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Bridging the Gap: Enhancing Teachers' Professional Literacy Through the Integration of Pre-Service Education and Post-Service Training

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Abstract

The professional literacy of teachers encompasses four fundamental dimensions: professional ideals, knowledge, skills, and ethics. However, a disparity exists between pre-service education and in-service training. This study aimed to investigate the satisfaction levels of normal university graduates who have embarked on their teaching careers regarding pre-service training and post-service career development through the administration of questionnaires. Additionally, it sought to explore their perspectives on enhancing the integration of these two stages. The results indicated that participants generally expressed dissatisfaction with their pre-service education. Although they are able to effectively fulfill their duties as teachers after entering the workforce, they also perceive inadequacies in their competence, thereby highlighting the necessity for continuous professional development. Overall, participants exhibited a positive attitude towards strengthening the integration of pre-service education and post-service training in order to promote personal growth and development more effectively. Therefore, this study proposes integrating both stages while emphasizing four distinct areas of teacher professional competence training: cultivation and establishment of ideals; acquisition of theoretical understanding and practical application of knowledge; laying foundations and refinement of skills; as well as acquisition and implementation of ethical principles. By doing so, teachers can develop self-professionalism.

Keywords: Teachers' professional literacy, Pre-service education, Post-service training, The integration of pre-service education and post-service training

1. Introduction

In order to identify and train students who possess a keen interest in serving the critical strategic needs of the nation, as well as exhibit exceptional comprehensive abilities or excel in fundamental disciplines, the Chinese

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Ministry of Education (2020) initiated a Pilot Reform Program of Enrollment for Basic Subjects (also called the "Strong Foundation Plan") in select universities. The implementation of this plan reflects both national and societal demands for talent development, thereby imposing elevated expectations on teachers' professional competence. Undoubtedly, high-quality educators constitute an indispensable initial stride towards cultivating high-caliber students.

Teacher professional literacy education consists of two stages: pre-service education and post-service training. However, the lack of emphasis on practical application and complex teaching situations in reality usually creates a disconnect between the two stages. To address this issue, teacher education should be guided by the "Strong Foundation Plan" and employ effective means and methods in both stages to promote the integrated development of teachers' professional ideals, knowledge, abilities, and ethics before and after service. Efforts should be made to establish an integrated education system that spans both stages, ultimately forming a collaborative force to enhance teachers' professional growth.

2. Literature Review

Teachers' professional literacy is a complex and multidimensional concept. Taken together, it mainly includes educational philosophy, knowledge structure, educational competence, educational emotion, and so on. Educational philosophy is the soul, guiding teachers' educational behavior; knowledge structure is the foundation, supporting teachers' educational practice; educational competence is the core, reflecting teachers' educational level; and educational emotion is the driving force, stimulating teachers' educational enthusiasm. Enhancing teachers' professional literacy is a long-term and systematic process that requires the joint efforts of many parties. From the teachers' own point of view, they can continuously improve their professional literacy through independent learning, reflection and practice, communication, and cooperation (Li and Pan, 2024); From the school level, it is possible to promote the improvement of teacher professional literacy by carrying out school-based training, establishing incentive mechanisms, and creating a favorable atmosphere (Scott *et al.*, 2012; Ismail and Mostafa, 2023); From the social level, it is possible to provide a strong guarantee for the improvement of teacher professional literacy by formulating relevant policies, increasing investment, and establishing the evaluation system (Lammert *et al.*, 2022).

Teachers' professional literacy not only involves teachers' own development, but also directly affects the quality of students' lifelong growth. Therefore, it is of important theoretical value and practical significance to do some researches on teachers' professional literacy. However, most of the existing researches regard pre-service and post-service teachers as two separate and fragmented stages. And there is a lack of effective connection between pre-service education and post-service training, which makes it difficult for teachers to form a coherent and systematic knowledge system and competence structure in the process of professional development. The research on the integration of teachers' professional literacy aims to plan and design the whole process of pre-service education and post-service training for teachers, ensuring that each stage is articulated and focused, thus to constitute an intrinsically linked teacher education system (Zhang and Lo, 2023; Ouyang *et al.*, 2023).

Therefore, this study targeted normal university graduates who transitioned into teaching positions to examine their satisfaction with pre-service training, post-work career development, and perspectives on enhancing the integration of pre-service and in-service training, thereby offering insights for enhancing teacher education and professional growth.

3. Research Design

3.1. Research Questions

According to the research purpose, this study aims to address the following three research questions:

(1) How satisfied are graduates of normal major with their pre-service education?

(2) How do they perceive their post-service development?

(3) What is their attitude towards the integration of pre-service and post-service training?

3.2. Participants

In this study, we selected graduates of normal major as our research participants. Most of these individuals have recently embarked on their teaching careers and possess vivid memories of their pre-service education and training experiences. Furthermore, they have gained profound insights after entering the profession, enabling them to develop a comprehensive understanding of both pre-service and post-service training. Therefore, their perspectives hold significant value for enhancing teacher education and professional development. In total, 236 teachers were involved in this study (male = 57, female = 179). The participants' educational backgrounds encompassed various subjects taught at primary and secondary schools. Approximately half had been working for only 2–3 years, while three-quarters had no or just held junior professional titles.

3.3. Instruments

In order to gather data, we developed a questionnaire regarding the cognitive perception of graduates of normal major on the integration of pre-service training and post-service development. The questionnaire employs a 5-point Likert scale encompassing four sections: satisfaction with pre-service training (11 items), perceptions of post-service development (15 items), attitude towards the integration of pre-service and post-service training (12 items), and demographic profile.

3.4. Data Collection

The current investigation employed human participants. Prior to the commencement of the study, the study protocol was reviewed and approved by the Ethics Committee of the School of Foreign Languages at the local University, with an ethics approval reference [202310002]. During data collection and processing, utmost attention was devoted to compliance with national and municipal laws as well as adherence to the Declaration of Helsinki.

A comprehensive justification of the study's objectives was provided in advance, with a strong emphasis on voluntary engagement. Participants were explicitly informed about their right to withdraw consent at any time without facing consequences or needing to provide an explanation. Given the anonymous nature of this research and its non-collection of personally identifiable information, participants provided their spoken informed consent during participation through questionnaire responses, eliminating the need for signed formal consent forms.

The Ethics Committee, as previously mentioned, approved the use of participant oral consent. A paper-and-pencil questionnaire was distributed at each school from October 9 to October 31, 2023, and data was promptly collected thereafter. Subsequently, SPSS 26.0 was utilized to import and analyze all gathered data while ensuring anonymity and confidentiality.

4. Results and Discussion

The Cronbach Alpha test revealed high reliability for the entire questionnaire (38 items) with a coefficient of 0.97. Additionally, the pre-service training satisfaction subscale (11 items) demonstrated a reliability coefficient of 0.95, while the post-service development evaluation subscale (15 items) and attitudes on integrating pre-service and post-service training both exhibited reliabilities of 0.95 and 0.96 respectively. Therefore, the reliability of the questionnaire is high.

4.1. RQ 1: How satisfied are graduates of normal major with their pre-service education?

The descriptive statistical results revealed that overall satisfaction with pre-service training among participants was not high (M = 3.90, SD = 0.83). Specifically, they expressed the highest level of satisfaction with the educators' teaching proficiency in the stage of pre-service education (M = 4.12, SD = 0.86), while being least satisfied with the vocational ideal education provided by these instructors (M = 3.78, SD = 0.96). Most other aspects (particularly regarding curriculum setting and practice-related activities) scored below 4 on average. These findings indicate that participants exhibit confidence in their subject knowledge abilities; however, there are still several areas within pre-service education that require further improvement and strengthening.

4.2. RQ 2: How do they perceive their post-service development?

The descriptive statistical findings revealed that the participants exhibited a general recognition of their post-service development and expressed confidence in possessing the necessary professional abilities and qualities (M = 4.03, SD = 0.70). Notably, they rated their "moral character and teacher ethics" as the highest attribute (M = 4.29, SD = 0.73), while rating their instructional design ability as comparatively lower (M = 3.83, SD = 0.90). These results indicate that participants are capable of effectively fulfilling their duties upon becoming teachers; however, they simultaneously express concerns regarding perceived skill gaps, thereby highlighting the importance of ongoing professional development.

4.3. RQ 3: What is their attitude towards the integration of pre-service and post-service training?

The descriptive statistical results revealed a generally positive attitude among participants towards enhancing the integration of pre-service and post-service training (M = 4.18, SD = 0.73). Specifically, they expressed strong agreement with the idea of "inviting primary and secondary school teachers to deliver demonstration classes and lectures for normal students in college classrooms" (M = 4.26, SD = 0.80), indicating a perceived disconnect between college training and primary and secondary schools. Conversely, participants rated the involvement of universities in post-service training of graduates as relatively low (M = 4.18, SD = 0.82), suggesting their expectation for universities to play a more significant role in their post-service development. These findings imply that participants anticipate integrating pre-service education and post-service training to effectively facilitate their growth and development.

Based on the aforementioned findings, in order to effectively address teachers' demands and enhance their professional development, it is imperative to integrate pre-service education with post-service training. The following specific measures can be implemented.

4.4. Integrated Development of Teachers' Professional Literacy

4.4.1. Professional Ideal as a Spiritual Motivation: From Cultivation and Establishment in Pre-Service Education to Adjustment and Consolidation in Post-Service Practices

The professional ideal represents the teacher's aspiration and pursuit towards becoming a mature education professional, serving as their spiritual motivation for advancing in their profession. It embodies a pursuit of value rationality that transcends instrumental rationality, emphasizing teachers' dedication to the purpose of education rather than mere livelihood. Educators with lofty professional ideals perceive teaching as a platform for realizing self-worth, while those without such ideals view it primarily as an occupation. So, the promotion of teachers' professional ideals before and after service is crucial for fostering their integrated development. It is imperative to assist teachers in cultivating and establishing professional ideals prior to service, as well as aiding them in adjusting and consolidating these ideals afterward. This comprehensive approach will enable teachers to realize their life value within the realm of education and teaching.

In the stage of pre-service education, our focus should be on cultivating and establishing the professional ideals of pre-service teachers. This stage serves as a crucial period for career preparation, laying a solid foundation for prospective teachers and marking the beginning of their journey towards specialization in teaching. During this phase, pre-service teachers still assume the role of students; therefore, incorporating professional ideal education becomes essential to instill a sense of professional belief, stimulate their inner drive, and foster pursuit of their career aspirations. Consequently, normal colleges must not only impart professional knowledge but also engage in nurturing and fostering these professional ideals among pre-service teachers.

Firstly, it is essential for normal colleges to incorporate the cultivation of professional ideals into their teaching methodologies and integrate the education of ideals and beliefs within pre-service teachers' ideological and political courses, educational practice courses, and other relevant subjects (Yang *et al.*, 2020). This approach will subtly influence students' ideologies and behaviors. Additionally, normal colleges should enhance humanistic education to refine students' rationality, emotions, and determination. In the long run, this will enable students to gradually comprehend the spiritual essence embedded in their studies while establishing a professional ideal.

Secondly, teacher educators in normal colleges should serve as role models by embodying the principles of 'practice what you preach' and instilling students with confidence through both knowledge and virtue. It is essential for teachers and educators in normal colleges and universities to not only impart profound knowledge but also cultivate noble ethics within students, enabling them to comprehend the significance and responsibility associated with being a 'normal' teacher while fostering their development into aspiring professionals.

Furthermore, the internship process provides pre-service teachers with an opportunity to shape their own professional ideals. Practical experience is crucial for acquiring knowledge, and it serves as a foundation for establishing robust professional ideals among pre-service teachers. Engaging in off-campus practice activities such as educational internships allows pre-service teachers to gain a deeper understanding of the passion that ordinary educators have for their profession, emphasizing that their enthusiastic professional ideals deserve more attention than mere teaching skills. It is essential for pre-service teachers to cultivate their enthusiasm and dedication towards education while enhancing their sense of identity and belonging within the teaching profession.

During the pre-service stage, the professional ideals of pre-service teachers are frequently shaped by their classroom experiences, educational literature, and influential teachers from their student years. These individuals may possess an idealized vision of education but lack a comprehensive understanding of its intricate realities. Consequently, it is common for teachers' professional ideals to become disillusioned when confronted with the practical challenges of teaching. Therefore, it is crucial and imperative to prioritize the adjustment and consolidation of professional ideals among in-service teachers during post-service training. In this stage, teachers assume their teaching positions with heavy responsibilities, encountering complex teaching situations and facing competition in enrollment rates, as well as evaluation pressures that may lead to exhaustion. Moreover, the disparity between idealism and reality can also pose challenges and setbacks for teachers. Failing to establish correct and proactive professional ideals at this juncture may result in a lackadaisical approach towards educational work by in-service teachers; conversely, adjusting one's mindset according to reality while forming reasonable professional ideals can greatly facilitate the professional growth of these educators.

As the operational entities for in-service teachers, schools should foster an environment conducive to the adaptation and consolidation of their professional ideals. Primarily, schools ought to enhance the training on ideals and beliefs for in-service teachers by refining relevant regulations, ensuring that teacher ethics training is not merely a formality but genuinely implemented. Moreover, schools should periodically invite experts to deliver specialized lectures such as "Professional Ideals of Teachers in the New Era" to impart wisdom and cultivate a passion for education. Various forms of school-based training should assist in-service teachers in upholding their professional ideals and initial educational aspirations by aligning with contemporary demands while remaining grounded in educational realities, ultimately establishing a teaching philosophy centered around student development.

Moreover, schools should leverage the power of exemplification to guide in-service teachers in adapting and consolidating their professional ideals. Teachers who possess lofty professional aspirations ought to be acknowledged, as their unwavering commitment and selflessness can exert a positive influence on their peers. Over time, this will foster an environment characterized by moral education, dedication to teaching, and love for life, where teachers serve as role models for one another. Such a virtuous cycle will enhance teachers' sense of responsibility and mission in educating students. With appropriate guidance from school administration and the demonstration of colleagues, in-service teachers can uphold their professional ideals against distortion or erosion, even when faced with the pressures of teaching and personal life.

4.4.2. Professional Knowledge as the Fundamental Requirement: Transitioning from Theoretical Knowledge in Pre-Service Education to Practical Knowledge in Post-Service Education

Professional knowledge encompasses the comprehensive understanding that teachers must possess, serving as a fundamental prerequisite for their active involvement in educational endeavors. Extensive research has been conducted by scholars both domestically and internationally to delineate the content categories of teachers' professional knowledge; however, there is variation in their classifications.

Among them, Shulman, a highly influential international scholar, categorized teachers' professional knowledge into seven distinct domains: subject knowledge, curriculum knowledge, pedagogical content knowledge (PCK), general pedagogical knowledge (GPK), student knowledge, educational context knowledge, and other curriculum-related knowledge (Shulman, 1987). In contrast, Chinese scholars have classified it into four categories: ontological knowledge encompassing specific subject matter expertise; practical knowledge comprising pedagogy and psychology; contextualized situational teaching skills referred to as conditional knowledge; and general cultural knowledge denoting broad-based understanding (Xin *et al.*, 1999).

The definition of teachers' professional knowledge in this paper is derived from the perspectives of Chinese scholars mentioned earlier. Teachers' professional knowledge is not acquired overnight but rather a result of continuous accumulation. While general cultural knowledge mostly originates from the teacher's student period, it will not be discussed at present. Practical knowledge, conditional knowledge, and ontological knowledge primarily stem from pre-service and post-service education stages, which will be elaborated upon in detail. Among these, ontological and conditional knowledge predominantly derive from literature sources and are considered relatively abstract; hence, they are collectively referred to as theoretical knowledge here. Practical knowledge is not separately categorized or listed (see Figure 1).
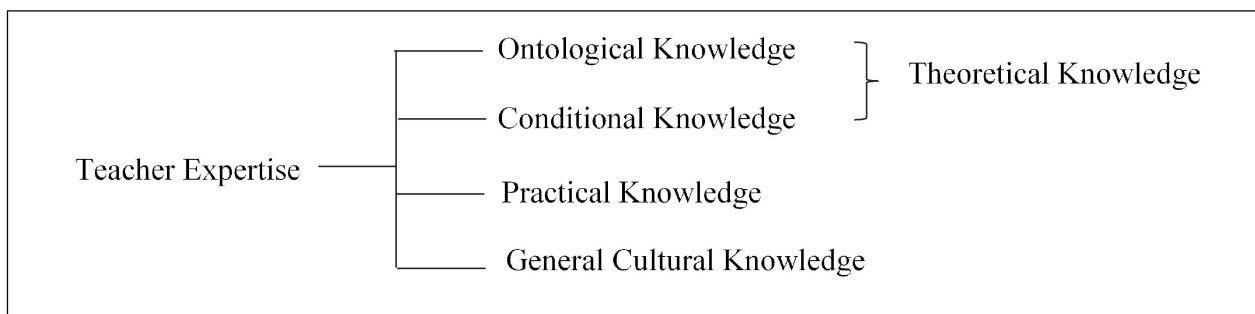

Figure 1: Content Structure Framework of Teachers' Professional Knowledge

In various stages of professional development, teachers should prioritize different types of knowledge. To facilitate the holistic growth of teachers' professional expertise before and after their service, it is imperative to emphasize the acquisition of theoretical knowledge during pre-service education and practical knowledge during post-service training.

The pre-service education stage is a crucial period for pre-service teachers to acquire theoretical knowledge, encompassing ontological and conditional knowledge. Additionally, practical knowledge is gained through educational practice activities such as educational internships. In summary, the focus of pre-service education should be on imparting theoretical knowledge and facilitating the transformation of theory into practice.

Ontological knowledge refers to the specific subject knowledge that teachers should possess. Pre-service education is primarily focused on academic aspects, aiming to provide pre-service teachers with a substantial amount of ontological knowledge. This enables them to acquire fundamental teaching skills and expertise in subjects such as English language proficiency (listening, speaking, reading, and writing), mathematical problem-solving theories, and modern and contemporary literature in Chinese. Regardless of their subject specialization during pre-service training, they often demonstrate exceptional subject knowledge at the basic education stage. Throughout teacher education programs, they also systematically acquire essential and cutting-edge subject-specific knowledge along with other required courses, thereby accumulating a robust foundation of ontological knowledge.

Conditional knowledge refers to the pedagogical and psychological knowledge that teachers should possess. Simultaneously, pre-service education also adopts a "teacher-oriented" approach, aiming to impart ample conditional knowledge to pre-service teachers so that they can master educational concepts and knowledge effectively. However, traditional education courses such as pedagogy, psychology, and teaching methods often suffer from time constraints and limited coverage. Therefore, it is crucial for normal colleges to reform their curriculum structure in order to address this issue comprehensively. Firstly, increasing the proportion of conditional knowledge courses and extending class hours would enable students to acquire a more profound and comprehensive understanding of educational theories and practices. Additionally, dividing pedagogy

and psychology into multiple specialized courses like curriculum theory, teaching theory, history of Chinese and foreign education, general psychology, educational psychology etc., would facilitate deeper learning experiences while systematically organizing subject-specific knowledge acquisition for pre-service teachers.

In addition to the aforementioned theoretical knowledge, it is imperative for pre-service education to facilitate the active engagement of pre-service teachers in practical experiences and emphasize the seamless integration of theory into practice.

Practical knowledge encompasses the classroom teaching situation and related knowledge that teachers should possess, including the educational tactics required to address diverse students. During pre-service education, practical knowledge is primarily acquired through educational practice and internships. Currently, in accordance with teacher professional certification requirements, normal university students typically undergo a concentrated internship period of one semester, which facilitates their acquisition of practical knowledge to some extent. Educational probation and study are integral components of pre-service teacher training, wherein trainees must exercise subjective initiative and rely on personal development to acquire the most practical knowledge; however, the supervising teacher's regulatory function remains indispensable in helping trainees consolidate their experiences into practical knowledge.

The post-service training stage serves as the primary period for teachers to acquire practical professional knowledge, which is derived from accumulated teaching experience during practice. Once established, this knowledge exerts a significant guiding influence on teachers' instructional behavior and undergoes further refinement through practical application. It should be emphasized that the types of knowledge required by teachers in the early and late stages of post-service training may differ.

In the initial phase of post-service training, educational institutions should facilitate a paradigm shift for in-service teachers from theoretical knowledge to practical application while also aiding them in accumulating more substantial professional expertise. Upon commencing their teaching careers, graduates from normal universities undergo a transition from being students to becoming educators. During this period, they possess an abundance of theoretical knowledge; however, their limited teaching experience often poses challenges when it comes to effectively translating theory into practice. Consequently, the subsequent sections propose solutions from two distinct perspectives.

Firstly, enhance the exchange and collaboration among practicing educators. Given that pre-service education curricula tend to prioritize theory over practical application, newly appointed teachers often possess extensive theoretical knowledge but may still grapple with how to effectively apply it in real-world settings. As a professional community, teachers are well aware of the challenges that novice educators may encounter, and the sharing of experiences from seasoned colleagues proves invaluable for their workplace integration. Mentoring represents a time-honored approach to fostering teacher communication—a model commonly referred to as "bridging experience"—where experienced mentors provide personalized guidance to novices, facilitating the transformation of theoretical knowledge into practical expertise and expediting their professional development. It is worth noting that establishing a comprehensive mentoring evaluation and acceptance system is crucial to motivating young teachers' growth.

Secondly, in-service teachers should enhance their personal reflection skills. Reflecting on teaching experiences can help organize the chaotic aspects and develop a structured understanding of teaching practices. This process is beneficial for optimizing knowledge structures, cultivating a unique teaching style, and acquiring practical knowledge—all crucial for in-service teachers. It is essential for them to cultivate reflective consciousness, master effective reflection methods, document reflections systematically, establish habitual reflection practices, evaluate the outcomes of reflection through practical application, accumulate valuable teaching experience, and gain practical knowledge.

In the later stages of post-service training, it is important to facilitate the transition of in-service teachers from practical professional knowledge to theoretical knowledge, thereby promoting their transformation from "experiential operation type" to "educational expert type". These teachers have accumulated a wealth of practical knowledge through teaching practice. Through systematic research or academic creation, they refine and transform this practical knowledge into new theoretical insights, achieving a higher level of development in their teaching and professional abilities.

4.4.3. Professional Abilities as a Fundamental Element: Progressing from Establishing Foundations in Pre-Service Education to Refinement in Post-Service Development

The professional ability of teachers serves as the outward manifestation of their comprehensive quality and constitutes a fundamental criterion for evaluating their professionalism. Enhancing teachers' professional ability is pivotal to improving teaching quality. In 2012, China introduced the "Professional Standards for Secondary School Teachers" (Ministry of Education of China, 2012), which delineates the professional competence of educators (refer to Figure 2).
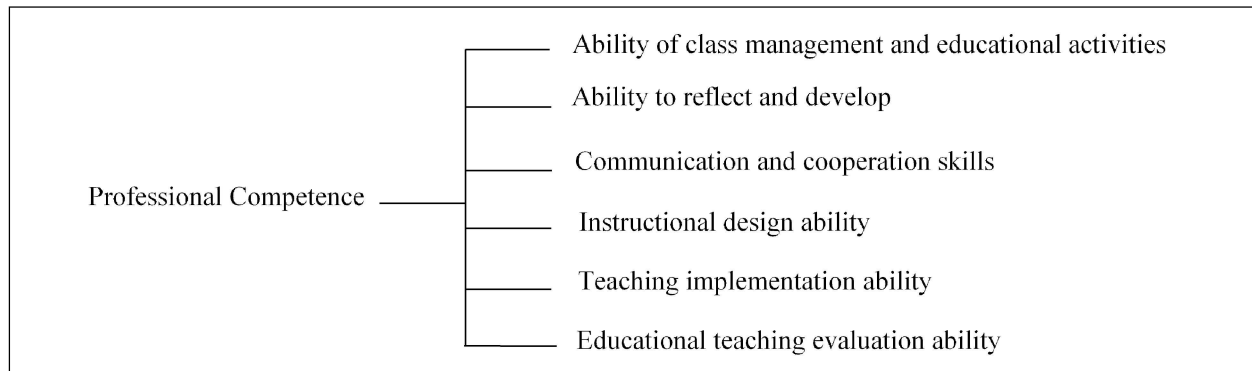
Professional Competence
- Ability of class management and educational activities
- Ability to reflect and develop
- Communication and cooperation skills
- Instructional design ability
- Teaching implementation ability
- Educational teaching evaluation ability

Figure 2: The Framework of Teachers' Professional Competence as Stipulated in the Professional Standards for Middle School Teachers

To enhance the integration of teachers' professional competence pre- and post-service, it is essential for the pre-service education stageto establish a solid foundation for prospective teachers, while the post-service training stage should facilitate continuous enhancement.

At the pre-service education stage, normal colleges should establish a solid foundation for the professional competence of pre-service teachers. Efforts should be made to rectify the inclination towards knowledge-centricity and practice-neglection through diverse approaches.

Firstly, establish corresponding courses that align with the Professional Standards for Middle School Teachers to cultivate the necessary abilities in pre-service teachers. These courses serve as a theoretical foundation for developing teaching design, implementation, and evaluation skills.

Secondly, normal colleges should prioritize microteaching and enhance the teaching training of pre-service teachers. Microteaching is a pedagogical approach that utilizes video and recording equipment to develop professional skills of pre-service teachers within limited time and space. Effective measures must be taken by normal colleges to promote the implementation of microteaching, such as devising a comprehensive microteaching plan and increasing the number of hours dedicated to it; intensifying research on microteaching theory and fostering awareness about its significance; diversifying evaluation methods for microteaching while improving its overall effectiveness.

Lastly, it is imperative for normal colleges to organize diverse teaching skills competitions in order to foster the enhancement of pre-service teachers' pedagogical abilities. Teaching skills competitions serve as a pivotal platform for students enrolled in normal universities to showcase and refine their teaching prowess. These competitions enable them to identify their strengths and weaknesses within their professional aptitude, thereby facilitating the development of their strong points while mitigating any shortcomings. Moreover, educators can enhance their instructional methods by addressing the identified weaknesses among these aspiring teachers. Consequently, educational institutions should host more high-quality teaching skills competitions to stimulate learning and evaluation.

In the stage of post-service training, it is crucial to promote the enhancement of professional competence among in-service teachers. Post-service development serves as a primary platform for teachers to improve their professional abilities. Wang (1994) conducted research on the formation time of excellent middle school teachers' professional competence, and results indicated that, apart from language expression ability, most aspects of middle school teachers professional competence were formed during pre-service education while other skills were developed through post-service training and self-learning. This phenomenon may be attributed to

traditional normal education in China, which emphasizes academic training but overlooks professional skills. Therefore, it is evident that the post-service training stage represents a golden opportunity for enhancing the professional ability development of in-service teachers.

First, in-service training plays a pivotal role in fostering the professional competence of teachers. To enhance their teaching abilities through training, we should adopt the following measures: diversified training forms, including school-based sessions, off-site workshops, and online courses; various training methods, such as collaborative lesson planning, on-campus lectures, demonstration lessons, expert presentations, interschool exchanges, short-term intensive programs, and self-directed learning opportunities; practical training content with a particular emphasis on enhancing professional skills like classroom management and instructional design; multiple training opportunities at school level as well as city-, provincial-, and national-levels. Such comprehensive training initiatives can effectively bolster teachers' professional capabilities.

Furthermore, teaching research serves as effective means to enhance the professional competence of in-service teachers. By forming a collaborative learning community, teachers engage in collective problem-solving, discuss pedagogical strategies, and generate educational insights. This approach fosters mutual support among educators, facilitates shared progress, and effectively enhances teachers' proficiency in areas such as communication, cooperation, reflection, and development.

Finally, self-directed learning can also facilitate the enhancement of teachers' personal professional competence. In addition to utilizing external resources, in-service educators should actively engage in self-study endeavors. They can explore scholarly literature or journals available online or at libraries to stay abreast of frontier information, such as holistic unit teaching, integrated teaching-learning-evaluation approaches, etc. By doing so, they can effectively apply their acquired knowledge to practical teaching scenarios, with the ultimate goal of augmenting their pedagogical expertise.

4.4.4. Professional Ethics as the Moral Foundation: From Cognition in Pre-Service to Practice in Post-Service

Teacher professional ethics serves as the moral foundation that guides educators in their pedagogical endeavors. It encompasses the principles and values upheld by dedicated teachers, who adhere to educational laws and regulations, contribute to the advancement of education, and continuously strive for excellence in their mindset, demeanor, emotions, beliefs, values, norms, and ethical conduct.

The concept of "teacher's ethics" has gradually been replaced by that of "professional ethics" for two reasons: firstly, due to the demands of social transformation. In ancient societies, morality was emphasized, whereas modern society places greater emphasis on rules and regulations, with ethics tending to refer to the norms and standards governing public relations. Secondly, this shift is driven by the requirements of teacher professional development. As a profession in its own right, teachers' professional ethics inevitably place more emphasis on their unique characteristics than on their moral literacy (Liu, 2012).

The significance of professional ethics in teacher education has been insufficiently emphasized, necessitating the integration of professional ethics throughout both pre-service and post-service stages. To facilitate this integration, it is imperative to establish a comprehensive understanding of professional ethics among prospective teachers during their time at normal universities and encourage practicing professional ethics among serving teachers.

In the stage of pre-service education, it is imperative for normal colleges to assist pre-service teachers in developing a profound understanding of professional ethics. Regrettably, professional ethics often receive insufficient attention during teacher education, and both educational institutions and pre-service teachers themselves have failed to embrace the notion that "professional ethics should be nurtured right from the outset of pre-service training". To enhance pre-service teachers' comprehension of professional ethics, we can initiate efforts from the subsequent perspectives.

Firstly, there has been a paradigm shift in the field of education philosophy. Teacher professional ethics should be an integral part of moral development, encompassing both pre-service education and post-service training, rather than being solely emphasized after entering the profession. It is imperative to discard the erroneous notion that "professional ethics can be disregarded during pre-service education" and instead

establish a scientifically grounded concept of "facilitating the integration of professional ethics throughout all stages of teacher preparation".

Secondly, it is imperative for teacher training institutions to establish dedicated courses on professional ethics and embrace innovative teaching methodologies. Currently, the education on professional ethics for prospective teachers is being overlooked and marginalized. Most normal colleges do not offer specialized courses on professional ethics; instead, they provide general ideological and moral education that fails to deeply resonate with pre-service teachers. By introducing separate courses solely focused on professional ethics, employing ethical dilemmas as case studies, and facilitating speculative discussions during instruction, we can significantly enhance the effectiveness of learning. This approach will foster ethical sensitivity and autonomy among pre-service teachers, while developing their awareness and capacity for ethical decision-making. Consequently, they will be better equipped with psychological preparedness and coping skills when confronted with moral predicaments in the future.

Finally, educational practice provides a fertile ground for the cultivation of professional ethics. Throughout the practical period, pre-service teachers engage in real and long-term educational activities, enabling them to deeply reflect upon the responsibilities and mission inherent in becoming an educator. By extending the duration of educational practice across multiple academic years, teacher training institutions can facilitate a more immersive experience that allows pre-service teachers to internalize professional ethics more effectively. Furthermore, comprehensive training plans should be formulated by normal colleges to promote the integrated development of pre-service teachers' professional knowledge, skills, and ethical values, thereby facilitating their moral growth.

In the stage of post-service training, it is essential to provide supervision for in-service teachers to ensure the implementation of professional ethics. Given that professional ethics serves as a benchmark for behavior, it should be effectively applied during teaching practice, facilitating the integration of theoretical knowledge and practical application.

The examination of the relationship between teaching stakeholders is a crucial aspect of professional ethics. In-service teachers should prioritize justice and care for their students, while also emphasizing equality and respect towards parents. Furthermore, they should focus on fostering cooperation and effective communication with colleagues. Additionally, professional development necessitates reflection and growth (Niu, 2008). While these principles are undeniably important, their implementation may not always be flawless in practice. Extensive research conducted by scholars across numerous provinces in China has revealed that although teachers generally exhibit positive behavior when interacting with colleagues, parents, and students, there are still areas that require varying degrees of improvement (Tong and Liu, 2007).

The practice of post-professional ethics should encompass both subjective and objective dimensions. Firstly, it is imperative to enhance the standards and systems of professional ethics for teachers in order to ensure their work is conducted objectively. Currently, the scope of professional ethics for teachers includes patriotism, law-abidance, dedication, care for students, effective teaching and mentoring skills, serving as role models, and lifelong learning. However, these principles are rather broad. A more meticulous approach would involve establishing a comprehensive code of professional ethics that delineates specific aspects through which love and dedication can be demonstrated or evaluated from various perspectives. This will effectively fulfill its guiding function. Furthermore, there is an urgent need to construct and improve the system governing professional ethics by establishing a systematic and comprehensive mechanism for evaluating, supervising, and incentivizing teachers' adherence to ethical standards in order to ensure strict compliance with these principles.

Secondly, teachers should enhance their awareness of practicing professional ethics, which plays a dynamic role subjectively. In-service teachers should consciously integrate professional ethics into their professional development, ensuring consistency between words and actions while managing multiple relationships in teaching. As educators, they should conscientiously practice and adhere to professional ethics, strengthen their commitment to professionalism, elevate the realm of education, and contribute to nurturing well-rounded individuals who embody moral integrity, intellectual prowess, physical fitness, aesthetic appreciation, and labor skills.

4.4.5. Professional Self, Serving as the Optimal State: Transitioning from Emotional Recognition During Pre-Service to Rational Evaluation in Post-Service

The development of a teacher's professional self represents the pinnacle of their professional growth, embodying their comprehensive understanding, experience, evaluation, and expectations regarding their role within the educational context (Zhang, 2009). This encompasses aspects such as professional self-awareness, professional self-experience, and professional self-regulation (Fu and Chen, 2014).

The professional self-awareness of teachers encompasses the acknowledgment of their own vocation, the validation of their work performance, and the acknowledgment of their prospects for professional development. Among them, the manifestation of their professional self includes "recognition of the teaching profession", "liking the work of educators", and "suitability for the teaching profession". The perception of their own job performance is demonstrated through "possessing proficient educational skills and techniques", "demonstrating competence at a professional level in their current role", "understanding students' personality traits", and "actively seeking solutions to encountered challenges". Their understanding of professional development prospects is reflected in factors such as "awareness regarding personal career growth opportunities", "having a clear vision for professional advancement goals", and "formulating well-defined plans for professional development".

A teacher can only be considered to have the potential for professional self-formation if they possess a clear understanding of their professional identity; otherwise, they will merely imitate others and lack an objective comprehension of their own professional self, making it challenging to foster the development of their professional identity. Therefore, establishing teachers' accurate perception of their professional identity is not only fundamental for their professional growth but also serves as a prerequisite for the formation of their professional selves.

The teacher's professional self-experience involves the emotions and affections that teachers undergo during the teaching process, encompassing feelings of self-respect, self-worth, and motivation for achievement. Self-respect is manifested through a sense of pride in the teaching profession. The perception of self-worth is demonstrated by acknowledging that being a teacher fulfills both personal survival and professional growth needs. Achievement motivation encompasses aspirations for success, avoidance of failure, seeking recognition for one's work, and dedicated pursuit of individual goals.

A teacher can only acquire professional self-experience through direct contact with professionals and engaging in teaching practice, as mere theoretical discussions or written exchanges cannot provide a genuine sense of professional self-experience. Therefore, the acquisition of valuable professional experience by teachers is not only crucial for their professional development, but also integral to the process of forming their professional identity.

Teachers' professional self-regulation incorporates self-learning, self-adjustment, and self-reflection (Wu, 2012). Self-learning involves enhancing one's professional knowledge through reading relevant literature. Self-adjustment entails adapting teaching methods and content based on classroom experience. Self-reflection involves critically evaluating one's own teaching practices, documenting reflective notes, and engaging in communication with colleagues.

Only through acquiring expertise in professional self-regulation, can a teacher engage in self-examination, self-supervision, and self-control of their professional conduct, as well as undertake self-correction, self-reflection, and strive for continuous improvement. This enables them to effectively steer the process and direction of their professional development while fostering their own professional growth. Consequently, scientific self-regulation among teachers serves as the impetus for professional advancement and signifies the formation of their professional self-identity.

5. Conclusion

In order to provide a robust assurance for the implementation of the "Strong Foundation Plan", the significance of teachers' professional literacy cannot be overstated. Enhancing teachers' professional literacy extends beyond pre-service education and is intricately linked with post-service development. Hence, investigating

the integrated development of teacher professional literacy in both pre-service and post-service education emerges as a pivotal research topic within the realm of teacher education.

The integration of teachers' professional ideals, knowledge, abilities, and ethics before and after service has ultimately led to the elevation of their professional selves. The formation of teachers' professional self represents the highest aspiration in integrating their professional development before and after service. In terms of time span, it is a collective outcome resulting from each aspect of their professional literacy during pre-service education and post-service training stages. In terms of logical relationship, the formation of teachers' professional self requires a prolonged period of trial and error as well as correction. In terms of content perspective, it encompasses professional ideals—from cultivation and establishment to adjustment and consolidation; professional knowledge—from theoretical understanding to practical application; professional abilities—from laying foundations to refinement; and professional ethics—from cognition to practice. Once teachers have established their professional selves, they will exhibit a strong and distinctive style across all aspects of their professional literacy while propelling forward positive momentum in terms of their professional ideals, knowledge, abilities, and ethical conduct.

Funding

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