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Research Article

Teacher Agency and Continuing Professional Development in Chinese Universities

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Abstract

The aim of this study was to examine the impact of educational background, professional title, work experience and agency on the continuing professional development (CPD) of 620 university teachers in China using a questionnaire survey. The findings indicate that there are significant differences in the CPD levels of teachers based on their educational qualifications, professional titles and years of experience, with CPD levels evolving alongside these factors. Additionally, teacher agency was found to have a significant positive effect on CPD, with higher levels of teacher agency being correlated with higher levels of CPD. The findings also revealed that teacher agency has a significant and positive influence on teachers' activities in terms of updating knowledge, reflection and collaboration in the context of continuing development.

Keywords: teachers' agency, continuing professional development, updating, reflective, collaborative

1. Introduction

Teachers' development is the foundation of sustainable school development (Hallinger & Liu, 2016). Continuous social development and educational reforms require teachers to continually update their professional competency and improve professional skills to meet the needs of modern education. The COVID-19 pandemic has shown that not all teachers possess the ability to adapt to changes, including changes in teaching methods and tools. (Pinos et al., 2023). Continuing Professional Development (CPD) is defined as a process that involves activities that aid teachers' growth by expanding their professional knowledge, teaching skills, and other aspects that may affect their teaching (Barrett et al., 2012; Imants & Van der Wal, 2019; Loyalka et al., 2019). The aim of CPD is to help teachers to adapt to changes and demands of the times and fulfill their duties appropriately (Srinivasacharlu, 2019). It includes formal and informal short-term or long-term training programmes, seminars and lectures, membership of professional organisations (study groups), and

more (Sadeghi & Richards, 2021). Autonomous learning, peer collaboration, and reflective practice are considered key methods to enhance and promote individual growth and professional development of teachers. (Agoro, 2013; Hendarwati et al., 2021; MacPhail et al., 2019). Therefore, Continuous active learning, collaboration, and reflection are the key characteristics of effective CPD (de Jong et al., 2019; Karlberg & Bezzina, 2022; Vangrieken et al., 2015), which not only facilitate changes in teachers' current roles and responsibilities, but also serve as tools to help teachers to reshape their professional selves based on the pursuit of continuing professional development (Ahmad & Shah, 2022).

Although educational leaders and schools always encourage teachers to take part in various activities that can enhance their professional development, different factors related to the school, teachers, or students can affect the outcome of those activities (McChesney & Aldridge, 2021). Professional development activities for teachers are often found to be ineffective or considered irrelevant by the teachers themselves (Lieberman & Pointer Mace, 2008; Noonan, 2018; Opfer & Pedder, 2011). For instance, the effectiveness of teachers' CPD remains unsatisfactory in China, despite significant investment by the government (Loyalka et al., 2019). Given the extensive teacher workforce, CPD in higher education in China is challenged by limitations in resources, time, and organisation. Particularly, top-down policies intensify these challenges by disproportionately focusing on classroom teaching at the expense of teachers' individual continuous professional development. Furthermore, since there is very limited research on CPD in the context of higher education in China (Scott et al., 2023), the effectiveness of CPD is still questionable (Sims & Fletcher-Wood, 2021).

From a modern educational perspective, teachers play a central role in their professional growth, rather than being passive recipients (Karlberg & Bezzina, 2022). Gurney and Liyanage (2016) observe that agency is an important factor in any form of learning. Teachers are able to choose to accept, adapt or resist policies (Cong-Lem, 2021), as reflected in their choices about the nature and scope of professional development and its impact on their professional learning and classroom practices (King & Nomikou, 2018). Shernoff and Csikszentmihalyi (2009) propose that learners' perspective of the learning experience has a significant impact on their absorption and transformation of knowledge. The motivation for participation is a prerequisite of effective and sustained learning (Deci et al., 1991; Fredricks et al., 2004; Noonan, 2016). As agency is realised through the dialectical relationship between motivation, behaviour and environmental influences (Simpson et al., 2018), it is deeply rooted in individuals' professional learning (Paloniemi & Goller, 2017). It is a prerequisite of the transformation of knowledge and exchange of practices in the teacher learning process (Giddens, 1984), and plays a central role in CPD (Wagner et al., 2019). Further research reveals that individual teachers' characteristics, including education, academic title and work experience, all influence their CPD (Byman et al., 2021; Coenders & Verhoef, 2019; Mikkonen et al., 2018). Therefore, the aim of this study is to explore the impact of teacher education, academic titles, work experience and agency on CPD.

2. Literature Review

2.1 Theoretical framework

The Interconnected Model of Professional Growth (IMPG) by Clarke and Hollingsworth (2002) is adopted as the theoretical framework for this study to explore the process of teachers' CPD. This theoretical model includes four non-linear domains, namely, the personal domain, the domain of practice, the domain of consequence and the external domain. These domains constitute a change environment in which teachers use practice and reflection to promote their transformation (Hung & Yeh, 2013). The personal domain includes teachers' knowledge, beliefs, and attitudes, and the domain of practice covers all forms of professional practice. The domain of consequence refers to significant outcomes perceived by teachers in practice, while the external domain includes stimuli or sources of support that drive an ongoing search for new strategies.

The dynamic nature of IMPG emphasises the way in which the environment and teachers'

learning orientation shape their professional growth (Widjaja et al., 2017). The focus of professional development changes with growth or learning; hence, change is synonymous with learning, with agency being a key element (Clarke & Hollingsworth, 2002). Changes in one domain do not necessarily lead to changes in another, as change occurs through a process of practice and reflection (da Ponte et al., 2022). The process of practice in the model is not merely action in the practice domain, but a process of translating beliefs into action, which occurs when teachers' knowledge, beliefs and attitudes affect their practice (Yang et al., 2022). In other words, it is a process driven by teachers' agency. The IMPG model is a practical tool for researchers to understand teachers' CPD based on analysis, prediction and inquiry (Justi & van Driel, 2006). It is versatile, flexible and widely applied in the field of teacher education (Ni et al., 2023; Perry & Boylan, 2018).

2.2 Teachers' agency

Agency enables individuals to adapt to meet the changing demands of the time and actively engage in self-development and renewal (Bandura, 2001). Archer (2000) defines individuals' agency as being influenced by society, but not determined by it due to individuals' autonomy. From a social cognitive theory perspective, agency is directly linked to action, a potential of the subject and a crucial precursor to agentic and autonomous actions. According to Bandura (1986), agency can regulate and control individuals' cognition, motivation and behaviour, not as accidental, uninformed or unintentional activities, but as purposeful actions (Bandura, 1999).

Theorised in the context of school activities, teachers' agency is frequently defined as professional autonomy (Molla & Nolan, 2020) in terms of the ability to make choices or take action to implement necessary reforms (Tao & Gao, 2017; Toom et al., 2015). Kockelman (2007) considers that teachers' agency can be theorised from the aspect of knowledge, while Biesta et al. (2015) observe that beliefs, influenced by past experience, play a significant role in the enactment of agency and its iterative process, and van Vuuren and Cooren (2010) argue that attitudes and emotions also have the capacity for action as part of teachers' agency. Skaalvik and Skaalvik (2016) suggest that the core mechanism of teachers' agency is self-efficacy, which refers to their belief in what they can do and how well they can do it (Bandura, 1999). Teachers' agency is a vital quality that has the power to meaningfully change classroom teaching, life and the professional environment (Fu & Clarke, 2017; Nguyen & Bui, 2016). Hence, teachers must have ability and space to exercise their agency for there to be real progress in educational reform (Kennedy, 2014). Teachers' agency is defined in this study as the capacity for action, which is specifically understood as teachers' belief and confidence in their ability to make changes (Kwakman, 2003; Polatcan, 2021).

2.3 Continuing professional development

CPD is related to the development of teachers' beliefs, attitude, knowledge and skills (de Vries et al., 2013; Kyndt et al., 2016). Guskey (2000) defines professional development as the process and activities that improve teachers' professional knowledge, skills and attitudes, thereby enhancing students' learning, while Diaz-Maggioli (2003) views teachers' professional development as a continuous learning process, in which teachers voluntarily engage in learning, and constantly adjust their teaching to meet students' needs. This is not a one-time event, but a continuous process of self-disclosure, reflection and growth. Richards (2008) describes teachers' professional development as inquiry-based, self-directed and directly related to their career. To Sharma and Bindal (2013), CPD is a lifelong learning process, which continually helps teachers to be familiar with developments in their field. It is an autonomous, collaborative and inquiry-based learning process or activity (Evers et al., 2016), which enables teachers to update their knowledge base, teaching skills, and their ability to creatively respond to situational demands (Albion & Tondeur, 2018).

The importance of teachers' collaboration is emphasised in many studies of CPD, as one of the main goals of professional development is to establish a core group of teachers to influence others'

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learning (Loyalka et al., 2019). Noonan (2018) proposes that professional development entails the sharing of experience; hence, effective CPD activities are focused on promoting an ongoing professional dialogue among teachers to ensure that they integrate best practice in their teaching. Teachers can share knowledge in collaborative learning, critically reflect on teaching practices, provide colleagues with support and peer feedback, and co-design teaching methods (Vangrieken et al., 2015). Critical thinking, reflection, debate and dialogue play a crucial role in solving problems in teachers' daily practices (Durrant, 2019). Therefore, teachers observe each other's teaching methods, share their personal thoughts and experience, and reflect on their teaching methods and practices to promote their professional development and meet students' diverse needs. In this study, CPD is simply defined as an ongoing learning process (Clarke & Hollingsworth, 2002) that includes a series of knowledge updates, collaboration and reflective activities in real-world settings (Dinham, 2007; Kwakman, 2003; Polatcan, 2021; Vescio et al., 2008).

2.4 CPD among teachers with different educational backgrounds, professional titles, and work experience

When Coenders and Verhoef (2019) investigated the professional development processes of novice and experienced teachers, they found that teaching experience has an impact on these processes. Karlberg and Bezzina (2022) explored the effect of different perspectives of teachers with varying levels of experience on their professional development. Byman et al. (2021) found significant differences in opportunities and satisfaction with CPD among teachers with different professional titles. Meanwhile, Yuan and Tian (2023) discovered significant differences in the professional development of teachers with varying educational backgrounds, work experience, and professional titles, manifest in the enhancement of their level of professional development with increased work experience and promotion. Yu et al. (2022) indicated that the level of work experience and professional title significantly influences teachers' job satisfaction and burnout, thereby affecting their CPD. Mikkonen et al. (2018) discovered that teachers' professional title, position, and degree are the common factors that affect their competence. On this basis, the following hypotheses are proposed:

H1: There is a significant difference in the CPD of teachers with different educational backgrounds.

H2: There is a significant difference in the CPD of teachers with different academic titles.

H3: There is a significant difference in the CPD of teachers with different work experience.

2.5 Relationship between teachers' agency and their continual professional development

Teachers' agency plays a crucial role in fostering their learning and teaching abilities (Bellibaş et al., 2020; Fu & Clarke, 2017). Wang et al. (2021) explored the theorisation of agency in influencing individuals' behaviour in their interaction with the external environment, and showed that teachers transform updated teaching concepts into improved teaching practices. Imants and Van der Wal (2019) constructed an agency model in professional development and school reform, which emphasised the impact of the interaction between individual teachers and their work environment on their professional development. Priestley et al. (2015) observed that teachers with high agency are more invested in professional development to achieve effective teaching. Due to the positive role of agency, teachers are more optimistic, proactive, and determined to change and enhance their teaching (Emirbayer & Mische, 1998; Liu et al., 2016). Durrant (2019) argues that teachers exercise agency in the professional development process to enhance their professionalism by utilising individual and collaborative influences to shape a professional environment that is conducive to their development vision. Therefore, teachers' agency plays an important role in CPD (de Vries et al., 2022) and, on this basis, the following hypotheses are proposed:

H4: Teachers' agency positively impacts CPD and its dimensions.

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H4a: Teachers' agency positively influence CPD.
H4b: Teachers' agency has a positive effect on activities   related to updating knowledge .
H4c: Teachers' agency has a significant and positive impact on reflective activities.
H4d: Teachers' agency has a positive influence on   collaborative activities.

3. Methodology

3.1 Participants and sampling method

The sample of this study were teachers from universities in Mainland China. To ensure the representativeness and diversity of the sample, Mainland China was divided into six regions: East, South, Central, North, Southwest and Northeast. Convenience sampling was used to distribute electronic questionnaires to the teachers willing to participate in the study. Totally, 620 valid responses were obtained out of the 700 questionnaires distributed, after excluding invalid ones, resulting in an effective response rate of 88.6%. The respondents' demographic information, including gender, educational background, academic title and work experience collected from the questionnaires is shown in Table 1.

Table 1: Demographic information of sample teachers

Variable	Item	n	%
Gender	Male	299	48.226
	Female	321	51.774
Educational Degree	Bachelor	61	9.839
	Master	397	64.032
	Doctoral	162	26.129
Academic Title	Junior lecturer	115	18.548
	Senior lecturer	318	51.290
	Associate professor or above	187	30.162
Teaching experience	5 years or less	93	15.000
	6-10 years	137	22.097
	11-15 years	157	25.323
	16-20 years	118	19.032
	More than 21 years	115	18.548

3.2 Research instruments

Two scales were used to collect the data for this study: a) Teacher Agency Scale (Liu et al., 2016), and b) Teacher Continuing Professional Development Scale (de Vries et al., 2013). Both scales were translated to fit the Chinese school culture. They were initially translated into Chinese by experts proficient in both the English and Chinese languages. Then, the translated scales were reviewed by five scholars in the Chinese educational field. Finally, bilingual experts re-translated them into English, and both versions were compared to ensure their accuracy and consistency.

3.2.1 Teachers' Agency Scale

The Teacher Agency Scale consists of 24 items that cover the four dimensions of learning efficiency, teaching efficiency, optimism and constructive engagement. For example, "If I work hard, my teaching will improve over time," and "Even when I'm in a bad mood, I can still engage in professional learning." All the items were measured using a Likert five-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree). A reliability analysis was conducted first, and item 16 was

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removed for failure to meet the reliability standard. The Cronbach's alpha value of the Teacher Agency scale was .940, with the dimensions of Learning efficiency, Teaching efficiency, Optimism, and Constructive engagement having Cronbach's alpha values of .904, .913, .850, and .907, respectively. As these were all above .7, the scale was deemed to be reliable.

A Confirmatory Factor Analysis (CFA) was used to test the Teacher Agency Scale. The standardised factor loadings for each item ranged between .742 and .821. Additionally, the CR values for the dimensions of Learning efficiency, Teaching efficiency, Optimism and Constructive engagement were .904, .913, .851, and .907, respectively, all exceeding the .60 evaluation standard. The AVE values for the dimensions of Learning efficiency, Teaching efficiency, Optimism, and Constructive engagement were .611, .601, .588, and .620, respectively, all exceeding the .40 evaluation standard. The chi-square (χ^2) was 255.498, df=224, χ^2/df=1.141, meeting the standard of less than 5 (Schumacker & Lomax, 2004). GFI was .965, AGFI was .957, both above .800 (Hair et al., 2019). SRMR was .025, less than .800. NFI was .971, NNFI was .996, CFI was .996, RFI was .967, IFI was .996, all above the .900 standard. RMSEA was .015, less than .800 (Hu & Bentler, 1999). These results indicate that the Teacher Agency Scale had good composite reliability and convergent validity and met the model fit standards.

3.2.2 Teachers' Continuing Professional Development Scale

The Teacher Continuing Professional Development Scale consists of 39 items that cover three dimensions: Updating activities, Reflective activities, and Collaborative activities. For example, "I read new learning materials (brochures, websites, textbooks, etc.)" and "I read about educational reforms and promising methods (through newspapers, television, internet, etc.)." All the items were measured using a Likert four-point scale, ranging from 1 (never) to 4 (often). A reliability analysis was conducted first, and item 32 was removed for failure to meet the reliability standard. The Cronbach's alpha value of the Teacher Continuing Professional Development scale was .983, with the dimensions of Updating activities, Reflective activities, and Collaborative activities having Cronbach's alpha values of .966, .971, and .975, respectively, all above .7, indicating good reliability.

A CFA was used to test the Teacher Continuing Professional Development Scale. The standardised factor loadings of each item ranged between .834 and .877. Additionally, the CR values of the dimensions of Updating activities, Reflective activities and Collaborative activities were .966, .971, and .975, respectively, all exceeding the .60 evaluation standard. The AVE values of the dimensions of Updating activities, Reflective activities, and Collaborative activities were .742, .723, and .723, respectively, all exceeding the .40 evaluation standard. The chi-square (χ^2) was 895.310, df=662, χ^2/df=1.352, meeting the standard of less than 5. GFI was .931, AGFI was .923, both above .800. SRMR was .017, less than .800. NFI was .966, NNFI was .990, CFI was .991, RFI was .963, IFI was .991, all above the .900 standard. RMSEA was .024, less than .800. These results indicated that the Teacher Continuing Professional Development Scale had good composite reliability and convergent validity and met the model fit standards.

4. Results

4.1 Current status of teacher agency and continuing professional development

A descriptive statistical analysis was used to examine the current status of teachers' agency and CPD of university teachers in China, using mean (*M*) and standard deviation (*SD*). The results showed that the dimensions for Teachers' Agency (*M*=3.394, *SD*=0.813) were Learning Self-efficacy (*M*=3.405, *SD*=1.021), Teaching Self-efficacy (*M*=3.481, *SD*=0.999), Optimism (*M*=3.332, *SD*=1.034), and Constructive Engagement (*M*=3.323, *SD*=1.029). The dimensions for CPD (*M*=2.555, *SD*=0.940) were Updating Activities (*M*=2.558, *SD*=1.059), Reflective Activities (*M*=2.576, *SD*=1.028), and Collaborative Activities (*M*=2.535, *SD*=1.035). These results indicate that both Teachers' Agency and CPD, along

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with their respective dimensions, scored above the midpoint of 3 and 2.5 respectively, suggesting a moderately high level among university teachers in China.

4.2 Differences in the CPD of teachers with different educational backgrounds, professional titles and work experience

A one-way ANOVA was conducted to understand the differences in the CPD of teachers with different educational backgrounds, professional titles and work experience. After using the Levene test to determine the equality of the variances, significant differences were found in the CPD of teachers with different educational backgrounds ($p < .001$), professional titles ($p < .001$), and work experience ($p < .001$), indicating variance heterogeneity. Subsequent Brown-Forsythe mean tests also showed significant differences across educational backgrounds ($p < .001$), academic titles ($p < .001$), and work experience ($p < .001$), followed by using Games-Howell for post-hoc comparison. The results are detailed below.

Education: Teachers with a Doctoral or Master's degree had a higher level of CPD than those with a Bachelor's degree, with the latter scoring below the average of 2.5 ($M=2.154$), indicating a moderately low level. Hence, H1 was supported.

Academic title: Associate professors and above had higher CPD levels than intermediate titles, which were higher than junior titles, with the latter scoring below the average of 2.5 ($M=2.010$), indicating a moderately low level. Hence, H2 was supported.

Work Experience: Teachers with more than 5 years' experience had significantly higher CPD levels than those with 5 years or less, and the latter scored below the average of 2.5 ($M=2.074$), indicating a moderately low level. Hence, H3 was supported. The results are shown in Table 2.

Table 2: Continuing professional development of teachers with different educational qualifications, academic titles and years of experience

Variable	Item	M	SD	F	Post hoc
Educational Degree	Bachelor (1)	2.154	.634	7.886***	3>1 2>1
	Master (2)	2.606	.953		
	Doctoral (3)	2.583	.974		
Academic Title	Junior lecturer (1)	2.010	.565	34.386***	3>2>1
	senior lecturer (2)	2.598	.933		
	Associate professor or above (3)	2.818	1.003		
Teaching experience	5 years or less (1)	2.074	.690	9.005***	5>1 4>1 3>1 2>1
	6-10 years (2)	2.603	.955		
	11-15 years (3)	2.642	.959		
	16-20 years (4)	2.538	.953		
	More than 21 years (5)	2.787	.938		

Note. ***$p < .001$.

4.3 Multiple regression analysis of CPD and its dimensions

A multiple regression analysis was used to explore the impact of teachers' agency on CPD and its dimensions. After controlling for background variables such as gender, educational background, academic title and work experience, teachers' agency was included in the regression models for Knowledge Updating Activities, Reflective Activities, Collaborative Activities, and overall CPD. The results are detailed below.

Teachers' agency had a significant and positive impact on CPD ($\beta = .593$, $p < .001$), $F = 93.408$ ($p < .001$), explaining 43.203% of the variance (R^2). Hence, H4a was supported.

Teachers' agency had a significant and positively impact on Knowledge Updating Activities ($\beta = $

.522, p < .001), F = 64.710 (p < .001), explaining 34.521% of the variance (R^2). Hence, H4b was supported.

Teachers' agency had a significant and positive impact on Reflective Activities (β = .531, p < .001), F = 59.780 (p < .001), explaining 32.742% of the variance (R^2). Hence, H4c was supported.

Teachers' agency had a significant and positive impact on Collaborative Activities (β = .551, p < .001), F = 77.707 (p < .001), explaining 38.755% of the variance (R^2). Hence, H4d was supported, confirming research hypothesis H4. The specific results are shown in Table 3.

Table 3: Regression analysis

Variables	CPD	Updating Activities	Reflective Activities	Collaborative Activities	VIF
Teacher Agency	.593[***]	.522[***]	.531[***]	.551[***]	1.142
R^2	0.432	.345	.327	.388	
Adj. R^2	0.427	.340	.322	.383	
F	93.408[***]	64.710[***]	59.780[***]	77.707[***]	

Note. [***]p < .001.

5. Discussion

According to the research results, there were significant differences in the CPD of teachers with different educational backgrounds, echoing previous research (Tan et al., 2022). Teachers with a postgraduate degree had significantly higher levels of CPD than those with a Bachelor's degree. The reason for this may be because higher education often implies better knowledge and skills, suggesting that these teachers have a deeper understanding of educational theory, teaching methods and subject knowledge (Jin, 2023). In addition, teachers who have higher qualifications may be better able to transfer knowledge, learn and adapt to new educational trends and technologies than others, which helps them to effectively address the challenges in teaching and promote their CPD.

The results showed that the CPD levels of teachers with different academic titles were also significantly different, in line with previous studies, indicating that teachers with higher titles had higher CPD levels (Yuan & Tian, 2023). Teachers with senior titles, such as associate professor and above, had significantly higher CPD levels than those with intermediate or junior titles. This may be due to the fact that, in Chinese universities, teachers' academic achievement frequently represents their academic level and is a key criterion to evaluate academic titles. Advanced academic titles are typically associated with increased experience, knowledge, and skills in the educational field. Higher titles not only enhance teachers' income, but also their status and job satisfaction (Orina et al., 2022). Yu et al. (2022) found that teachers with junior titles experienced lower job satisfaction and greater burnout than those with senior titles. Hence, teachers' academic title not only represents their academic achievements and status, but it is also linked to more professional development opportunities and resources. This leads to greater recognition and support, which enhances their CPD (Борзенко, 2022).

The results also revealed significant differences in the CPD of teachers with varying years of work experience, which is consistent with previous educational research (Yuan & Tian, 2023). Teachers with more than 5 years of experience had significantly higher levels of CPD than those with 5 years' experience or less. However, CPD levels plateaued, and even declined, when a certain stage of experience was reached (Дика et al., 2023). Early career teachers face numerous challenges during this phase, such as adapting to teaching environments, responding to diverse students' needs, and classroom management; hence, they require more support. This period also marks the beginning of the construction of teachers' professional identities (Villena-Agreda, 2020). Consequently, teachers with less experience tend to have lower job satisfaction and higher burnout than their more experienced counterparts. On the other hand, more experienced teachers focus on further improving their teaching skills and professional knowledge, as well as collaborative learning with peers

(Karlberg & Bezzina, 2022). Teaching experience is crucial to enhance teachers' professional quality and development, as rich experience equips them to better handle various teaching challenges and effectively use this experience for their professional growth (Борзенко, 2022).

It was found in this study that teachers' agency has a positive impact on CPD and its three dimensions of knowledge updating, reflection and collaborative activities. This indicates that the higher teachers' agency is, the higher is their level of CPD and their engagement in updating knowledge, reflection and collaborative activities. This is aligned with previous educational research, in which it was demonstrated that enhanced teachers' agency promotes CPD (Bellibaş et al., 2020; Dodman, 2022). Teachers' agency influences their choices and attitude toward professional development activities and determines their professional development practices. When teachers engage more actively with professional development activities, they choose positive practices. More importantly, these practices are not merely activities, but processes that transform teachers' knowledge, beliefs and attitude into actions (Yang et al., 2022). In other words, teachers' agency motivates them to turn optimism into proactive actions and engage more actively and spontaneously in activities for their professional development. Teachers' active communication of ideas and experience with others, mutual support and problem-solving abilities stimulate their motivation for active learning and innovation. The sharing of knowledge and resources among teachers promotes improved knowledge and practice, while collaboration and reflection enhance teachers' agency. Teachers with high agency more effectively fulfill their responsibilities in everyday learning and teaching, as evident in their greater seriousness, enthusiasm, active collaboration and willingness to share knowledge with colleagues (Khun-Inkeeree et al., 2023). Therefore, teachers' professional practices are influenced by their agency, which, in turn, provides positive feedback that enhances their willingness to learn, autonomous motivation, and ultimately fosters their CPD (Oppi & Eisenschmidt, 2022).

However, the discussion of teachers' agency cannot be separated from cultural contexts. Teachers' perceptions of school culture, along with how these perceptions affect teacher agency through interactions with students, communication and collaboration with colleagues, and support from the school, all influence teachers' CPD (Min, 2023; Wang, 2022). Moreover, effective institutional support can promote teachers' CPD (Philipsen et al., 2022). The emphasis on respecting authority and elders, along with valuing harmonious relationships inherent in traditional Chinese culture, may undermine equal dialogues. Furthermore, China's top-down educational authority system and school culture have a more profound impact, as they both restrict and facilitate the development of teachers' agency and CPD.

6. Conclusion

This study has emphasised the impact of the educational background, academic title and work experience of university teachers on their CPD by highlighting the individual differences among teachers that affect their CPD. Therefore, universities should design professional growth paths based on different individuals and different stages of professional development, such as knowledge level, emotional attitude and technical abilities. Avoiding generalised strategies, they should tailor professional development plans to meet teachers' actual needs and career development (Ajani, 2021), and incorporate teachers' feedback and suggestions to ensure the provision of practical and feasible support (Fairman et al., 2023). For example, teachers with 16-20 years of work experience showed a decline in CPD levels, indicating the need for schools to assess their work status and provide the necessary support and incentives to help them to steadily improve their professional development level. Additionally, education departments should value the role played by teachers' agency, which is fundamental to professional development. Universities should create an environment of trust and respect that encourages teachers to strengthen their collaboration, sharing of knowledge and critical reflection, thereby enhancing their agency (Maleyrot, 2023). Moreover, diverse incentive policies should be implemented, including both material and non-material incentives, such as bonuses,

opportunities for career advancement, professional development support and recognition, to enhance teachers' intrinsic and extrinsic motivation for professional development and invigorate their active learning and working agency (Prokhorova et al., 2020).

7. Implications

The IMPG theoretical framework was used in this study to assess the relationship between teachers' agency and CPD among university teachers in China by analysing how teachers, as active learners, continually promote CPD by updating their knowledge, as well as engaging in reflection and collaborative activities. While the existing research on teachers' agency often comprises case studies (Wang et al., 2021), this large-sample quantitative study broadens the perspective of agency and CPD. Additionally, the findings of the influence of teachers' agency and individual differences on CPD provide references for education departments in formulating plans for teachers' CPD.

8. Limitations and Recommendations

University teachers in China were the primary focus of this study, which sought to reveal the overall situation of teachers in Chinese universities. Although the samples were drawn from various regions in China for diversity, the limited sample size may not fully capture the diversity and specificity of the population of teachers in those regions. Furthermore, the study was only based on a survey and did not include in-depth interviews to validate the analytical results. Future researchers should consider expanding the sample size, especially by increasing the number of teacher samples in each region, or conducting studies specific to different regions in China, to account for regional differences and gain a more comprehensive understanding of CPD among all university teachers in China. Additionally, future studies based on interviews should involve more individual differences among teachers, such as different disciplines, types of universities, and career development stages, to obtain more comprehensive, scientific and objective perspectives of teachers overall (Yuan & Gao, 2023). Finally, future research should delve into the diverse background factors affecting teachers' agency and CPD, particularly cultural contexts and teachers' perceptions of institutional support, to uncover how these factors foster teachers' CPD in various cultural settings and environments, and how teachers maintain and develop their agency.

9. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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