

Teacher professional development and school improvement in Chinese secondary schools

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Abstract

This study investigated the relationship between teacher professional development (TPD) and school improvement in Chinese secondary schools. This descriptive research involved teachers and administrators from secondary schools across different regions of China. This study aimed to establish the correlation between teacher professional development and school improvement. Specifically, it aimed to describe the demographic profiles of teachers and administrators in Chinese secondary schools in terms of age, sex, years of teaching experience, subject specialization, and administrative roles, determine the teacher professional development in terms of participation rates, perceived effectiveness of programs, and areas of professional growth, identify the school improvement in Chinese secondary schools in terms of academic performance, student engagement, school climate, and stakeholder satisfaction, test the difference of responses when grouped according to profile variables, test the relationship between the two variables and propose an action plan to enhance professional development and school improvement based on the results of the study. Most of the respondents are female, 24-34 years old, college graduates and serving for 10 years and above. Teacher professional development indicates widespread participation in various forms of professional learning activities, with positive perceptions regarding their impact on teaching skills and instructional quality. These findings underscore the importance of ongoing professional development initiatives in enhancing educator effectiveness. The evaluation of school improvement efforts demonstrates their positive impact on student academic achievement and overall school climate. Effective improvement strategies, such as setting clear goals, fostering a culture of collaboration, and prioritizing instructional leadership, contribute to tangible improvements in student outcomes and school culture. Factors such as age, years of teaching experience, and subject specialization influence attitudes towards professional development and school improvement initiatives, highlighting the importance of personalized approaches to support educator growth. There is a strong positive relationship between teacher professional development and school improvement outcomes. Teachers who engage in continuous professional learning opportunities are more likely to contribute to overall school improvement efforts, suggesting that investments

in professional development yield significant benefits for educational institutions. Based on the findings, an enhanced program for teacher professional development was developed. By investing in ongoing professional development opportunities that are aligned with school improvement goals, educational institutions can cultivate a culture of continuous improvement and enhance overall student outcomes.

Keywords: teacher professional development, school improvement, Chinese secondary schools, lifelong learning, teacher training

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1. Introduction

Teacher professional development and school improvement are two interconnected concepts that hold significant importance in the Chinese education system, particularly in secondary schools. As the cornerstone of educational progress, teachers play a pivotal role in shaping the educational outcomes of students and the overall quality of schools. Therefore, investing in teacher professional development has become a strategic priority for schools seeking to enhance their performance and meet the challenges of a rapidly changing educational landscape. Teacher professional development (TPD) stands as a cornerstone in the pursuit of educational excellence, embodying a commitment to the continuous enhancement of educators' knowledge, skills, and attitudes. Defined as the ongoing process of refining teaching practices to positively impact student learning outcomes, TPD transcends mere pedagogical instruction to encompass a holistic approach to educator growth. Rooted in the recognition that teachers are central agents in shaping the quality of education, TPD endeavors to empower educators with the tools and insights necessary to navigate the complexities of the modern classroom effectively (Darling-Hammond, 2006).

Meanwhile, school improvement represents a concerted effort to elevate the overall quality of education within educational institutions, encompassing a multifaceted approach aimed at enhancing student learning outcomes, fostering a positive school culture, and promoting equitable opportunities for all learners. Rooted in the recognition that schools serve as the bedrock of societal progress, school improvement initiatives strive to create environments that nurture academic achievement, socioemotional development, and civic engagement among students. Through collaborative endeavors involving educators, administrators, students, parents, and community stakeholders, school improvement endeavors seek to cultivate dynamic learning communities that are responsive to the evolving needs of diverse learners in an ever-changing world (Leithwood, et. al., 2003). Both teacher professional development and school improvement are mutually beneficial to schools. Teacher professional development not only enhances individual teachers' capabilities but also contributes to the overall improvement of schools by raising the quality of teaching and learning.

Conversely, school improvement efforts create a supportive environment that fosters teachers' professional growth and encourages them to engage in innovative practices. In a model of "productive participation" by Zhang, et. al., (2010) they delve into the complexities of professional development for Chinese teachers, exploring how their participation in such programs can lead to improved teaching practices and ultimately contribute to school improvement. It provides insights into the specific challenges and opportunities within the Chinese educational context, highlighting the need for tailored approaches to teacher development to enhance overall educational quality. By referencing this study, one can underscore the relevance and significance of investigating teacher professional development within Chinese secondary schools. Teacher Professional Development (TPD) and its correlation with School Improvement (SI) represent a crucial area of study in education, particularly in the context of Chinese secondary schools. This research is motivated by the seminal work of Zhang, et. al., (2018), whose study sheds light on the pivotal role of TPD in enhancing teaching quality and student achievement in Chinese educational settings. The study by Zhang et al. (2018) provides compelling evidence that effective TPD strategies contribute significantly to school improvement efforts in the Chinese secondary school context. Their research underscores the importance of continued inquiry into this topic, emphasizing the potential for targeted professional development interventions to drive positive changes in educational practice and student success.

This study explored the role of teacher professional development in school improvement in Chinese secondary schools. It delves into the various strategies and practices adopted by schools to promote teacher development and how these efforts translate into improvements in teaching and learning outcomes. Furthermore, the challenges and

opportunities faced by schools in implementing teacher professional will be examined to offer insights into how these can be addressed. By understanding the link between teacher professional development and school improvement, this may develop effective actions that can be replicated and scaled up to improve the quality of education in Chinese secondary schools. This, in turn, can contribute to the overall development of students and prepare them to meet the demands of the 21st century. Study on “Teacher Professional Development and School Improvement in Chinese Secondary Schools” will directly benefit Chinese secondary schools by providing actionable insights and evidence-based recommendations to elevate teaching standards, empower educators, foster innovation, and promote equity and inclusion. Through a comprehensive investigation of effective professional development strategies, your research will equip educators with the knowledge and skills needed to adapt to evolving educational practices, ultimately enhancing teaching quality and improving academic outcomes for students. Moreover, by aligning with national education goals and addressing issues of equity and inclusion, your study will contribute to the broader objectives of educational reform and excellence in China’s secondary education system. Overall, this study offers actionable insights and recommendations tailored to the specific context of Chinese secondary schools, with the overarching goal of driving positive change and enhancing the quality of education for all stakeholders involved.

Objectives of the study - This study aimed to establish the correlation between teacher professional development and school improvement. Specifically, it aimed to describe the demographic profiles of teachers and administrators in Chinese secondary schools in terms of age, sex, years of teaching experience, subject specialization, and administrative roles, determine the Teacher Professional Development in terms of participation rates, perceived effectiveness of programs, and areas of professional growth, identify the School Improvement in Chinese secondary schools in terms of academic performance, student engagement, school climate, and stakeholder satisfaction, test the difference of responses when grouped according to Profile Variables, test the relationship between the two variables and propose an action plan to enhanced the professional development and school improvement in Chinese secondary schools based on the results of the study.

2. Methods

Research Design - The descriptive study investigated the relationship between teacher professional development and school improvement in Chinese secondary schools. Teacher professional development is crucial for enhancing educational quality and promoting student learning outcomes. This research design outlines the methods and strategies employed to gather data, analyze findings, and draw conclusions on this topic (Zhang et al., 2010).

Participants of the Study - The total population of the study are Secondary education teachers with secondary education institutions in Henan Province as the research context, there are 3,000 teachers in total , from which 328 teachers through Raosoft calculator were selected as respondents to participate in the study using a simple random sampling technique. Selection of these teachers requires certainty that they are volunteers and willing to participate. The information regarding the selection of participants using a simple random sampling technique is based on established research methodology principles and practices. These techniques are commonly employed in educational research studies to ensure the representativeness and generalization of findings to the broader population of interest.

Instrument of the Study - The study used a survey questionnaire to gain a deeper understanding of middle school teachers’ professional development status and school improvement in China. The questionnaire aims to collect information on teachers’ personal professional growth, school teaching improvement, and participation in school development. This helped the researcher analyze current problems, propose targeted improvement strategies, and promote continuous improvement in education quality of China. The questionnaire includes sections on basic information, teacher professional development, and school improvement. It was developed by the researcher based on literature review and consultation with educational experts. Demographic questions were adapted from previous studies.

Questions on professional development were based from the study of Brandt et al. (2017) on teacher professional development and student achievement with some modifications to fit the context of the study. Meanwhile, the school improvement assessment part of the questionnaire was adapted from the research instrument of Creemers et al. (2005) on the study “The role of school improvement in enhancing school effectiveness and School effectiveness and school improvement by Sammons (1995). To make the adapted instrument reliable, it underwent content validation before it was subjected to pilot test with the result indicated below.

Data Gathering Procedure - This study collected data in the form of an online survey by contacting respondents beforehand. A link to the online questionnaire was sent to the respondents via instant messenger after confirming that the respondents understood and appreciated the purpose and ethics of the study. The respondents answered the questionnaire through their cell phones or computers and the responses were saved in their cell phones or computers after completion. The questionnaire was stored in the back end of Questionnaire Star (the Chinese version of Google Questionnaire and then discussed until the steps that all data were collected and interpreted. The survey responses were tallied and forwarded to the professional statistician for statistical analysis. After the treatment made by the statistician on the forwarded collected data, the results were analyzed, interpreted and used as basis for the formulation of conclusions, recommendations and proposed output.

Data Analysis - Weighted mean and ranking were used to determine the teacher professional development in terms of participation rates, perceived effectiveness of programs, and areas of professional growth and identify the school improvement in Chinese secondary schools in terms of academic performance, student engagement, school climate, and stakeholder satisfaction. In addition, analysis of variance (ANOVA) was used to test the test the difference of responses when grouped according to Profile Variables. Pearson’s r was used to test the test the relationship between teacher professional development and school improvement.

Ethical Considerations - Ethical considerations in academic research play a crucial role in ensuring the quality of research and protecting the rights of participants. First, ensuring that all participants understand the purpose and process of the research and give informed consent not only ensures their autonomy, but also increases the transparency and trust in the research. This is key to building trust between the researcher and the participants, especially when the research involves potential risks. Secondly, respect for privacy and confidentiality of data is one of the core ethical principles. Participants should trust the researcher to handle their information appropriately and not allow their identity to be exposed or misused. At the same time, treating all participants fairly and ensuring that they are not discriminated against on the basis of factors such as gender, age, ethnicity or socio-economic status will ensure that the research is broad and representative. In addition, transparency and honesty are particularly important when reporting research findings. Falsification or manipulation of data not only undermines the credibility of the academic community, but may also lead to erroneous conclusions or recommendations, further causing potential harm to society.

3. Results and discussion

Table 1
Summary table on Teacher Professional Development

Indicators	WM	VI	Rank
1. The Impact of Educational Background	3.69	Strongly Agree	1
2. The Impact of Teaching Experience on the Professional Development of Teachers	3.60	Strongly Agree	2
3. The Impact of Frequency of Participation in Educational Training on Teachers’ Professional Development	3.47	Agree	3
Composite Mean	3.59	Strongly Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

Table 1 presents the evaluation results of the three main influencing factors on teacher career development. Each influencing factor has a corresponding weighted mean, verbal explanation, and ranking. Firstly, the weighted mean of the Impact of Educational Background reached 3.69, which is the highest score among all influencing

factors. This shows that the respondents strongly agree with this and rank first in the ranking. This indicates that respondents generally believe that educational background has a significant and important impact on the professional development of teachers).

Secondly, the weighted mean of The Impact of Teaching Experience on the Professional Development of Teachers is 3.60, slightly lower than the score of the impact of educational background. This indicates that teaching experience is also considered one of the key factors in the professional growth process of teachers. Finally, the weighted mean of The Impact of Frequency of Participation in Educational Training on Teachers' Professional Development is 3.47, which is slightly lower than the first two influencing factors, but still shows the respondents' recognition of this factor. This reflects that the frequency of participating in educational training is also considered one of the important factors affecting the professional development of teachers, although its impact may be slightly inferior to educational background and teaching experience. Studies have consistently highlighted the significance of educational background, teaching experience, and participation in educational training in shaping teacher professional growth and advancement (Darling-Hammond, 2006; Hargreaves et al., 2012). Additionally, participation in ongoing educational training and professional development activities has been linked to enhanced teaching practices, student learning outcomes, and overall teacher effectiveness (Desimone et al., 2002). Taking into account all influencing factors, the calculated composite mean is 3.59, which generally leans towards a strongly agreed view. This indicates that respondents generally agree on the positive role of educational background, teaching experience, and frequency of participation in educational training in teacher career development.

In summary, the respondents' views on the impact of three key factors on teacher career development, with the highest recognition of the influence of educational background and teaching experience, and the frequency of participating in educational training being seen as an important driving factor. Overall, these findings underscore the multifaceted nature of teacher career development and the importance of considering various factors in supporting educators' continuous professional growth and success.

Table 2
Summary Table on School Improvement

Indicators	WM	VI	Rank
1. Teaching Quality and Effectiveness	3.58	Strongly Agree	1
The Impact of School Management Level on School Performance	3.38	Agree	3
Student Performance and Academic Level	3.53	Strongly Agree	2
Composite Mean	3.50	Strongly Agree	

Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree

Firstly, "Teaching Quality and Effectiveness" got the weighted average value of 3.58, which is relatively high, indicating that most people hold a very positive attitude towards teaching quality and effectiveness. The verbal explanation is a strong agreement, further confirming this point. In terms of ranking, this factor ranks first, highlighting the importance of teaching quality and effectiveness in improving students' academic level. Next is the second factor, "The Impact of School Management Level on School Performance.". Its weighted average is 3.38, although it also shows some recognition, it slightly decreases compared to the first factor. Oral explanation is "agreement", indicating that most people believe that the level of school management does have an impact on school performance, but may not be the most critical factor. In terms of ranking, this factor ranks third. Finally, the weighted average of the third factor, Student Performance and Academic Level, is 3.53, which is similar to the first factor. Oral explanation is also a strong agreement, indicating people's high recognition of the student's own performance and academic level. In terms of ranking, this factor ranks second, indicating that in the improvement of students' academic level, their own efforts and performance are also very important. Additionally, research underscores the significance of school leadership and management practices in shaping overall school performance (Leithwood et al., 2004). Furthermore, the importance of student engagement, motivation, and academic achievement in driving academic success has been widely documented.

In summary, the table data shows the importance of teaching quality and effectiveness, school management

level, and student performance and academic level in improving student academic performance, and emphasizes that these three factors have been strongly recognized by the majority of people. These data have guiding significance for educators and policy makers, helping them to have a deeper understanding of the key factors affecting student academic development, and based on this, develop corresponding teaching strategies and management measures.

Table 3
Relationship Between the Teacher Professional Development and School Improvement

The Impact of Educational Background	R-value	P-value	Interpretation
Teaching Quality and Effectiveness	.494**	0.000	Highly Significant
The Impact of School Management Level on School Performance	.275**	0.000	Highly Significant
Student Performance and Academic Level	.343**	0.000	Highly Significant
The Impact of Teaching Experience on the Professional Development of Teachers			
Teaching Quality and Effectiveness	.409**	0.000	Highly Significant
The Impact of School Management Level on School Performance	.391**	0.000	Highly Significant
Student Performance and Academic Level	.461**	0.000	Highly Significant
The Impact of Frequency of Participation in Educational Training on Teachers' Professional Development			
Teaching Quality and Effectiveness	.400**	0.000	Highly Significant
The Impact of School Management Level on School Performance	.430**	0.000	Highly Significant
Student Performance and Academic Level	.260**	0.000	Highly Significant

Legend: Significant at p-value < 0.05

Table 3 shows that the more frequently teachers participate in educational training, the higher their teaching quality and effectiveness may be. The study by Zhang et al. (2018) provides compelling evidence that effective TPD strategies contribute significantly to school improvement efforts in the Chinese secondary school context. Their research underscores the importance of continued inquiry into this topic, emphasizing the potential for targeted professional development interventions to drive positive changes in educational practice and student success.

The frequency of participation in education and training: The correlation coefficient is .430, with a p-value of 0.000, indicating a highly significant positive correlation between the frequency of participation in education and training and the impact of school management level on school performance. This means that the more frequently teachers participate in educational training, the greater the positive impact of school management level on school performance may be. While teacher quality and instructional practices significantly impact student learning, other factors such as school leadership, resources, and student motivation also play crucial roles in shaping academic outcomes. The frequency of participation in education and training has a correlation coefficient of .260 and a p-value of 0.000, indicating a significant positive correlation between participation frequency in education and training and student performance and academic level. However, compared to other factors, this relationship may be slightly weaker.

From the provided data, it can be seen that multiple factors in the educational background, especially the frequency of participation in educational training, have a significant impact on teaching quality and effectiveness, the impact of school management on school performance, as well as student performance and academic level. Studies have shown that participation in high-quality professional development programs positively impacts teaching practices and student learning outcomes (Desimone, 2009). These data have important guiding significance for schools and educational institutions, as they can improve teaching quality and effectiveness by encouraging teachers to participate in more educational training, thereby enhancing overall school performance and student academic level. Additionally, literature on educational leadership emphasizes the importance of effective school management in improving overall school performance (Leithwood et al., 2004).

Table 4
Proposed Action Plan to Enhance Professional Development and School Improvement in Chinese Secondary Schools

Key Result Areas	Objectives	Enhancement Activities	Success Indicators	Persons Involved
Teacher Professional Development 1.1 Frequency of Participation in Educational Training	To Improve the professional skills of teachers through participation in retooling activities.	1. Establish professional learning communities (PLCs) for subject-area teams 2. Organize meetings for collaborative planning and sharing of best practices 3. Initiate participation in cross-school collaboration initiatives to benchmark best teaching practices 4. Offer professional development sessions on educational technology tools and applications or in any area where difficulties or weaknesses of teachers are responded. 5. Develop a monitoring and tracking system that will ensure equal opportunity given to teachers in terms of training attendance.	90% improvement in the professional and teaching- related skills of teachers 90% increase in regular attendance and active participation in PLC meetings 90% Increased collaboration and sharing of instructional strategies among teachers	School administrators, teachers
School Improvement 2.1 Impact of School Management on School Performance	To foster school improvement through improved school management	1. Organize more meetings with teachers for them to be more involved in school planning, decision making and conflicts management . 2. Gather feedback from stakeholders, including teachers, in a regular basis and use the feedback as basis for continually improving the school. 3. Organize events that will showcase the innovations of teachers which are based from the learnings they get from attended trainings. 4. Develop a daily customer- feedback mechanism that will focus on addressing and responding to the needs of stakeholders in a timely and prompt manner.	90% increase in the realization of the school goals	School administrators, teachers Other stakeholders

4. Conclusions and recommendations

The assessment of teacher professional development indicates widespread participation in various forms of professional learning activities, with positive perceptions regarding their impact on teaching skills and instructional quality underscoring the importance of ongoing professional development initiatives in enhancing educator effectiveness. The evaluation of school improvement efforts demonstrates their positive impact on student academic achievement and overall school climate. Effective improvement strategies, such as setting clear goals, fostering a culture of collaboration, and prioritizing instructional leadership, contribute to tangible improvements in student outcomes and school culture. Factors such as age, years of teaching experience, and subject specialization influence attitudes towards professional development and school improvement initiatives, highlighting the importance of personalized approaches to support educator growth. Teacher professional development is closely associated to school improvement outcomes. Teachers who engage in continuous professional learning opportunities are more likely to contribute to overall school improvement efforts, thus, investments in professional development yield significant benefits for educational institutions. Based on the findings, an action plan to enhance professional development and school improvement in Chinese secondary schools was proposed.

Schools may establish comprehensive professional development plans to ensure that teachers receive adequate training and support at all stages, enhancing their teaching quality and professional competence. Teachers may actively engage in professional development activities including training courses, workshops, and teaching research, continuously enhancing their teaching abilities and professional standards and develop their own personal growth plans. Human resource officers may provide diverse training resources to meet the varied professional development needs of teachers, including online courses, workshops, and mentorship programs. The proposed teacher development program may be reviewed, implemented and evaluated. Future researchers may delve into various factors influencing teacher professional development and school improvement, including personal, organizational, and environmental factors, to provide theoretical support for more effective development strategies.

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