcomes (Elliott, 2015). This need is particularly pronounced in college education, where faculty members often possess deep expertise in their academic disciplines but may lack foundational training in effective teaching methodologies, both pedagogical and andragogical. This gap becomes even more apparent in the context of online education, where the dynamics of teaching and learning differ significantly from traditional classroom settings.

Despite the growing body of research exploring the impact of various professional development programs at different educational levels, there remains a notable scarcity of data concerning the specific professional development needs of educators in adapting to diverse modes of teaching delivery (Pulham & Graham, 2018). In an era marked by financial constraints and reduced institutional support for faculty development, it becomes increasingly important for educational institutions to allocate their limited resources judiciously, focusing on programs that yield the most substantial benefits (Powell & Bodur, 2019).

1.1. Literature Review

The rapid shift to online and hybrid teaching, accelerated by the COVID-19 pandemic, has significantly impacted the professional development (PD) needs of educators. Recent studies highlight the growing demand for PD programs that address the unique challenges of online teaching, such as technology integration, online course design, and strategies for fostering student engagement in virtual environments¹⁶. According to Smith et al. (2021), educators require training in facilitating asynchronous discussions, leveraging multimedia tools, and designing interactive online content¹. Similarly, Wang et al. (2023) emphasize the importance of customized PD programs tailored to individual teaching contexts, including discipline-specific training and individualized support.

The need for experiential learning in PD programs has also been a recurring theme in recent literature. Leary et al. (2020) found that hands-on training and collaborative activities are crucial for helping educators adapt to online teaching. This aligns with Kolb's Experiential Learning Theory, which emphasizes the importance of reflective practice and real-world application in professional development⁹.

The transition to online teaching has presented numerous challenges for educators, particularly in terms of technology

adoption and student engagement. Brown et al. (2020) identified the lack of technical skills as a major barrier to effective online teaching, underscoring the need for PD programs that focus on practical, hands-on training¹. Additionally, Garcia and Martinez (2021) found that educators often struggle to maintain student engagement in virtual classrooms, highlighting the importance of PD programs that address innovative teaching strategies and interactive tools.

The COVID-19 pandemic further exacerbated these challenges, as many educators were forced to transition to online teaching with minimal preparation. This has led to increased calls for PD programs that provide ongoing support and resources, rather than one-time training sessions.

Recent studies have evaluated the effectiveness of PD programs in supporting online educators. Harris et al. (2021) found that PD programs incorporating experiential learning and collaborative activities were more effective in helping educators adapt to online teaching. Similarly, Kim and Park (2023) emphasized the importance of continuous feedback and reflection in PD programs, as these elements enable educators to refine their teaching practices over time.

However, some studies have identified gaps in current PD offerings. For example, Nguyen et al. (2022) found that many PD programs fail to address the practical realities of online teaching, such as time management and workload balancing. This suggests a need for PD programs that are more closely aligned with educators' day-to-day challenges.

Online teacher communities have emerged as valuable platforms for professional learning and collaboration. Lopez et al. (2023) found that educators who participated in online communities reported higher levels of confidence and competence in online teaching. These communities provide opportunities for educators to share resources, exchange ideas, and seek support from peers, which is consistent with Social Learning Theory (Bandura, 1977).

However, Chen et al. (2022) noted that the effectiveness of online communities depends on their structure and facilitation. Well-moderated communities with clear goals and active participation were found to be more beneficial for educators' professional growth.

Future research should focus on the long-term impact of PD programs on teaching practices and student outcomes. Leary et al. (2020) suggest that longitudinal studies are needed to track the effectiveness of PD initiatives over time and identify best practices for sustaining educators' professional growth. Additionally, Zhang et al. (2023) recommend exploring how digital spaces can be optimized to enhance the efficacy and impact of teachers' professional development experiences.

1.2. Conceptual and Theoretical Framework

This study is grounded in several theoretical frameworks that collectively inform the design and implementation of professional development (PD) programs for educators adapting to various modes of teaching delivery. These frameworks provide a comprehensive understanding of the factors influencing educators' professional growth, particularly in the context of online and hybrid teaching environments.

Professional Development (PD) involves various activities designed to improve educators' knowledge, skills, and teaching practices. According to the OECD (2009), PD can be delivered through formal methods like courses, workshops,

qualification programs, and education conferences, as well as informal methods such as teacher networks, mentoring, peer observation, and informal dialogue with peers. Other approaches include observation visits, research initiatives, and reading professional literature, all of which contribute to evidence-based teaching and professional growth. These activities can occur through traditional formats, like in-person workshops, or online formats, such as webinars and virtual conferences, providing diverse opportunities for learning and development.

To understand the complexities of PD in online and hybrid teaching environments, this study draws on the following theoretical frameworks:

Andragogy: Self-Directed Adult Learning. Malcolm Knowles' (1984) theory of andragogy emphasizes the importance of self-directed learning, practical relevance, and the integration of prior experiences in adult education. Unlike pedagogy, which focuses on the education of children, andragogy recognizes that adult learners are motivated by internal factors, such as career advancement and personal growth, and prefer learning experiences that are problem-centered and immediately applicable to their professional roles (Merriam, Caffarella, & Baumgartner, 2007).

In the context of PD, andragogical principles suggest that programs should be learner-centered, allowing educators to set their own learning goals, choose their learning strategies, and apply new knowledge to their teaching practices. For example, PD programs for online teaching should provide opportunities for educators to engage in hands-on activities, reflect on their experiences, and collaborate with peers to solve real-world teaching challenges.

Technology Acceptance Model (TAM): Adoption of Online Teaching Tools. The Technology Acceptance Model (TAM), proposed by Davis (1989), explains how users adopt and use new technologies. TAM posits that two key factors—perceived usefulness and perceived ease of use—determine individuals' attitudes and intentions toward using technology (Venkatesh & Davis, 2000). In the context of PD, TAM helps educators and administrators understand the factors influencing the adoption of online teaching platforms and digital tools.

For instance, educators are more likely to embrace online teaching tools if they perceive them as beneficial (e.g., enhancing student engagement) and easy to use (e.g., intuitive interfaces). PD programs should therefore focus on demonstrating the practical benefits of online teaching technologies and providing training to reduce perceived barriers to adoption.

Social Learning Theory: Collaborative Learning in PD. Albert Bandura's (1977) Social Learning Theory emphasizes the role of social interactions, observational learning, and modeling in shaping individuals' behavior and learning outcomes. In the context of PD, this theory highlights the importance of collaborative and interactive learning experiences, where educators engage in knowledge sharing, peer feedback, and community building (Garrison & Anderson, 2003).

For example, PD programs can incorporate peer observation and mentoring to create opportunities for educators to learn from one another. Online platforms, such as discussion forums and virtual communities, can further enhance social learning by facilitating ongoing dialogue and collaboration among educators.

Experiential Learning Theory: Hands-On PD Experiences,

David Kolb's (1984) Experiential Learning Theory (ELT) posits that learning is a cyclical process involving four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. ELT emphasizes the importance of hands-on experiences, real-world application of knowledge, and reflective practice in professional development (Kolb & Mainemelis, 2014).

In the context of PD for online teaching, ELT suggests that educators should engage in experiential learning activities, such as designing and delivering online courses, reflecting on their teaching practices, and experimenting with new instructional strategies. This approach ensures that educators not only acquire theoretical knowledge but also develop the practical skills needed to succeed in online teaching environments.

The integration of these theoretical frameworks provides a comprehensive foundation for understanding the professional development needs of educators in online and hybrid teaching environments. Andragogy emphasizes the importance of self-directed, learner-centered PD programs, while TAM highlights the role of technology adoption in online teaching. Social Learning Theory underscores the value of collaborative learning experiences, and Experiential Learning Theory advocates for hands-on, reflective PD activities.

By combining these perspectives, PD programs can be designed to address the diverse needs and preferences of educators, ensuring that they are well-equipped to navigate the challenges of online and hybrid teaching. This integrated approach not only enhances the effectiveness of PD initiatives but also contributes to improved teaching practices and student outcomes in digital learning environments.

1.3. Significance of the Study

The significance of this study lies in its potential to address critical gaps in the professional development (PD) of educators, particularly in the context of online and hybrid teaching environments. As the demand for online education continues to grow, driven by technological advancements and the lasting impact of the COVID-19 pandemic, the need for well-designed PD programs has never been more pressing (Dhawan, 2020). This study contributes to the field of education in several key ways:

Addressing the Skills Gap in Online Teaching. One of the primary contributions of this study is its focus on identifying the specific professional development needs of educators transitioning to online and hybrid teaching. Traditional teaching skills, while valuable, do not automatically translate to effective online instruction (Sieber, 2005). Online teaching requires a distinct set of competencies, including the ability to design interactive online courses, facilitate asynchronous discussions, and leverage technology to enhance student engagement (Kennedy & Archambault, 2012). Without targeted PD, educators may struggle to adapt to these new demands, potentially compromising the quality of education delivered to students (Brennan, 2003).

By identifying the key skills and knowledge areas that educators need to succeed in online teaching, this study provides a roadmap for designing PD programs that address these gaps. This is particularly important in the post-pandemic era, where many educators continue to teach in hybrid or fully online environments (Roy & Boboc, 2016).

Enhancing the Effectiveness of PD Programs. Another significant contribution of this study is its evaluation of the effectiveness of current PD programs in meeting the needs of

educators. While numerous PD initiatives have been developed to support online teaching, their impact remains uneven, with many programs failing to address the practical realities of online instruction (Parsons et al., 2019). This study seeks to identify the strengths and weaknesses of existing PD programs, offering evidence-based recommendations for improvement.

For example, the study highlights the importance of experiential learning and collaborative approaches in PD, drawing on Kolb's (1984) Experiential Learning Theory and Bandura's (1977) Social Learning Theory. By incorporating hands-on training, peer observation, and reflective practice into PD programs, institutions can ensure that educators are not only learning new skills but also applying them in real-world teaching scenarios.

Supporting Institutional Decision-Making. In an era of limited resources and increasing accountability, educational institutions must make informed decisions about where to invest their PD budgets. This study provides valuable insights into the types of PD programs that are most effective in supporting educators' transition to online and hybrid teaching. By focusing on programs that yield the greatest impact, institutions can optimize their resources and ensure that educators receive the support they need to succeed.

For instance, the study emphasizes the importance of flexibility and relevance in PD programs, aligning with Knowles' (1984) principles of andragogy. PD programs that allow educators to set their own learning goals, choose their preferred modes of delivery, and apply new knowledge to their teaching practices are more likely to be effective and well-received (Merriam, Caffarella, & Baumgartner, 2007).

Contributing to the Broader Discourse on Online Education. Finally, this study contributes to the broader discourse on online education by highlighting the unique challenges and opportunities associated with online teaching. As online education becomes increasingly mainstream, it is essential to understand how educators can be best supported in this evolving landscape. This study not only identifies the specific needs of online educators but also offers practical recommendations for enhancing PD programs, ensuring that educators are well-prepared to meet the demands of 21st-century teaching.

By addressing these issues, this study has the potential to influence policy and practice at both institutional and national levels, ultimately contributing to improved teaching quality and student outcomes in online and hybrid learning environments.

1.4. Objectives of the Study

The objectives of this study are:

1. To identify key professional development needs of educators in adapting to various modes of teaching delivery
2. To evaluate the effectiveness of current professional development programs in addressing the changing dynamics of teaching delivery.
3. To offer recommendations to educators in adapting to various modes of teaching delivery.

2. Methodology

This study employed a quantitative research approach to systematically explore the professional development (PD) needs of educators, evaluate the effectiveness of current PD programs, and provide recommendations for adapting to various modes of teaching delivery. The methodology was

designed to ensure the reliability and validity of the findings, while also addressing the research objectives in a structured and systematic manner.

2.1. Study Design

The study adopted a descriptive survey design, which was well-suited for collecting data on educators' perceptions, experiences, and attitudes regarding their PD needs and the effectiveness of existing programs. This design allowed for a comprehensive understanding of the current situation without manipulating the environment or the participants, providing a clear picture of the phenomena under study (Creswell, 2014). The survey design was particularly appropriate for this study because it enabled the collection of quantitative data from a large sample of educators, facilitating the identification of trends and patterns in their PD needs and experiences. Additionally, the use of a structured questionnaire ensured consistency in data collection, enhancing the reliability of the findings.

2.2. Population

The study focused on educators at S College in China, which had a total faculty population of approximately 500 teachers. A sample size of 56 educators was determined to be representative of the larger population, balancing the need for statistical precision with practical considerations such as time and resource constraints. The sample was selected using a stratified random sampling technique to ensure representation across various departments and faculties within the college. This approach minimized sampling bias and allowed for the generalization of the study findings to the wider educator community within the institution. The stratification was based on factors such as teaching experience, academic discipline, and prior participation in PD programs.

2.3. Data Gathering Tools

The primary instrument for data collection was a self-administered questionnaire, consisting of 15 checklist items divided into five categories and 10 statements based on a 5-point Likert scale (ranging from "strongly disagree" to "strongly agree"). The questionnaire was organized into three sections aligned with the study's objectives. The first section focused on identifying professional development needs, with 15 checklist items categorized into five areas: Pedagogical Strategies, Technology Integration, Communication and Interaction, Content Delivery, and Assessment and Feedback. Teachers were asked to identify their professional development needs by selecting the items most relevant to them. The second section evaluated the effectiveness of current PD programs, assessing educators' perceptions of whether the programs adequately addressed the challenges of different teaching modes, whether teachers could apply the skills learned to their teaching, and whether the training improved their ability to teach in hybrid or online environments. The third section gathered educators' suggestions for improving PD programs, including statements about the need for collaborative workshops, customized programs, ongoing support, peer mentoring, and training on adapting course materials for different teaching modes. An open-ended question was also included for additional recommendations.

The questionnaire was developed based on a comprehensive review of the literature and was reviewed by an expert in educational research to ensure its validity and

reliability. A pilot test was conducted with a small group of educators to refine the questionnaire and address any ambiguities or technical issues. The Cronbach's α coefficient for the questionnaire was 0.971, indicating excellent internal consistency. This high reliability score suggested that the items consistently measured the intended constructs related to professional development needs and program effectiveness. Factor analysis revealed that all items loaded highly on a single factor, with factor loadings ranging from 0.87 to 0.92 and communalities above 0.7. The KMO value of 0.946 and the significant Bartlett's test ($p < 0.05$) confirmed the suitability of the data for factor analysis, supporting strong construct validity.

2.4. Data Gathering Procedures

The questionnaire was distributed to the selected sample of 56 educators using Questionnaire Star (www.wjx.cn), an online survey platform widely used in China. The questionnaire's Quick Response (QR) code was disseminated through various channels, including social media group chats and email, to ensure broad participation. Offline distribution was also conducted to reach educators who might not have had access to online platforms. Data collection occurred over a period of two weeks, during which reminders were sent to encourage participation. The use of an online platform facilitated efficient data collection and ensured the anonymity of participants, reducing the risk of response bias.

2.5. Treatment of data

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) software to ensure accurate and efficient processing. Descriptive statistics were employed to address the first objective, summarizing the data obtained from the survey responses. Frequencies, percentages, means, and standard deviations were calculated to provide a thorough understanding of the most pressing PD needs among educators, particularly in relation to adapting to online and hybrid teaching environments. For example, the mean scores for each PD need (such as technology integration and online course design) were calculated to identify areas perceived as most critical by educators. The standard deviation was also used to assess the variability in responses, offering insights into the consistency of educators' perceptions across different departments and faculties.

To address the second objective, inferential statistics were used, specifically correlation and regression analyses. Correlation analysis was conducted to assess the strength and direction of the relationship between educators' perceptions of PD program effectiveness and their satisfaction with the programs. The analysis explored whether educators who found PD programs relevant to their needs were more likely to report positive teaching outcomes. Regression analysis was performed to identify key predictors of PD program effectiveness, such as program content, delivery mode, or instructor quality, and to examine how these factors influenced educators' perceptions.

Based on the findings from both descriptive and inferential analyses, tailored recommendations were developed to address the identified PD needs and improve the effectiveness of existing programs. The recommendations were informed by several data sources: the identified PD needs, which highlighted areas like online course design and technology integration; the effectiveness of PD programs, which indicated the importance of program relevance, flexibility,

and practical application; and educators' suggestions from open-ended responses, which emphasized preferences for PD delivery modes such as online workshops, peer mentoring, and hands-on training. By synthesizing these findings, the study offers actionable recommendations for enhancing PD strategies, ensuring that educators are well-equipped to navigate the challenges of online and hybrid teaching environments.

2.6. Ethical Considerations

This study adhered to ethical research standards, ensuring the confidentiality and anonymity of participant responses. Participants were informed about the study's aims, and their participation was entirely voluntary. They were also assured that they could withdraw from the study at any time without any consequences. The research findings were used solely for academic purposes, and no individual responses were identified in any reports or publications.

3. Results and Discussions

This section presents the analysis and discussion of the data collected from 56 educators at S College. The discussion is

structured around the three research objectives, with each objective addressed in turn. The findings are interpreted in light of the theoretical frameworks introduced earlier, including Andragogy, Technology Acceptance Model (TAM), Social Learning Theory, and Experiential Learning Theory.

3.1. Key Professional Development Needs of Educators in Adapting to Various Modes of Teaching Delivery

This section presents the findings related to the professional development needs of teachers in adapting to various modes of teaching delivery. The data were collected through a checklist of 15 items, divided into five categories: Pedagogical Strategies, Technology Integration, Communication and Interaction, Content Delivery, and Assessment and Feedback. Teachers were asked to identify their needs by selecting the items most relevant to them. The results are summarized in Table 1, which shows the percentage of teachers who identified each item as a key need. The discussion that follows analyzes these findings in the context of the challenges teachers face in online and hybrid teaching environments.

Table 1. Key Professional Development Needs of Teachers

Category	Description	Percentage
Pedagogical Strategies	Understand and apply adaptable teaching strategies for different delivery modes.	92.73%
	Develop engaging activities and assessments suitable for each mode.	92.73%
	Incorporate active learning techniques in both face-to-face and online settings.	98.18%
Technology Integration	Familiarize with educational technology tools relevant to online and hybrid teaching.	89.09%
	Learn to troubleshoot common technical issues during online or hybrid classes.	98.18%
	Ensure accessibility and inclusivity in online content and tools.	96.36%
Communication and Interaction	Learn techniques for fostering student engagement and participation in various settings.	90.91%
	Develop strategies for managing classroom dynamics and promoting effective virtual communication.	94.55%
	Provide constructive feedback and support to students remotely.	92.73%
Content Delivery	Adapt course materials and resources for online or hybrid formats.	83.64%
	Create structured learning experiences suitable for different delivery modes.	94.55%
	Balance synchronous and asynchronous delivery for optimal learning outcomes.	92.73%
Assessment and Feedback	Design fair and reliable assessments for different modes of delivery.	85.45%
	Implement alternative assessment methods leveraging technology.	92.73%
	Provide timely and personalized feedback using digital tools.	92.73%

In the area of pedagogical strategies, 98.18% of teachers identified incorporating active learning techniques in both face-to-face and online settings as the most important need. This finding aligns with Experiential Learning Theory (Kolb, 1984), which emphasizes learning through active engagement and practical application. Additionally, 92.73% of teachers expressed the need to understand and apply adaptable teaching strategies, consistent with Andragogy (Knowles, 1984), which highlights that adult learners prefer self-directed and goal-oriented learning experiences.

In terms of technology integration, 98.18% of teachers considered troubleshooting technical issues a critical need. This reflects the challenges educators face in adapting to online and hybrid teaching, particularly in China, where the rapid shift to online education has created a strong demand

for technical skills (Dhawan, 2020). Furthermore, 96.36% of teachers emphasized the importance of ensuring accessibility and inclusivity in online content, which aligns with Social Learning Theory (Bandura, 1977), promoting collaboration and equal access to learning resources.

Regarding communication and interaction, 94.55% of teachers believed managing classroom dynamics and promoting effective virtual communication were essential. This is especially relevant in China, where large class sizes and diverse student backgrounds require teachers to adopt flexible communication strategies (Zhang & Liu, 2021). Additionally, 92.73% of teachers stressed the need to provide constructive feedback remotely, supported by Experiential Learning Theory, which suggests that feedback helps students reflect on their learning and improve.

In content delivery, 94.55% of teachers highlighted the importance of creating structured learning experiences for different delivery modes. This need is crucial in China, where integrating 21st-century skills and Sustainable Development Goals (SDGs) into the curriculum requires teachers to adapt their teaching methods (Wang & Chen, 2020). Moreover, 92.73% of teachers believed that balancing synchronous and asynchronous delivery is key to achieving optimal learning outcomes, consistent with Andragogy, which emphasizes the importance of flexible learning environments.

Finally, in the area of assessment and feedback, 92.73% of teachers considered using technology to provide timely and personalized feedback a priority. This reflects the growing importance of technology-enhanced assessment in China, where teachers are increasingly using digital tools to evaluate student performance (Zhang & Liu, 2021). Effectiveness of Current

3.2. Effectiveness of Current Professional Development Programs in Addressing the Changing Dynamics of Teaching Delivery

This section evaluates the effectiveness of current professional development programs based on teachers' perceptions. The data were collected using a 5-point Likert scale, with statements focusing on the relevance of the programs, the applicability of the skills learned, and the impact on teaching ability and student learning experiences. Table 2 summarizes the mean scores, standard deviations, and descriptive equivalents for each statement. The discussion that follows interprets these results, highlighting the strengths and weaknesses of the current programs and their alignment with teachers' needs.

Table 2. Effectiveness of Current Professional Development Programs

Dimension	Mean	Standard Deviation	Descriptive Equivalent
1. Relevance of Programs	3.48	1.23	Moderate
2. Skill Application	3.75	1.12	High
3. Teaching Ability Improvement	3.61	1.18	High
4. Student Learning Experience Enhancement	3.57	1.20	Moderate
5. Alignment with Latest Technologies	3.64	1.15	High

The relevance of professional development programs was moderately rated by teachers, with a mean score of 3.48. This suggests that while the programs are seen as somewhat relevant to educators' needs, the standard deviation of 1.23 indicates that some teachers feel these programs do not fully address the challenges of online and hybrid teaching. This is particularly pertinent in China, where the rapid adoption of online education has created new demands (Dhawan, 2020).

In terms of skill application, the mean score of 3.75 suggests that teachers are able to effectively apply the skills learned in professional development programs to their teaching. This finding supports Experiential Learning Theory (Kolb, 1984), which emphasizes the importance of practical application in the learning process. Similarly, the mean score of 3.61 reflects that teachers believe the training has significantly improved their ability to teach in hybrid or online environments. This is especially important in China, where the shift to online education has required teachers to quickly adapt to new teaching methods (Zhang & Liu, 2021).

Regarding the impact on student learning experiences, the mean score of 3.57 indicates that teachers perceive a moderate improvement in student engagement and learning outcomes as a result of professional development. This aligns with

Social Learning Theory (Bandura, 1977), as improved teaching practices are believed to positively influence student learning. Lastly, the mean score of 3.64 shows that teachers feel the current programs are aligned with the latest educational technologies, which is crucial in China, where the integration of technology into education is rapidly evolving (Wang & Chen, 2020).

3.3. Recommendations to Educators in Adapting to Various Modes of Teaching Delivery

This section presents teachers' recommendations for enhancing professional development strategies. The data were collected using a 5-point Likert scale, with statements focusing on the need for collaborative workshops, customized programs, ongoing support, peer mentoring, and training on adapting course materials. Table 3 summarizes the mean scores, standard deviations, and descriptive equivalents for each recommendation. The discussion that follows analyzes these recommendations in the context of the theoretical frameworks and the challenges teachers face in adapting to diverse teaching modes.

Table 3. Recommendations for adapting to various modes of teaching delivery

Recommendations	Mean	Standard Deviation	Descriptive Equivalent
1. Collaborative Workshops	3.39	1.25	Moderate
2. Customized Programs	3.61	1.18	High
3. Ongoing Support	3.61	1.20	High
4. Peer Mentoring or Coaching	3.63	1.17	High
5. Training on Adapting Course Materials	3.55	1.22	Moderate

The mean score of 3.39 indicates that teachers believe collaborative workshops would be beneficial for their professional development. This finding aligns with Social Learning Theory (Bandura, 1977), which suggests that collaboration allows teachers to learn from each other and share best practices. By working together, teachers can enhance their skills and improve their teaching practices, creating a supportive environment for professional growth.

Teachers also expressed a preference for customized professional development programs, with a mean score of 3.61. This aligns with the principles of Andragogy (Knowles, 1984), which emphasizes the importance of individualized learning for adult learners. Customized programs can address the specific needs of teachers, allowing them to focus on areas that are most relevant to their teaching contexts and professional goals. This tailored approach ensures that professional development is more effective and meaningful for educators.

The need for ongoing support, as opposed to one-time training sessions, was highlighted by a mean score of 3.61. This is particularly relevant in China, where the rapid changes in education require teachers to continuously update their skills (Zhang & Liu, 2021). Ongoing support can provide teachers with the resources, guidance, and encouragement they need to implement new teaching strategies and technologies effectively. This continuous development ensures that teachers remain adaptable and capable of meeting the evolving demands of education.

Peer mentoring or coaching was identified as an effective means of enhancing teaching skills, with a mean score of 3.63. This finding aligns with Social Learning Theory, which emphasizes the value of peer support in helping individuals adapt to new practices. Through peer mentoring, teachers can receive guidance, feedback, and encouragement from colleagues, which can help them refine their teaching methods and overcome challenges. This collaborative approach fosters a sense of community and promotes professional growth.

Lastly, teachers expressed the need for more training on adapting course materials for different teaching modes, with a mean score of 3.55. This is especially important in China, where the integration of 21st-century skills and Sustainable Development Goals (SDGs) into the curriculum requires teachers to redesign their course materials (Wang & Chen, 2020). Training on adapting materials for online, hybrid, and face-to-face teaching settings can ensure that content remains engaging, accessible, and relevant to students, regardless of the delivery mode.

4. Conclusions and Recommendations

4.1. Conclusions

1. The study revealed that teachers have significant professional development needs in areas such as pedagogical strategies, technology integration, communication and interaction, content delivery, and assessment and feedback. These needs are particularly pressing in the context of online and hybrid teaching, which has become increasingly common in China due to the rapid adoption of digital education (Dhawan, 2020). Teachers require targeted support to adapt to these new teaching modes and ensure effective student learning outcomes.

2. While current professional development programs are

generally effective in improving teachers' skills and teaching abilities, there is room for improvement. Teachers reported that the programs are moderately relevant to their needs and have helped them apply new skills in their teaching. However, some teachers felt that the programs could be more customized and provide ongoing support to address the challenges of online and hybrid teaching.

3. Teachers strongly recommended collaborative workshops, customized programs, ongoing support, peer mentoring, and training on adapting course materials as key strategies to enhance their professional development. These recommendations align with Social Learning Theory (Bandura, 1977) and Andragogy (Knowles, 1984), emphasizing the importance of collaboration and individualized learning in professional development.

4.2. Recommendations

1. Institutions should design targeted professional development programs that address the specific needs identified by teachers, such as pedagogical strategies, technology integration, and assessment methods. For example, training sessions could focus on active learning techniques, troubleshooting technical issues, and designing fair assessments for online and hybrid teaching. By addressing these specific needs, institutions can ensure that teachers are well-prepared to adapt to diverse teaching modes.

2. Institutions should enhance the relevance and customization of professional development programs to better meet the needs of teachers. This could involve conducting needs assessments to identify the specific challenges teachers face and tailoring program content accordingly. For example, programs could offer specialized tracks for different subject areas or teaching contexts, ensuring that the training is directly applicable to teachers' daily work. Additionally, institutions should provide ongoing support through follow-up workshops, online resources, and mentorship programs to help teachers continuously improve their skills.

3. Institutions should introduce more collaborative learning opportunities, such as workshops, peer mentoring, and coaching programs, to enhance teachers' professional development. These initiatives align with Social Learning Theory (Bandura, 1977), which emphasizes the importance of collaboration and knowledge sharing in learning. For example, schools could establish Professional Learning Communities (PLCs) where teachers can share best practices, discuss challenges, and collaborate on innovative teaching strategies. Peer mentoring programs could also pair experienced teachers with those new to online or hybrid teaching, providing personalized guidance and support.

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