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## Teacher CPD model integrating TPACK framework with attitude and character knowledge

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### Abstract

This study aimed to develop a comprehensive Teacher CPD (Continuous Professional Development) model integrating the TPACK framework with attitude and character knowledge. The model addressed both cognitive competencies, such as pedagogical, technological, and content knowledge, and non-cognitive competencies, including attitude and character traits. A mixed-methods approach was employed, combining quantitative data from a survey of 1,012 teachers across Indonesia with qualitative data from interviews. The findings reveal that teachers prioritize pedagogical, professional, social, and personality competencies, while also emphasizing the importance of attitude and character for effective teaching. Teachers with strong character traits, such as empathy, responsibility, and integrity, were found to be more effective in integrating technology and fostering positive classroom environments. The study highlights the need for CPD programs to focus on both technical skills and emotional intelligence, offering a more holistic approach to teacher development in the digital age.

### Keywords

Attitude knowledge, character education, teacher competency development (CPD), TPACK framework

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## Introduction

Teacher professional development (CPD) plays a crucial role in enhancing educators' competencies, thereby contributing to the improvement of educational outcomes. According to Law No. 14 of 2005 on Teachers and Lecturers in Indonesia, CPD is a fundamental part of maintaining and enhancing teachers' professional qualifications. CPD programs are intended to foster continuous improvement in teachers' pedagogical skills, knowledge, and competencies, ultimately benefiting students and the broader educational system (Kemendikbud, 2015). However, existing CPD models often emphasize technical skills and pedagogical knowledge, with limited attention to other essential competencies, such as attitude and character.

In recent years, there has been growing recognition of the importance of non-cognitive factors—specifically, teachers' attitudes, character, and social-emotional competencies—in fostering effective teaching and learning. A study by [Tondeur et al. \(2020\)](#) highlights that teacher effectiveness extends beyond technical proficiency to include personal attributes, such as a positive attitude towards learning and ethical behavior, which influence their professional performance. Similarly, research by [Koh et al. \(2013\)](#) suggests that teachers' emotional intelligence, which includes empathy, self-awareness, and social skills, is crucial in shaping classroom dynamics and enhancing student engagement.

Recent research further emphasizes the growing importance of social-emotional skills in teaching practices. Teachers who cultivate empathy, self-regulation, and relationship-building skills are better positioned to create supportive learning environments that promote student well-being and academic success ([Scherer et al., 2021](#)). Moreover, ethical decision-making and moral reasoning are increasingly regarded as foundational to creating a positive, inclusive classroom atmosphere where students feel safe and motivated to learn. As educational landscapes become more diverse, teachers must be prepared not only to manage classroom dynamics effectively but also to address the ethical and emotional needs of students ([Jennings & Greenberg, 2009](#)). These insights underscore the necessity of including attitude and character competencies within teacher development frameworks, ensuring that educators are well-equipped to support the holistic development of their students.

The challenge of integrating non-cognitive skills into traditional CPD models has prompted calls for more comprehensive frameworks that blend technical, emotional, and ethical competencies. The TPACK framework, which focuses on the intersection of content, pedagogy, and technology, provides a solid foundation for understanding the cognitive dimensions of teaching. However, as teaching becomes increasingly digital and interactive, integrating emotional intelligence and ethical conduct into the TPACK model is necessary to address the complexities of modern classrooms. Recent studies suggest that teachers with strong interpersonal skills, coupled with technological proficiency, are more effective in fostering student engagement and navigating the ethical dilemmas posed by new educational technologies ([Chai & Koh, 2020](#)). This evolving approach aligns with the 21<sup>st</sup> century skills framework, which stresses the importance of preparing educators to manage not only cognitive tasks but also social and emotional dynamics in learning environments.

The TPACK (Technological, Pedagogical, and Content Knowledge) framework has become a cornerstone for understanding the integration of technology in teaching. Developed by [Mishra and Koehler \(2006\)](#), TPACK emphasizes the interplay between three primary domains: content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK). While TPACK has been widely used to improve teachers' technological integration in education, it tends to overlook the crucial role of personal and ethical competencies, such as attitude and character. As educational technology becomes more integrated into classrooms, teachers need not only technical expertise but also the emotional and moral disposition to use technology effectively in ways that benefit students ([Chai & Koh, 2020](#)).

This gap in existing CPD models presents an opportunity to integrate personal competencies, such as attitude and character, with the TPACK framework. By doing so, we can create a more comprehensive CPD model that addresses both cognitive and non-cognitive aspects of teacher development. According to [Scherer et al. \(2021\)](#), integrating emotional and ethical competencies into teacher professional development helps build stronger teacher-student relationships, improve classroom management, and foster a positive learning environment.

In addition to improving technical competencies, teacher CPD programs that focus on developing emotional and ethical aspects can help create a more supportive and effective learning environment. Teachers with strong character and a positive attitude are better equipped to manage classroom challenges, foster student motivation, and promote a culture of respect and empathy ([Kianinezhad, 2023](#); [Tang, 2025](#)). Research by [Hattie \(2009\)](#) emphasizes that the teacher-student relationship plays a pivotal role in student achievement, and teachers' emotional competencies are crucial for building this relationship. Furthermore, integrating character and attitude into CPD programs aligns with the broader goal of developing well-rounded educators who are not only skilled in delivering content but also capable of modeling positive behaviors and ethical values for their students ([Zins, 2004](#)). By incorporating these qualities into teacher development, we can better equip educators to navigate the complexities of modern classrooms and ensure that students receive both academic and personal guidance. Therefore, this study's proposed CPD model is not only an academic framework but also a practical tool for enhancing teacher effectiveness in a way that is aligned with the demands of the 21st-century educational environment.

This study proposes a CPD model that combines the TPACK framework with attitude and character knowledge, aiming to bridge the gap between technical skills and personal competencies. The model offers a more holistic approach to teacher development by addressing both the cognitive and emotional aspects of teaching. The study's primary objective is to explore how integrating attitude and character with TPACK can enhance teacher professional development and improve overall teaching effectiveness.

By introducing a comprehensive CPD model that incorporates both TPACK and personal competencies, this study seeks to contribute to the ongoing discussion on how teacher training can be adapted to meet the challenges of the modern educational landscape, where technology and personal attributes are equally important in shaping teaching practices.

## Methodology

This study employs a sequential explanatory mixed-methods research design. This design is effective for investigating research questions by first collecting and analyzing quantitative data, followed by qualitative data collection to further explain or deepen the quantitative findings. The sequential explanatory approach allows for a comprehensive understanding of the research problem by integrating both numerical data and participants' experiences or insights.

In the first phase of the research, quantitative data were collected from teachers using a structured instrument designed to assess their professional competencies in the context of the TPACK framework integrated with Character and Attitude Knowledge. The data were analyzed using Structural Equation Modeling (SEM) to determine the relationships between the competencies. In the second phase, qualitative data were collected through semi-structured interviews with a subset of teachers. The qualitative phase aimed to explore how attitude and character influence the adoption and integration of TPACK in teaching practices. These qualitative insights helped explain the quantitative findings in more detail.

The study follows the stages of research and development outlined by [Borg and Gall \(1983, p. 775\)](#), as cited in [Assyauqi \(2020\)](#), which include: "research and information collecting, planning, developing a preliminary form of product, preliminary field testing, main product revision, main field testing, operational product revision, operational field testing, final product revision, and dissemination and implementation."

The research and development process in this study has been organized into three main stages, which are detailed in Table 1 below. These stages have been adapted from the original ten steps outlined by [Borg and Gall \(1983\)](#) to suit the specific needs of the Teacher CPD Model development using the TPACK framework integrated with Character and Attitude Knowledge.

**Table 1.** *Stages of research and development of the Teacher CPD model*

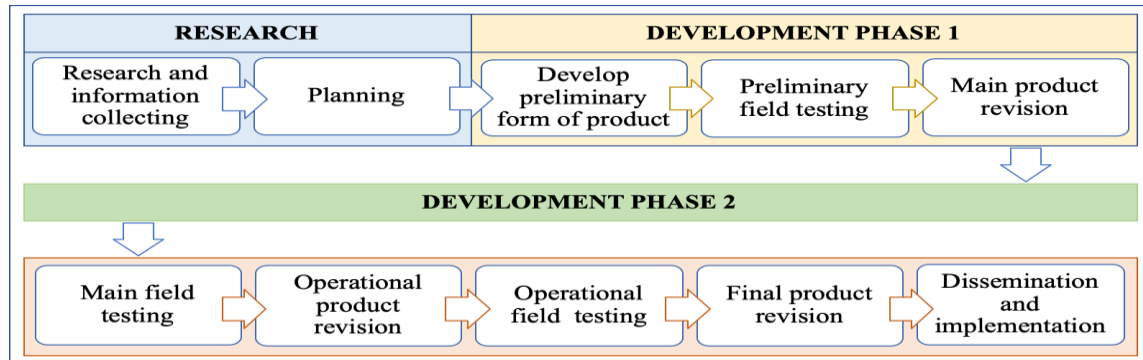
Stages	Research Steps
Research Introduction	1. Research and information collecting 2. Planning
Development Phase 1	1. Develop a preliminary form of the product 2. Preliminary field testing 3. Main product revision
Development Phase 2	1. Main field testing 2. Operational product revision 3. Operational field testing 4. Final product revision 5. Dissemination and implementation

Table 1 divides the research and development process into three major phases. The research introduction phase includes the initial steps of collecting information and planning the study. Development Phase 1 focuses on developing and testing a preliminary form of the product

(the CPD model), followed by revisions based on field testing. Development Phase 2 involves main field testing, final revisions, and the dissemination of the product. Each stage is essential for refining the CPD model and ensuring its relevance and effectiveness in improving teacher professional development.

After presenting the stages in Table 1, the process is illustrated in Figure 1, which visually depicts the research and development model.

**Figure 1.** *Steps of research and development model*



(Source: Borg and Gall (1983) modifications)

Figure 1 visually represents the stages of research and development outlined in Table 1. It provides a simplified flowchart that helps readers understand the cyclical nature of the research process, which includes steps from initial planning and development to final revisions and dissemination. The figure enhances the understanding of how each phase feeds into the next and how the final CPD model was developed and refined throughout the study.

## Findings

This study aimed to address the need for teacher competency development through the integration of the TPACK framework with character and attitude knowledge. To achieve this, a Teacher CPD Needs Instrument was developed, which specifically focuses on assessing the learning needs required by teachers to improve their pedagogical, personal, social, and professional competencies, along with their use of technology in learning.

The instrument is designed to identify and map the areas of teacher competency development within the context of teacher CPD, using the TPACK framework. It incorporates four key knowledge domains, integrating CPD with TPACK, to assess the depth of teachers' needs for competency development across these domains. A total of 1,012 respondents participated in the survey, with teachers from all 38 provinces in Indonesia. Of these respondents, 46.1% had less than 5 years of teaching experience, 23% had between 5 and 10 years, and 30.9% had more than 10 years of teaching experience.

The collected data were analyzed using descriptive analysis to categorize and illustrate the respondents' characteristics and the research variables. Descriptive analysis was applied to both the independent and dependent variables, with subsequent classification based on

respondents' total scores. These scores were used to establish assessment criteria for each statement item in the instrument. The responses were then categorized according to the frequency distribution table, where scores were classified into the following categories: strongly agree, agree, disagree, and strongly disagree. The formula used to calculate the average score is:

$$\text{Average Score} = \frac{\Sigma \text{Questionnaire Answers}}{\Sigma \text{Question} \times \Sigma \text{Respondent}}$$

$$\text{Score Range} = \frac{\text{Highest Value} - \text{Lowest Value}}{\text{Total Value}}$$

$$\text{Score Range} = \frac{4 - 1}{4} = \frac{3}{4} = 0.75.$$

This formula helps compute the mean score by dividing the total of all questionnaire answers by the product of the total number of questions and the total number of respondents. After obtaining the average scores, they were plotted onto a continuum line, reflecting respondents' tendencies in their responses. The score ranges for the assessment criteria were as follows:

**Table 2.** *Score range and score criteria for teacher competency needs*

Score Range	Criteria
1.00 - 1.75	Very Low
1.75 - 2.50	Low
2.50 - 3.25	High
3.25 - 4.00	Very High

Following the score categorization, the Pearson correlation analysis was used to examine the relationships between teacher competencies (pedagogical, professional, social, personality, and technology) and to measure the strength of these relationships. The Pearson correlation coefficient values range from -1 to 1, where a value closer to 1 indicates a stronger positive correlation.

**Table 3.** *Correlation between competency domains and technology integration*

Competency	Professional	Pedagogical	Social	Personality	Technology
Professional	1	0.781**	0.703**	0.723**	0.736**
Pedagogical	0.781**	1	0.690**	0.716**	0.720**
Social	0.703**	0.690**	1	0.857**	0.753**
Personality	0.723**	0.716**	0.857**	1	0.771**
Technology	0.736**	0.720**	0.753**	0.771**	1

Note: Pearson correlation significance at the 0.01 level (2-tailed).

The Pearson correlation values show strong positive relationships between the competency domains, particularly between social and personality competencies ( $r = 0.857$ ), and between pedagogical and professional competencies ( $r = 0.781$ ). These strong correlations indicate that improvements in one competency can positively influence the others. The analysis of teacher competency needs also revealed the priority areas for CPD. The average scores for pedagogical, personality, social, and professional competencies all fall into the high priority category, with mean scores ranging from 3.560 to 3.713, indicating that these competencies are deemed crucial for further development.

**Table 4.** *Competency needs: Means and standard deviations*

Aspect	Mean	Std. Deviation	Category
Pedagogical	3.562	0.545	High Priority
Personality	3.687	0.491	High Priority
Social	3.713	0.478	High Priority
Professional	3.560	0.543	High Priority

The mean scores for all four competencies are above 3.5, confirming that teachers consider these competencies as high priority for development. The small standard deviations indicate that teachers generally share similar views on the importance of these competencies. The mean scores for all four competencies—Pedagogical, Professional, Social, and Personality—exceed 3.5, suggesting that teachers recognize the importance of these competencies and consider them high-priority areas for professional development. The relatively small standard deviations indicate that most teachers share similar views on the significance of these competencies. This consensus highlights the alignment among teachers regarding the fundamental competencies that need to be enhanced to improve teaching effectiveness. It also suggests that a structured CPD program targeting these areas could be highly beneficial for fostering consistent growth across diverse educational settings.

Moreover, the strong emphasis on these competencies reflects the growing recognition that teacher effectiveness is influenced by more than just technical skills. Pedagogical knowledge, social interaction skills, and personality traits are increasingly seen as essential components of a well-rounded teaching approach. This insight supports the need for a holistic teacher development model, one that balances technical proficiency with the development of interpersonal and personal qualities that contribute to positive teaching outcomes and enriched student learning experiences.

#### ***Attitude and character competencies***

The analysis of attitude and character competencies also revealed high priority ratings, with mean scores above 4.4, indicating that teachers strongly value these non-cognitive aspects. These competencies are vital for fostering a positive classroom environment and effectively using technology in teaching. Teachers with strong attitudes toward their profession are more likely to adopt innovative teaching practices, engage students effectively, and create a supportive atmosphere in which students feel motivated to learn. Similarly, strong character

traits, such as integrity, empathy, and responsibility, contribute to the ethical use of technology, ensuring that educational tools are used not only to enhance learning but also to promote fairness and inclusivity.

This finding emphasizes the critical role that personal and emotional intelligence plays in effective teaching. As the educational landscape evolves with the increasing use of digital technologies, the importance of these non-cognitive competencies cannot be overstated. Teachers who possess a positive attitude toward technology and maintain strong moral values are better equipped to navigate challenges and maximize the potential of educational technologies. This aligns with recent research by Hattie (2009), which underscores that teachers' personal qualities, including their emotional and ethical attributes, are pivotal in shaping the quality of student-teacher interactions and ultimately impacting student achievement.

**Table 5.** *Aspects of attitude and character needs (on a scale of 5)*

Aspect	Mean	Std. Deviation	Category
Attitude	4.574	0.586	High Priority
Character	4.497	0.613	High Priority

These findings show that teachers possess strong positive attitudes and demonstrate desirable character traits, such as responsibility, integrity, and empathy. These traits are essential for professional growth and ethical technology use in the classroom. These findings show that teachers possess strong positive attitudes and demonstrate desirable character traits, such as responsibility, integrity, and empathy. These traits are essential for professional growth and ethical technology use in the classroom. Teachers who embody these qualities are not only better equipped to manage the complexities of modern teaching but also serve as role models for their students, shaping their moral and social development. When teachers exhibit integrity and responsibility, they foster trust and respect within the classroom, creating a conducive environment for effective learning. Furthermore, empathy allows teachers to better understand and address students' diverse needs, making their teaching more inclusive and supportive.

Moreover, the development of these non-cognitive competencies directly impacts the way teachers engage with technology. In an age where digital tools are increasingly integrated into classrooms, the ability to ethically use technology is paramount. Teachers who demonstrate strong character traits, such as responsibility and integrity, are more likely to employ educational technology in a way that aligns with ethical standards, ensuring equitable access and fostering a safe digital learning environment. This also means they are more prepared to critically evaluate the impact of technology on students' learning experiences and adapt their practices accordingly. As technology continues to shape education, teachers with strong character and positive attitudes will play a crucial role in ensuring that technology is used not just effectively, but responsibly and ethically.

The strong correlations between professional and pedagogical competencies ( $r = 0.781$ ), as well as between social and personality competencies ( $r = 0.857$ ), indicate that improvements in one competence often led to improvements in others. This suggests that CPD programs must target these competencies holistically. The direct effect hypothesis test was conducted to

assess the relationships between the independent variables (e.g., Pedagogical, personality, social, professional, technology) and the dependent variable (e.g., teacher CPD). Path coefficients for these relationships were tested using the SEM approach and found to be statistically significant ( $p < 0.05$ ), confirming meaningful relationships between the variables.

Similarly, the indirect effect hypothesis test (mediation) was used to determine whether the relationship between the independent and dependent variables was mediated by attitude and character competencies. The results indicate that the mediator variables play a significant role in the relationship between teacher competencies and CPD outcomes, further supporting the importance of integrating attitude and character knowledge in CPD.

The findings of this study underscore the importance of integrating attitude and character knowledge with the TPACK framework for teacher professional development. The results indicate that teacher competencies in pedagogical, professional, social, and personality domains, when developed holistically, can significantly enhance teaching effectiveness and the ability to integrate technology. Additionally, positive attitudes toward technology and strong moral character are essential for teachers to effectively adopt and implement the TPACK framework in their teaching practices.

This research contributes to the development of a more comprehensive and effective CPD model, integrating both cognitive and non-cognitive competencies, which is crucial for improving overall teacher competency and, by extension, educational quality in the digital age.

## Discussion

This study aimed to develop a comprehensive Teacher CPD (Continuous Professional Development) model that integrates the TPACK framework with attitude and character knowledge. The findings suggest that both cognitive competencies (such as pedagogical, professional, and technological knowledge) and non-cognitive competencies (such as attitude and character traits) are essential components of effective teacher professional development. These results align with the growing body of research emphasizing the need for holistic approaches to teacher development that consider both the technical and emotional aspects of teaching (Tondeur et al., 2020; Scherer et al., 2021). The findings also support the argument that effective teaching involves much more than mastering content knowledge and pedagogical strategies; it requires the cultivation of personal traits such as responsibility, integrity, and empathy.

### *The role of TPACK in teacher professional development*

The findings of this study reveal that teachers view pedagogical, professional, and social competencies as high-priority areas for development, as indicated by their mean scores above 3.5. These competencies are consistent with the core components of the TPACK framework, which emphasizes the integration of technological, pedagogical, and content knowledge. The results suggest that teachers recognize the importance of these areas for enhancing their teaching effectiveness, particularly in the context of incorporating technology into their teaching practices. Previous studies also emphasize the importance of these domains, noting that the integration of content knowledge, pedagogy, and technology is crucial for teachers to

effectively engage students and enhance learning outcomes (Mishra & Koehler, 2006; Voogt et al., 2015). Moreover, the incorporation of technology within pedagogical practice is increasingly necessary for addressing the diverse learning needs of students, especially in the digital age.

The importance of integrating TPACK within CPD frameworks becomes more pronounced as technology continues to transform teaching and learning environments. Teachers' ability to effectively combine content, pedagogy, and technology hinges not only on their technical skills but also on their personal and interpersonal competencies. Teachers with strong pedagogical knowledge and technological proficiency are better equipped to engage students with meaningful, technology-enhanced lessons. However, the emotional and ethical dimensions of teaching cannot be overlooked, as they influence how teachers use technology to create an inclusive, supportive environment where all students feel respected and valued (Chai & Koh, 2020). Integrating attitude and character competencies into the TPACK framework will further enhance teachers' abilities to navigate the challenges posed by digital tools while fostering a positive classroom atmosphere.

**The Importance of Attitude and Character in Teacher Professional Development**  
The results of this study underscore the significant role that attitude and character play in teacher professional development. Teachers in this study rated these competencies as highly important, with mean scores above 4.4, suggesting that these qualities are viewed as critical for their professional growth. This finding is consistent with recent research that emphasizes the importance of teachers' personal qualities in effective teaching. For instance, studies have shown that teachers with strong emotional intelligence, including self-awareness, empathy, and self-regulation, are better able to manage classroom dynamics and positively influence student outcomes (Mayer et al., 2016; Scherer et al., 2021). Teachers' emotional intelligence also fosters the creation of a supportive learning environment, where students feel safe to express themselves and take risks in their learning.

The findings from this study suggest that TPACK's influence extends beyond the mere adoption of technology in the classroom. Teachers with strong pedagogical knowledge can more easily incorporate new technologies in ways that align with their content knowledge and teaching style. For example, teachers familiar with the principles of inquiry-based learning may be more adept at using technology tools that foster student exploration and critical thinking. As such, the integration of TPACK should not only focus on improving teachers' technology skills but also encourage the development of pedagogical and content expertise. This comprehensive approach ensures that technology serves as an effective tool for learning rather than merely a replacement for traditional teaching methods (Koehler & Mishra, 2009).

However, the study's findings also highlight the limitations of relying solely on the technical competencies encapsulated in the TPACK framework. Teachers in this study expressed a strong need for professional development that also addresses their attitudes and character. These non-cognitive dimensions play a crucial role in shaping how teachers use technology and interact with their students. The social, personality, and professional competencies, which include empathy, responsibility, and ethical behavior, are essential for creating positive teacher-student relationships and fostering an inclusive and supportive learning environment (Hattie, 2009; Zins, 2004). These findings support the growing recognition in the literature that teacher effectiveness is not solely determined by cognitive

skills but is also shaped by personal and interpersonal qualities (Chai & Koh, 2020; Koh et al., 2013). Teachers with these qualities are better equipped to build trusting relationships with their students and manage the complexities of modern classrooms effectively.

### *The importance of attitude and character in teacher professional development*

The results of this study underscore the significant role that attitude and character play in teacher professional development. Teachers in this study rated these competencies as highly important, with mean scores above 4.4, suggesting that these qualities are viewed as critical for their professional growth. This finding is consistent with recent research that emphasizes the importance of teachers' personal qualities in effective teaching. For instance, studies have shown that teachers with strong emotional intelligence, including self-awareness, empathy, and self-regulation, are better able to manage classroom dynamics and positively influence student outcomes (Mayer et al., 2016; Scherer et al., 2021). Teachers' emotional intelligence also fosters the creation of a supportive learning environment, where students feel safe to express themselves and take risks in their learning.

The emphasis on attitude and character also reflects a broader educational shift toward developing well-rounded educators. The importance of non-cognitive skills is particularly evident in modern classrooms, where diverse student needs, cultural sensitivity, and ethical considerations are more pronounced. Teachers who possess a positive attitude toward their profession and demonstrate ethical behavior are more likely to engage with students from diverse backgrounds in a respectful and supportive manner. This underscores the need for CPD programs to incorporate training on interpersonal skills, conflict resolution, and ethical decision-making, ensuring that teachers are not only skilled in teaching but also equipped to handle the complexities of today's classrooms (Hattie, 2009; Zins, 2004).

Moreover, the development of these non-cognitive competencies directly impacts the way teachers engage with technology. In an age where digital tools are increasingly integrated into classrooms, the ability to ethically use technology is paramount. Teachers who demonstrate strong character traits, such as responsibility and integrity, are more likely to employ educational technology in a way that aligns with ethical standards, ensuring equitable access and fostering a safe digital learning environment. This also means they are more prepared to critically evaluate the impact of technology on students' learning experiences and adapt their practices accordingly. As technology continues to shape education, teachers with strong character and positive attitudes will play a crucial role in ensuring that technology is used not just effectively, but responsibly and ethically (Chai & Koh, 2020).

The development of attitude and character in teachers is not only essential for fostering a positive learning environment but also crucial for supporting teachers' well-being and job satisfaction. Research has shown that teachers with positive attitudes and strong emotional intelligence are less likely to experience burnout and more likely to stay motivated in their professional roles (Skaalvik & Skaalvik, 2017). The integration of attitude and character into professional development programs can also improve teachers' resilience in dealing with stress, leading to better teaching performance and healthier teacher-student relationships. As educational settings continue to evolve, especially in the context of technological advancement, teachers' capacity to manage the emotional and ethical challenges associated

with technology use becomes increasingly critical. Thus, fostering these qualities should be a central component of any CPD program, not only for improving teaching practices but also for enhancing overall teacher satisfaction and retention (Jennings & Greenberg, 2009).

### *Holistic teacher development: Integrating cognitive and non-cognitive competencies*

The integration of character and attitude into the teacher professional development model proposed by this study reflects a more holistic approach to teacher growth. This approach acknowledges that effective teaching goes beyond technical skills and includes emotional and moral competencies that influence how teachers interact with students and use technology in their teaching practices. The findings of this study align with the work of [Chai and Koh \(2020\)](#) and [Tondeur et al. \(2020\)](#), who argue that non-cognitive skills such as emotional intelligence, ethical behavior, and positive attitudes are integral to fostering teacher effectiveness in the 21st century. The inclusion of these aspects in teacher development programs ensures that teachers are not only proficient in their subject matter and pedagogical techniques but also emotionally capable of managing classroom dynamics and building meaningful connections with students.

A holistic approach to CPD is particularly relevant in today's educational climate, where teachers are faced with increasingly complex challenges ([Petar, 2024](#)). These challenges include managing diverse student needs, navigating the ethical implications of technology use, and fostering critical thinking in an information-rich society. To address these challenges effectively, CPD must not only focus on enhancing teachers' subject matter expertise and pedagogical strategies but also on supporting their emotional well-being, resilience, and ethical decision-making skills. As such, teacher professional development should integrate both hard skills (such as technical proficiency and pedagogical knowledge) and soft skills (such as emotional intelligence, ethical behavior, and interpersonal communication) to ensure that teachers are equipped to thrive in a dynamic and diverse teaching environment ([Durlak et al., 2011](#)).

Furthermore, the findings suggest that professional development must be an ongoing, lifelong process rather than a one-time event. CPD programs that focus solely on initial training may fail to meet the evolving needs of educators, particularly in a rapidly changing technological landscape. Continuous professional development, facilitated by regular workshops, mentoring, and collaborative learning opportunities, is critical to ensuring that teachers continue to grow and adapt throughout their careers. This ongoing support helps teachers stay up to date with new technologies, teaching methods, and pedagogical advancements while also reinforcing the importance of attitude and character in shaping their practice.

### *The role of technology in teacher professional development*

The findings of this study also highlight the role of technology in teacher professional development. Teachers' ability to integrate technology effectively into their teaching is closely linked to their pedagogical and professional competencies, as well as their attitude towards

technology. The study found that teachers with higher scores in pedagogical and professional competencies were more likely to adopt and integrate technology into their teaching practices. This finding supports the work of [Mishra and Koehler \(2006\)](#), who argue that technology integration requires a balance between technological knowledge, pedagogy, and content.

However, the study also revealed that attitude and character play an equally important role in the effective use of technology. Teachers who exhibit positive attitudes towards technology and demonstrate ethical use of digital tools are more likely to engage students in meaningful ways and foster a responsible use of technology. These findings are consistent with recent research that emphasizes the importance of digital citizenship in education ([Kim & Choi, 2018](#)). As technology becomes increasingly integrated into the classroom, it is essential for CPD programs to focus not only on developing teachers' technical skills but also on cultivating the ethical and emotional competencies needed to use technology responsibly.

The findings of this study have significant implications for educational policy and practice. First, they underscore the importance of developing CPD programs that address both the cognitive and non-cognitive aspects of teacher development. Policymakers should prioritize the integration of attitude and character into teacher education and professional development frameworks. This can be achieved by incorporating social-emotional learning (SEL) and ethical decision-making into teacher training programs, alongside the development of technical skills and pedagogical knowledge.

Additionally, the study suggests that CPD should not be viewed as a one-time event but as an ongoing process that adapts to the evolving needs of educators in a rapidly changing educational landscape. Continuous support through mentoring, collaborative learning communities, and access to resources for personal and professional growth can ensure that teachers continue to develop their competencies over time. By fostering a culture of lifelong learning, educational systems can better support teachers in navigating the challenges of modern teaching, ensuring that they remain resilient, effective, and adaptable throughout their careers.

## **Conclusion**

This study highlights the importance of adopting a holistic approach to teacher professional development (CPD) that integrates both cognitive competencies (such as the TPACK framework) and non-cognitive competencies (including attitude and character). The findings suggest that teacher effectiveness is not solely determined by technical proficiency but is also deeply influenced by personal qualities such as empathy, responsibility, and ethical behavior. As such, CPD programs should go beyond traditional approaches that focus primarily on subject knowledge and pedagogical techniques. They must also prioritize the development of emotional intelligence, ethical decision-making, and positive attitudes to ensure that teachers are well-prepared for the challenges of modern education.

By integrating TPACK with attitude and character knowledge, this study proposes a comprehensive CPD model that addresses both cognitive and non-cognitive aspects of teacher development. This integrated approach ensures that teachers are equipped not only with the technical skills required to navigate digital tools but also with the interpersonal and emotional competencies necessary for fostering positive classroom environments. Teachers

who possess both strong pedagogical and personal competencies are better able to create inclusive, supportive learning spaces that contribute to improved student outcomes.

The findings of this study align with existing research, emphasizing the need for CPD programs that are dynamic and multifaceted, focusing on both professional knowledge and personal development. These results also have broader implications for educational policy. Policymakers and educational leaders should recognize the importance of a balanced approach to teacher development, where emotional intelligence and ethical conduct are as valued as pedagogical knowledge and technological skills. By fostering such a holistic approach, educational systems can ensure that teachers are not only effective in the classroom but also resilient and ethically grounded in their professional practices.

Finally, this study contributes to the ongoing discourse on teacher development in the digital age, where the integration of technology and the development of ethical and emotional competencies are increasingly crucial. Future research should continue to explore the practical applications of this integrated CPD model across diverse educational settings, examining how it can be adapted to meet the specific needs of teachers in various contexts.

### Disclosure Statement

No potential conflict of interest was reported by the authors.

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