



**A STUDY OF THE METACOGNITIVE LEVEL OF HIGH SCHOOL ENGLISH
TEACHERS - A CASE STUDY OF HIGH SCHOOL ENGLISH TEACHERS IN
JINAN**

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**AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF
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This Independent Study has been approved as a Partial Fulfillment of the
Requirements for the Degree of Master of Business Administration

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Date: 26 / 7 / 2024


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ABSTRACT

This study focused on the factors that affect the metacognitive level of high school English teachers in Jinan, and how to improve their metacognitive level. The objectives of this study were: 1) To explore the relationship between the metacognitive level of high school English teachers and their educational background, 2) To explore the relationship between the metacognitive level of high school English teachers and their teaching experience, 3) To explore the relationship between the differences in the teaching forms and the metacognitive level of high school English teachers in the teaching process. This study adopted the quantitative method, using a questionnaire survey with 300 questionnaires distributed to the English teachers in high schools in Jinan, and 262 valid questionnaires were collected. SPSS was used for descriptive analysis, correlation analysis and regression analysis.

The study found that the metacognitive awareness of English teachers in Jinan middle school was relatively good. The following research results were obtained : 1) The metacognitive level of high school English teachers was positively correlated with their educational background, 2) The metacognitive level of high school English teachers was significantly positively correlated with their teaching experience, 3) The metacognitive level of high school English teachers was significantly positively correlated with the teaching forms used in the teaching process.

Based on the research results, this study puts forward three suggestions on how to use metacognitive strategies to improve the metacognitive level of high school English teachers:1) Apply the planning strategy of metacognitive strategy to help teachers establish the goals of teaching and research activities, formulate reasonable plans, and be fully prepared to improve the efficiency of teaching and research, 2) Make good use of the monitoring strategy of metacognitive strategy, encourage teachers to self-monitor teaching and research activities, eliminate internal and external interference, and effectively optimize and adjust teaching and research activities in the implementation process, 3) Make good use of the adjustment strategy, diagnosing and evaluating the cognitive results of teaching and checking the effectiveness of the cognitive strategies

used in teaching and research activities.

Keywords: high school English teacher, metacognitive strategies, effective teaching, metacognitive level.



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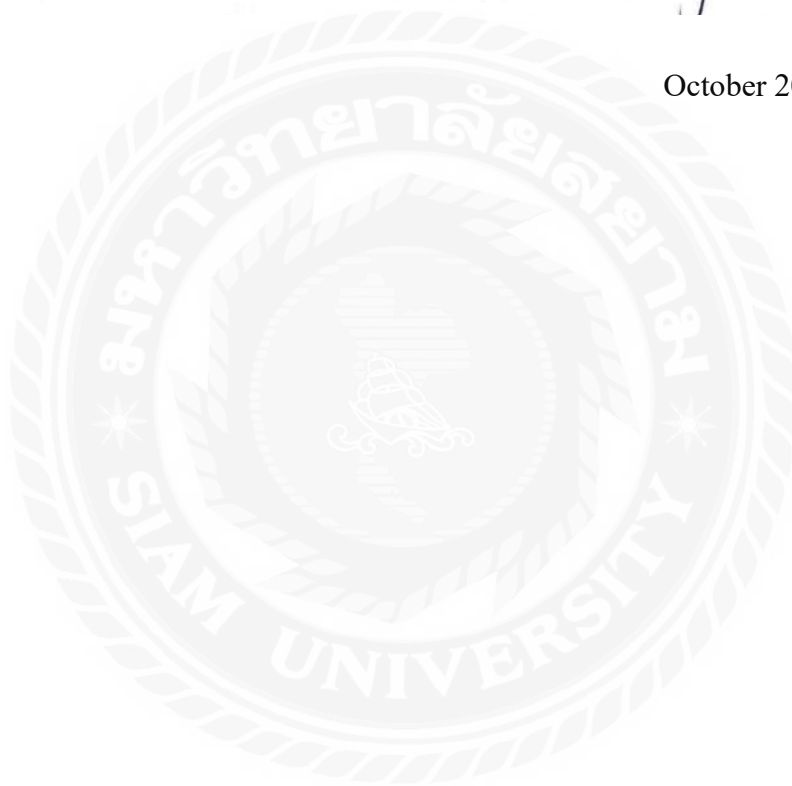


DECLARATION

I, Liu Ying, hereby certify that the work embodied in this independent study entitled “A STUDY OF THE METACOGNITIVE LEVEL OF HIGH SCHOOL ENGLISH TEACHERS - A CASE STUDY OF HIGH SCHOOL ENGLISH TEACHERS IN JINAN” is result of original research and has not been submitted for a higher degree to any other university or institution.

Liu Ying

October 20, 2023



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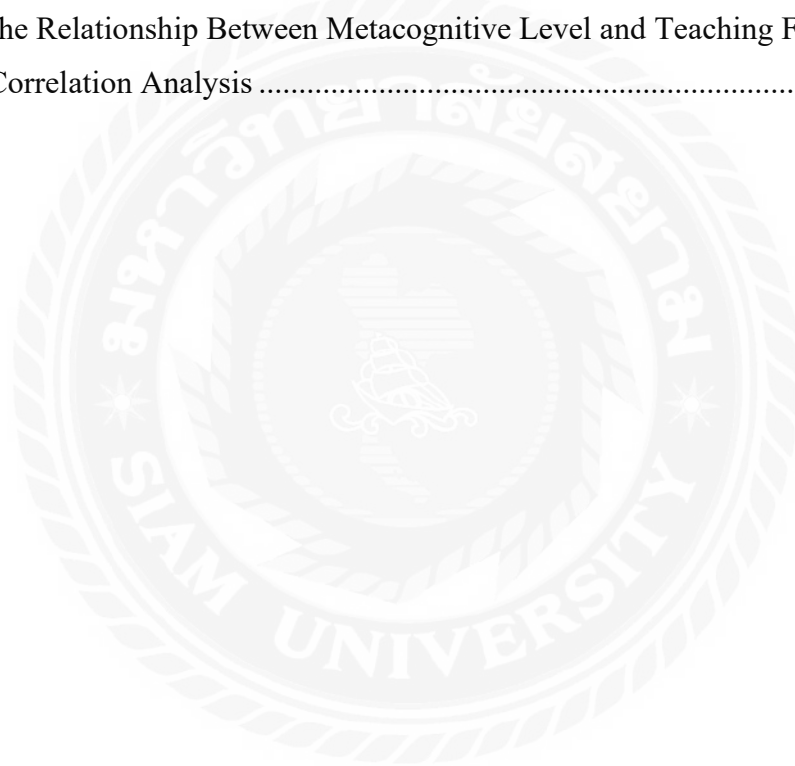
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Chapter 1 Introduction

1.1 Background of the study

In recent years, the development of education has been a key content of Chinese research. Metacognition plays a vital role in teacher professional development. For example, metacognition is of great significance to learning and teaching in educational research and practice. As we all know, it is very important to combine listening, speaking, reading and writing in English teaching. However, at present, the teaching of High school English teachers in many domestic schools is still relatively traditional and single, which cannot be effectively combined with speaking, reading and writing. Moreover, in the teaching process, students are prone to lack of initiative and teachers still occupy a dominant position. Metacognitive strategies emphasize initiative. Teachers with high metacognitive awareness can plan, monitor and adjust their teaching methods and skills to improve their English learning skills, to improve their English learning ability.

In China, the Core Competencies for Students' Development in China (2016) proposes to cultivate a "well-rounded person" and stresses six major competencies, including scientific spirit, learning ability and practical innovation. The traditional paper-and-pencil tests, which have long dominated China's elementary education in and out of school examinations and daily teaching practice (Zhou, 2019), fail to effectively measure students' complex skills such as problem solving, cooperation and communication (Lipman, 1987), and are clearly not conducive to the development of students' core competencies and higher-order skills. With the continuous advancement and development of the curriculum reform in elementary education, Chinese educators have continued to try and explore the use of performance assessment in course teaching and examination assessment, contributing to the integration of performance assessment and China's education. However, there are still some difficulties and problems in the practice and application of performance assessment in primary and secondary education in China, so it is worthy of further exploration.

Based on the nature and characteristics of metacognition, this study focused on the following three aspects: The importance of metacognitive awareness of high school teachers to English Teaching(Jiang, 2006). The metacognitive awareness of high school English teachers in China is influenced by those important factors. Current situation of metacognitive awareness of Chinese high school English teachers. The purpose of the selection is to study the overall classroom teaching quality by investigating the metacognitive awareness of high school English teachers and make a simple exploration of the current situation of the metacognitive awareness of high school English teachers in China to provide some reference for the future teacher training and textbook training.

1.2 Problems of the study

Metacognition plays a vital role in foreign language learning. According to Flavell's definition, metacognition is about an individual's knowledge and regulation of his or her own cognitive processes, i.e., "cognitive cognition" or "operational manipulation"(Flavell, 1976). Metacognition consists of two main components: metacognitive knowledge (awareness of the learning process) and metacognitive strategies (regulation and management of learning). In the field of foreign language learning, metacognitive strategies are considered more important than other types of learning strategies because they help learners self-regulate the learning process and complete language tasks effectively in different contexts (Liu & Zhou, 1998).

Studies have shown that language performance in language learners can be improved through metacognitive interventions. In addition, metacognitive teaching can enhance learners' use of metacognitive knowledge or strategies, although the effect was not significant in most studies with a control group. Correlation studies have also shown that metacognition is a relatively strong predictor of language performance, and that the more metacognitive resources a learner uses in learning, the more successful they are in performing on language tasks.

Systematic metacognitive training for foreign language learners helps students form a correct view of language and language learning, which is helpful to improve students' language learning level. Teachers can help learners become more autonomous and self-regulated language learners through instructional activities and process-based lessons that engage students and develop their metacognitive knowledge. In addition, teachers should pay attention to both the teaching of language content and the teaching of learning methods and processes to enhance students' metacognitive knowledge. Future research should also use a variety of tools to assess metacognition, including synchronous tools (e.g., thinking out loud and observation) and self-reporting tools (e.g., questionnaires and interviews), or a combination of quantitative and qualitative tools. Considering that almost all existing experimental studies focus only on short-term effects, more research is needed in the future to investigate the maintenance of metacognition over a longer period(Liao, 2013).

Factors influencing metacognition include teaching experience, educational attainment, and the main expressions in the teaching process. However, there is still relatively little research on how these factors affect metacognition. Future research needs to further explore the relationship between these factors and metacognition.

1.3 Objectives of the study

As the capital of Shandong, Jinan has a strong cultural heritage, and its economic development has also made tremendous progress with China's all-round rise. However, compared to the economically developed areas along the southeastern coast of China,

Jinan City is not a very developed area (Zheng, 2020), and there is also a significant gap in English teaching level, which is closely related to economic development. So, exploring how to improve the level of high school English teaching in Jinan is particularly important.

The objectives of this study are as follows:

1. To examine the relationship between the metacognitive level of high school English teachers and their educational background.
2. To examine the relationship between the metacognitive level of high school English teachers and their teaching experience.
3. To examine the relationship between the differences in the teaching forms used in the teaching process and the metacognitive level of high school English teachers.

1.4 Scope of the study

The survey mainly selects some English teachers from key high schools and non-key high schools in Jinan to help teachers adapt to the new situation of English teaching, and to make beneficial explorations for promoting the professional development of teachers and the new development of English teaching in the context of the new era. A total of 300 high school English teachers in Jinan were invited to participate in the study.

1.5 Significance of the study

Manning and Payne (1996) argue that the starting point for changing teachers' professional development lies in understanding teachers' understanding of their own teaching. According to these academic viewpoints, the improvement of teachers' metacognitive ability can help improve their teaching ability and improve teaching effectiveness within established teaching conditions and environments. Improving teachers' metacognitive ability can promote cognitive monitoring and regulation of their teaching process and behavior, thereby improving their own literacy and academic level, and promoting the improvement of school teaching quality and the development of students' core literacy. Therefore, strengthening the training of metacognitive strategies for teachers and emphasizing the improvement of their metacognitive abilities is of great significance, whether it is for the improvement of teaching effectiveness, the development of students' thinking abilities, or the promotion of teachers' professional development.

This study is of great value in exploring the factors influencing teachers'

metacognitive level. Nowadays, metacognition is gaining more and more attention. As an important way to improve the teaching efficiency of high school English teachers, metacognition plays an important role in improving teachers' teaching ability, promoting educational reform, and enriching educational theories. The research in this paper will put forward some pertinent and feasible opinions and suggestions for high school English teachers, which has solid value and substantive practical significance for improving the teaching efficiency of high school English teachers. The study of the metacognitive level of English teachers in Jinan can help us understand the current situation and dilemma of their career development, and the significance of this move is that it can play a role in making up for the shortcomings to a certain extent and balancing the level of English teachers across the country.



Chapter 2 Literature Review

2.1 Introduction

This study used the theory of metacognitive strategy theory. The metacognitive strategy theory was proposed by American psychologist Flavier in the 1970s, also known as retrospective cognition, reflective cognition, metacognition, and metacognition(Flavell, 1970).

Metacognitive strategy refers to an individual's knowledge and ability to regulate their cognitive processes. Metacognitive strategies control the flow of information, monitor, and guide the progress of cognitive processes, including planning strategy, monitoring strategy (attention strategies), and moderating strategy. The planning strategy includes setting learning objectives, browsing learning materials, analyzing methods for completing tasks, etc. The monitoring strategy includes tracking attention while reading, asking self-questions about materials, and monitoring one's speed and time during exams (Zhong, 2023). The adjustment strategy is based on the examination of cognitive activity results. If problems, difficulties, or deviations from goals are found, corresponding remedial measures are taken to timely correct and adjust cognitive strategies.

Teacher metacognition is an important area of research in Professional Learning Communities (PLCs)(Prytula, 2012). According to research, teachers' metacognition refers to their awareness and understanding of their own thought processes, which includes how they plan, monitor, and evaluate their own teaching practices. Professional learning communities provide teachers with an environment of collaboration and inquiry that helps promote the development of teachers' metacognition. Research has shown that the collaborative and reflective nature of PLC environments helps teachers think deeply and learn about their own teaching. Teachers' interactions in the PLC can promote their metacognitive awareness of teaching goals, strategies, and processes. In addition, the metacognitive abilities of PLC leaders themselves have a significant impact on the type of work they lead in the PLC, which may affect the learning of other teachers. The study also found that teachers' metacognitive abilities are critical to their professional development. Teachers who are equipped with the ability to self-regulate their learning can achieve continuous professional growth throughout their careers and are able to facilitate the learning process of their students more effectively. Therefore, teachers' professional development should start with their perception of their own teaching and develop their metacognitive perspective of teaching activities.

In PLC, the teacher's metacognitive knowledge includes personal variables, task variables, and strategic variables. Individual variables relate to teachers' self-perception of their own teaching abilities, task variables include cognition of the scope and requirements of teaching tasks, and strategic variables relate to teachers' knowledge and application of specific teaching strategies. A teacher's metacognitive experience includes the cognitive and affective experiences that arise during the teaching process, while metacognitive skills include intentional activities that plan, monitor, regulate, and evaluate the teaching process(Guan, 2008).

Overall, teachers' metacognition plays an important role in PLC, helping to promote teachers' professional development and improve the quality of teaching. Through collaboration and inquiry in PLCs, teachers can enhance their own metacognitive abilities to more effectively support student learning and growth.

2.2 Metacognition and Teachers' Metacognition

Metacognition is generally regarded as the process of how individuals monitor and control their cognition, and refers to the cognition of cognition. Specifically, it is the knowledge of an individual's own cognitive processes and the ability to regulate these processes, with two separate and interconnected components. It is the knowledge and concept of cognitive process and the regulation and control of cognitive behavior, including metacognitive knowledge and metacognitive control. American developmental psychologist John H. Flavell proposed the concept of "metacognition" in 1976, and defined metacognition as "knowledge or cognitive activity that reflects or regulates any aspect of cognitive activity". In this way, the new term "metacognition" appeared in the field of cognition in the 1970s. Since then, the concept of "metacognition" has been widely used in psychology and pedagogy in foreign countries and has also attracted positive attention by foreign researchers.

In the 1980s, Stiggins (1987), a leading assessment expert, first clearly defined performance assessment in education as a form of assessment that measures learners' application of previously acquired knowledge to solve new problems. Later, Stiggins (1997) revised the definition of performance assessment as the observation and evaluation of the process of skill demonstration and creative outcomes, which provides a more explicit definition of performance assessment. This definition implies that performance assessment focuses on learners' application of knowledge and problem-solving ability, emphasizing learners' practical training and demonstration of skills rather than simple memorization and understanding of knowledge. Obviously, performance assessment that stresses the evaluation and development of students' skills rather than mastery of knowledge is different from traditional paper-and-pencil tests. In addition, performance assessment includes both observation and collection of information about students' performance, as well as the feedback of performance.

In recent years, classroom teaching has higher and higher requirements for

teachers. After 1970, the scope of effective teaching became more complex. Carter (1990) uses the words “thoughtful” and “agility” when describing teachers and teaching. And then he found that good teachers will adopt some effective teaching routines and steps, and involve some complex psychological activities. Later, efficient English teachers are often associated with the word “metacognition”. The metacognitive knowledge of teacher teaching is divided into three aspects: self-factor understanding, object factor and strategy factor that mainly includes teachers’ understanding of subject characteristics, teaching tasks, students’ situation, teaching ability and related teaching strategies. However, most scholars tend to believe that teachers’ metacognition is teachers’ awareness and control of their own knowledge structure, perception, thinking, selective attention ability, the composition and development stage of teaching expertise. Therefore, this study also adopted the view that teachers’ metacognition includes teachers’ metacognitive knowledge, teachers’ metacognitive experience and teachers’ metacognitive regulation.

2.3 Composition of Metacognition

The perspectives of different researchers on the composition of metacognition are also inconsistent. Flavell regards "metacognitive knowledge" and "metacognitive experience" as two major elements of metacognition. Metacognitive knowledge includes knowledge about individual metacognition, knowledge about task metacognition, and knowledge about strategy metacognition. From this, metacognitive knowledge is a knowledge fragment that an individual has already stored before the start of cognitive activities and is related to the cognitive subject itself and various cognitive tasks, activities, and experiences. Conscious cognitive or emotional experiences that accompany and are subordinate to intellectual activities are called metacognitive experiences. Metacognitive experiences can be clearly recognized by individuals, or they can be subconsciously ambiguous and run through the early, middle, and late stages of individual cognitive activities.

Brown(1982) believes that "knowledge about cognition" and "cognitive regulation" are two major elements of metacognition. His interpretation of the connotation of "knowledge related to cognition" is like Flavell's "metacognitive knowledge", that is, the individual's knowledge about their own cognitive resources and the compatibility between learners and learning contexts. As for "cognitive regulation", Brown defines it as a regulatory mechanism actively used by learners in their attempt to solve problems, which includes a series of regulatory skills such as planning, monitoring, and testing. Based on the perspectives of Flavell, Brown, and previous scholars, this study tends to adopt the perspective that metacognition consists of three parts: metacognitive knowledge, metacognitive experience, and metacognitive regulation.

2.4 Theory Review

Domestic researchers tend to divide metacognitive elements into three categories: metacognitive knowledge, metacognitive experience, and metacognitive monitoring. Metacognitive knowledge is the general knowledge of cognitive activity accumulated by the subject through experience, that is, the understanding of the factors affecting cognitive activity, the interaction between factors and the results of the action. Metacognitive experience is the cognitive and emotional experience produced by the subject when engaged in cognitive activities. Metacognitive monitoring refers to the process in which the subject constantly monitors, controls and adjusts the ongoing cognitive activities as the object of consciousness. Based on the views of previous scholars, this study also tends to adopt the idea that metacognition consists of metacognitive knowledge, metacognitive experience and metacognitive regulation. For example, Huo Yongquan and Li Hongwu published an article in *Education Research* in 2003 titled "Research on Teacher Metacognitive Skills and Training Approaches". The article explored the importance of teacher metacognitive skills in teacher reflection and teaching abilities and proposed effective ways to train teacher metacognitive skills (Huo & Li, 2003). This is also the first time that "teacher metacognition" has appeared in the field of teacher development in China. Wang Ying (2004) analyzed the role of teacher metacognition in teaching in the information age and proposed suggestions on how to cultivate teacher metacognition. Research on teacher metacognition in China mainly focuses on exploring ways to cultivate teacher metacognition ability, the relationship between teacher metacognition and professional development, and classroom teaching. There is a lack of empirical research on teacher metacognition, and research on high school English teacher metacognition is even rarer.

As the national common language, English is also one of the three main subjects for students, which is very important for students. In English learning, students not only need to acquire the language rules, cultural phenomena and various language expression skills of English language, but also should have different degrees of self-awareness and self-control in the process of the acquired knowledge and skills. The study of English learning shows that the gap of students' learning ability is not mainly in the cognitive ability such as understanding and memory, but in the metacognition. Students with strong learning ability have a high awareness of cognitive development. At the same time, teachers with high metacognitive awareness have a deeper understanding of students' learning degree, and a stronger reflection and learning of their own teaching skills. Some psychologists concluded that metacognition has the following significance for English teaching:

1. It can mobilize the enthusiasm of English teachers in teaching.

English teachers have a high level of metacognition, which can not only enrich and improve the teaching methods, teaching habits, teaching contents and teaching methods in teaching activities, but also re-recognize the teaching objects and students' cognitive ability and characteristics, let both teachers and students get a certain sense of achievement, to mobilize the enthusiasm and initiative of teachers in teaching.

2. It is easier to enjoy the teaching situation.

Teachers' metacognitive level plays an overall control and coordination role in teaching activities. If teachers can get a positive cognitive or emotional experience such as success and pleasure in the teaching process, then they will take the initiative to recognize them. The encouraging teaching concept and pleasant teaching atmosphere are conducive to creating an active classroom atmosphere, to promote the continuous development of foreign language teaching.

3. It can strengthen the metacognitive monitoring of English teachers and conduct reflective teaching.

In English teaching, teachers should be good at reflecting on and monitoring their own teaching activities and face up to their own shortcomings. The process of teachers' self-reflection on teaching is the process of teachers' cognitive monitoring of their own teaching activities based on metacognitive knowledge. Teachers constantly reflect in the teaching activities, and actively carry out reflective teaching, which is conducive to promoting the comprehensive development of teachers' career, to drive students' learning.

Therefore, English teacher's metacognition has a positive guiding role in English teaching and plays an important role in teachers' teaching activities. As an English teacher, they should not only consciously improve their own metacognitive ability, but also consciously use metacognitive strategies to reasonably standardize English teaching. Teachers are the guidance of students, and they must have a higher level of metacognitive ability, to better adjust their own classroom.

The research structure of this study was designed based on the research question, and research hypotheses were established to explore the relationship between the teachers' educational background and the teachers' teaching experience and the teaching forms and the metacognition level of high school English teachers.

This research hypotheses were divided into three aspects. 1) The relationship between the educational background of high school English teachers and their

metacognitive level. 2) The relationship between high school English teachers' teaching experience and metacognitive level. 3) The relationship between the teaching forms used in the teaching process of high school English teachers and their metacognitive level.

2.5 Theoretical Framework

Metacognitive strategies are an individual's knowledge of their own cognitive processes and their ability to regulate them. Metacognitive strategies control the flow of information, monitor and guide the progress of cognitive processes, including planning strategies, monitoring strategies, and regulating strategies.

The use of the above three metacognitive strategies can solve the main problems encountered in the teaching process of high school English teachers, and significantly improve the metacognitive ability of high school English teachers.

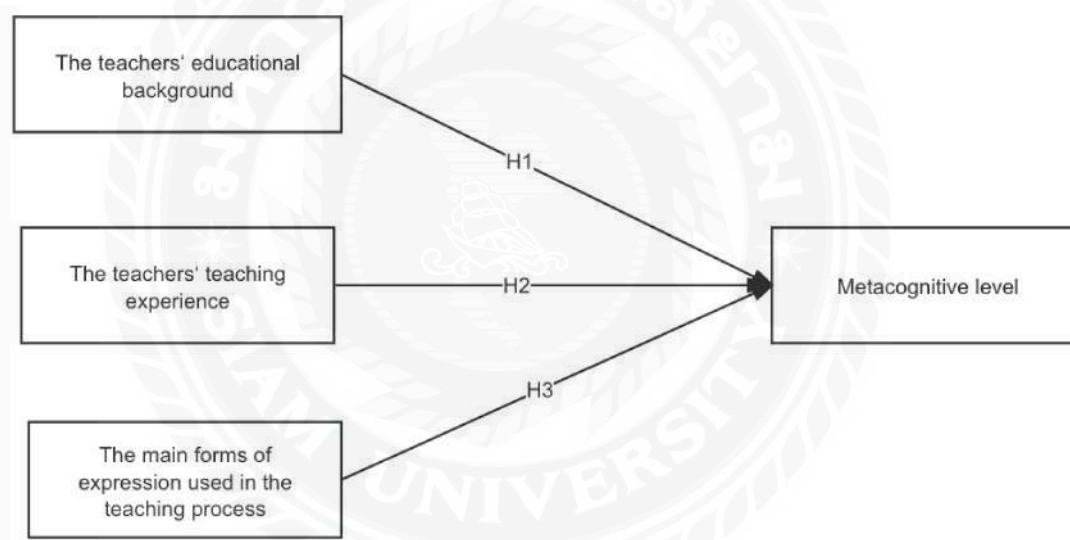


Figure 2.1 Theoretical Framework

2.6 Research Hypothesis

Based on the above three aspects, the hypotheses are:

H1: The higher the educational background of high school English teachers, the higher the level of metacognition.

H2: The more experienced high school English teachers are the higher the level of metacognition.

H3: The richer the teaching forms used by high school English teachers in the teaching process, the higher the teacher's metacognitive level.

Chapter 3 Research Methodology

3.1 Research Design

This study adopted the quantitative method which included a questionnaire survey and an interview. The survey questionnaire consists of two parts. The first part is mainly used to collect and investigate the basic information of teachers. This scale consists of 6 questions. The second part of the questionnaire consists of 10 questions to understand the metacognitive level of high school English teachers. The questionnaire adopts a Likert's five-point scale, requiring participants to judge the described situation and its degree of conformity. The higher the score of the scale, the higher the metacognitive level of the subjects.

The main function of interviews is to describe the occurrence, development, and changes of social phenomena by collecting information on people's behavior and attitudes, and to explore the reasons behind the various behaviors of the interviewees, to enhance their understanding of a certain phenomenon and its essence. It is one of the important ways to obtain data in qualitative research (Yang, 2012).

3.2 Questionnaire and Interview Design

The questionnaire was mainly designed from six aspects: the basic information of the survey respondents, metacognitive knowledge, metacognitive reflection, metacognitive experience, metacognitive plan and metacognitive regulation.

Table 3.1 Teachers' Metacognitive Level Questionnaire

Constituent part	Dimension	The question number
Part one	basic information	Q1,Q2,Q3,Q4,Q5,Q6
Part two	metacognitive knowledge	Q7,Q8,Q9
	metacognitive reflection	Q10,Q11
	metacognitive experience	Q12,Q13,Q14
	metacognitive plan	Q15,Q16
	metacognitive regulation	Q17

According to the six dimensions of this questionnaire, an analysis of the teachers'

survey was made to check the status information of the metacognitive level of English teachers in Jinan high school. In addition, the seven teachers selected from the respondents, the content and data by telephone, can also be used as a reference. The information collected from each teacher can increase the understanding of a certain phenomenon and essence, as a supplement to the data obtained by the questionnaire.

The interview focuses on the following questions:

1. Do you know metacognition? How do you understand the concept of metacognition?
2. How do you understand one of the dimensions of metacognitive experience? Can you briefly describe your metacognitive experience in the early, middle and late stages of teaching?
3. What would you do if the students didn't respond when asking questions in class? How do you feel about this situation?
4. Will you make corresponding solutions to unexpected situations that may occur suddenly in the classroom? Can you give an example?
5. What specific methods do you use to strengthen your metacognition? Can you give an example?

3.3 Population and Sampling

This study adopted a stratified sampling method to conduct a questionnaire survey on high school English teachers in Jinan City. There were 300 English teachers in total, and 300 questionnaires were sent out. 288 questionnaires were collected, with a response rate of 96%. After excluding 26 invalid questionnaires, 262 were valid. The effective rate is 90.9%.

3.4 Data Collection

This study used the questionnaires to understand the current situation and differences and combined the qualitative method of interview with teachers to conduct in-depth analysis and exploration of the core research issues. The aim was to analyze and solve research problems from multiple perspectives, gain a more comprehensive and in-depth understanding of the current situation and differences in the metacognition level of high school English teachers.

Table 3.2 Questionnaire Response Statistics

Total Sample	Recycling samples	Rewind rate	Valid questionnaire	Invalid documents	Effective response rate
300	288	96%	262	26	90.9%

This study randomly selected 7 teachers from the survey participants as the interviewees, conduct semi-structured interviews one by one over the phone, with each interview duration ranging from 10 to 30 minutes. After obtaining the consent of the interviewees, the interview was recorded and written, resulting in a total of over 9600 words. The data collected from the interview serves as a supplement to the data obtained from the questionnaire survey.

3.5 Data Analysis

This study mainly used the SPSS and Excel to statistically analyze the survey data. The Excel software was used to statistically analyze the basic information of research subjects and generate survey data. Then, SPSS was used for descriptive statistics, independent sample t-tests, and other data statistical methods to analyze the overall level of metacognition among high school English teachers and the differences under different demographic variables, providing data and information support for subsequent conclusions.

3.6 Reliability and Validity Analysis of the Scale

(1) Questionnaire reliability analysis

If the measurement is repeated, the degree of consistency of the measurement results of a scale is the reliability of the scale, which is usually used to indicate whether the scale can stably measure the desired item. Cronbach's Alpha is usually used to analyze the reliability of attitude questionnaires. If the value of coefficient α is higher than 0.8, it indicates high reliability of the questionnaire; If the value of coefficient α is between 0.7 and 0.8; It indicates good reliability; If the value of coefficient α is between 0.6 and 0.7; Explain that the reliability of the questionnaire is acceptable; If this value is less than 0.6; This indicates poor reliability of the questionnaire.

To test the reliability of the questionnaire, the researcher randomly distributed the questionnaire to the participants in this survey through WeChat and collected 300 valid questionnaires. Although the respondents of this survey were all English teachers with

a certain level of English proficiency, to avoid ambiguity caused by personal understanding of certain English words and maintain the overall language consistency of the questionnaire, the researcher translated all the initially referenced English scales into Chinese before distributing the questionnaire. By analyzing 300 questionnaire data using SPSS (25.0), a coefficient of 0.871 was obtained, as shown in the following figure. The coefficient is higher than 0.8, indicating a high internal consistency reliability of the questionnaire, which can be used for this study.

Table 3.3 Reliability Analysis

Cronbach's Alpha	Number of items
.871	17

(2) Questionnaire Validity Analysis

The accuracy of the measurement tool in presenting the properties of the measured object is called validity, or the degree of validity. Validity includes content validity and structural validity, and content validity can reflect the moderation between the test indicators and measurement objectives; Structural validity can reflect whether the scale can measure the variables to be measured. The validity of the questionnaire can be tested using factor analysis, which includes exploratory factor analysis and confirmatory factor analysis. Usually, researchers use exploratory factor analysis to explore the dimensions of fundamental variables; Confirmatory factor analysis is the process in which researchers verify whether the correspondence between measurement factors and scale items is consistent with their predictions based on certain theories or prior knowledge. This study used a survey on the metacognition level of high school English teachers. Although the questionnaire was designed based on the teacher metacognition scale, due to different research subjects, exploratory factor analysis was also used to verify the structural validity of the questionnaire in this study.

After factor analysis of the questionnaire in this study, the KMO value was 0.866; Bartlett's spherical test was 2169.134; $P < 0.001$. The test result of the KMO value was more significant than 0.7 and $P < 0.001$, which means that this sample data is suitable for factor analysis.

Table 3.4 KMO and Bartlett's test

The Kaiser-Meyer-Olkin metric of sampling adequacy		.866
Bartlett's sphericity test	Approximate cardinality	2169.134
	df	72
	Sig.	.000

Chapter 4 Findings

Through descriptive analysis, correlation analysis, and regression analysis of data, this study found that the metacognitive level of high school English teachers in Jinan is positively correlated with their educational background, the metacognitive level of high school English teachers is positively correlated with their teaching experience, and the metacognitive level of high school English teachers is positively correlated with the teaching forms used in the teaching process. Among them, educational background and teaching experience have a significant positive impact on the metacognitive level of high school English teachers. In contrast, the teaching forms used by teachers in the teaching process have a weaker impact on their metacognitive level.

4.1 Analysis of the Basic Information of Participant Teachers

This survey research distributed questionnaires through questionnaire stars, and ultimately collected 262 valid questionnaires. The following figure shows the gender ratio of teachers participating in this survey. According to statistics, we can see that there are 50 male teachers among the selected teachers, accounting for 19% of the total number; The number of female teachers is 212, accounting for 81% of the total number. From this, the number of female teachers in the participant group is significantly higher than that of male teachers, and there is a significant difference in the gender ratio, which is closely related to the particularity of the teaching profession and the English subject.

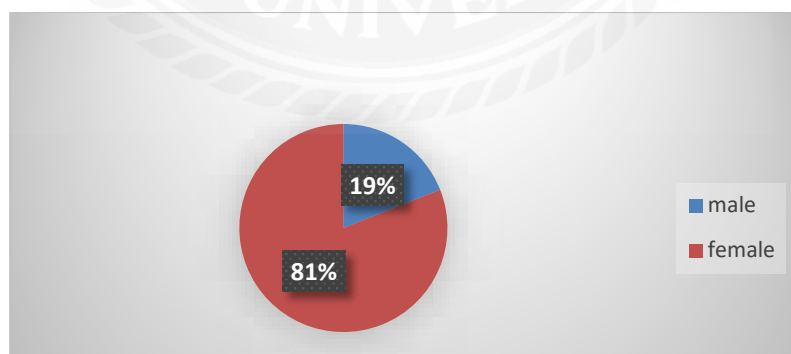


Figure 4.1 Male to Female Ratio of Participant Teachers

In addition, seven high school English teachers from different schools were selected as the interviewees to supplement the analysis results of the questionnaire data. The basic information of the seven teachers is as follows:

Table 4.1 Basic Information of the Interviewees

	Sex	Age	Gradational Background	Titles	Years of Teaching
Jack	man	29	Master of Arts	first-awareness teacher	three years
Oscar	woman	42	Bachelor of Arts	senior teacher	seventeen years
Mary	woman	31	Master of Arts	first-awareness teacher	four years
Candice	man	45	Bachelor of Arts	senior teacher	twenty years
Jeff	woman	36	Master of Arts	second-awareness teacher	nine years
Jerry	woman	30	Master of Arts	first-awareness teacher	four years
Dara	woman	39	Bachelor of Arts	senior teacher	fifteen years

4.2 Results of Correlation Analysis

To analyze the current metacognitive level of senior high school English teachers, the average value of the five dimensions was calculated as the basis, and the specific data are as follows: (Full marks 5 points).

Table 4.2 Five Dimensions

Dimension	Mean
Metacognitive knowledge	3.7
Metacognitive reflection	4.05
Metacognitive experience	3.89
Metacognitive plan	3.78
Metacognitive regulation	4.15

According to the above data statistics, the average of all dimensions exceeded 75% of the total score of five. According to past research, a score exceeding 70% of the total score can be said to be higher. Therefore, from this score, we can analyze that the overall average level of metacognition of high school English teachers in Jinan is relatively high.

In addition, to have a deeper and more comprehensive understanding of the status quo of metacognition among senior high school English teachers in Jinan, these data from the five dimensions , teaching experience and educational background were analyzed.

4.2.1 The relationship between educational background and the metacognitive level of high school English teachers

Table 4.3 The Relationship Between Metacognitive Level and Educational Background

Dimension	Educational background	Number of people	The average	T	Significant(P)
Metacognitive knowledge	undergraduate	240	4.07	0.24747	0.812
	graduate student	22	4.28		
Metacognitive reflection	undergraduate	240	4.18	1.271	0.244
	graduate student	22	4.25		
Metacognitive experience	undergraduate	240	4.36	0.957	0.370
	graduate student	22	4.13		
Metacognitive plan	undergraduate	240	4.20	0.000	0.873
	graduate student	22	4.07		
Metacognitive regulation	undergraduate	240	4.03	1.758	0.129
	graduate student	22	4.00		

Statistical results are shown in the table above. There was no significant difference in the five dimensions after the comparison of teachers with different degrees. If the value of p is less than 0.05 (p is the difference significant), it is significant difference, however, in the data above, the value of p is greater than 0.05. There is no significant difference between teachers' education and the awareness of metacognition of high school English teachers may be due to less working hours or other reasons. For example, although graduate teachers have spent a long learning time, their actual work experience is relatively less, which may have a certain impact on their own metacognition. After all, there is a certain gap between the knowledge learned from books and the experience and knowledge obtained from practice (only for opinion).

4.2.2 The relationship between teaching experience and the metacognitive level of high school English teachers

Table 4.4 The Relationship Between Metacognitive Level and Teaching Experience

Dimension	Teaching experience	Number of people	The average	T	Significant(P)
Metacognitive knowledge	more than ten years	212	4.07	4.491	0.002
	less than or equal to ten years	50	3.93		
Metacognitive reflection	more than ten years	212	4.15	0.318	0.758
	less than or equal to ten years	50	4.14		
Metacognitive experience	more than ten years	212	4.31	6.000	0.000
	less than or equal to ten years	50	4.26		
Metacognitive plan	more than ten years	212	4.05	0.58	0.575
	less than or equal to ten years	50	4.18		
Metacognitive regulation	more than ten years	212	4.13	0.843	0.325
	less than or equal to ten years	50	4.02		

As can be seen from the above data table, the two groups of teachers with different teaching experience produced significant differences in metacognitive knowledge and metacognitive experience in the two dimensions. In addition, from the average of the five dimensions, the average of the teachers is higher than the teachers with the shorter teaching experience. Therefore, there is a certain relationship between teachers' teaching experience and the metacognitive awareness of high school English teachers.

4.2.3 The relationship between the teaching forms used in the teaching process and the metacognitive level of high school English teachers

The differences in the forms of expression used by high school English teachers in the teaching process may be related to their metacognitive level.

In addition, the level of metacognition may also affect teachers' utilization and development of teaching forms. Teachers with a higher level of metacognition may be

more able to identify and make use of various teaching resources, including textbooks, the Internet, multimedia, etc., to provide richer and more interesting teaching content. Teachers with low levels of metacognition may be more reliant on traditional textbook teaching or unable to make effective use of other teaching resources.

In general, the differences in the forms of representation used by high school English teachers in the teaching process are related to their metacognitive level. Improving the metacognitive level of teaching can help them better design and implement teaching activities and improve teaching effectiveness.

Table 4.5 The Relationship Between Metacognitive Level and Teaching Forms

Dimension	Teaching forms	Number of people	The average	T	Significant(P)
Metacognitive knowledge	Multimedia teaching	210	4.12	4.068	0.006
	Traditional teaching	52	3.06		
Metacognitive reflection	Multimedia teaching	210	4.12	0.306	0.368
	Traditional teaching	52	4.41		
Metacognitive experience	Multimedia teaching	210	4.04	4.000	0.000
	Traditional teaching	52	4.16		
Metacognitive plan	Multimedia teaching	210	4.2	0.67	0.476
	Traditional teaching	52	4.09		
Metacognitive regulation	Multimedia teaching	210	4.11	0.611	0.206
	Traditional teaching	52	4.08		

To explore the relationship between the educational background, teaching experience, teaching forms and metacognition of high School English teachers in Jinan, the correlation analysis was carried out as shown in the following table:

Table 4.6 Correlation Analysis

Relativity				
	Educational background	Teaching experience	Teaching forms	Metacognition
Educational background	1			
Teaching experience	0.788**	1		
Teaching	0.602**	0.903**	1	

forms				
Metacognition	0.482**	0.472**	0.637**	1
** At 0.01 level (double tail), the correlation is significant.				

The average score of teachers' educational background and metacognition level was 0.482, indicating a significant positive correlation ($P < 0.01$); The average score of teaching experience and metacognition level is 0.472, with a significant positive correlation ($P < 0.01$); The average score of teaching forms and metacognition level was 0.637, indicating a significant positive correlation ($P < 0.01$). The results suggest that the higher the educational background, the more experienced and the richer in the teaching forms used by high school English teachers in the teaching process at Jinan high school, the higher their metacognition level.



Chapter 5 Conclusion and Recommendation

5.1 Conclusion

This study focused on the factors affecting the metacognitive awareness and the current situation of high school English teachers in Jinan. It can be seen from the survey that the metacognitive awareness of English teacher in Jinan high school is relatively good. From the five dimensions, the average score is more than 75% of the total score. At the same time, the survey teachers were classified according to different aspects, and the average score from the five dimensions is also very high. In terms of teacher education, the results of the data analysis of teachers with graduate education and undergraduate education showed that there is no significant difference between the two in the five dimensions, and in terms of teaching experience, the metacognitive level of teachers is significantly different.

To sum up, the metacognitive level of high school English teachers is affected by many aspects. This study mainly analyzed the current situation of metacognitive level of English teachers, hoping to provide some reference and help for the future career development of high school English teachers, the reflection and progress of teaching activities and the growth of their own cognition.

First, it is necessary to integrate multiple resources and study multiple topics.

Primary and secondary schools should coordinate and guide teachers to build a bridge between experts, colleagues, and even their own past theories and experiences with current education and teaching practices through flexible and diverse forms of teaching and research activities such as collective lesson preparation, expert supervision, reading sharing, and teacher-student discussions, to improve the possibility and diversity of teachers' use of metacognitive strategies. At the same time, it helps teachers form the habit of reflection, exercises teachers' skills in capturing and processing metacognition, and enriches teachers' experience of using metacognitive knowledge.

Second, it is necessary to scientifically study and build a cognitive framework.

The construction of teachers' metacognitive ability is a process of thinking collision and cognitive repair, and schools should create a good platform for reflection and interaction, open up the multi-dimensional space of teachers' metacognitive knowledge practice, metacognitive strategy application, and metacognitive reflection, and refine the personalized metacognitive scaffolds such as "asking questions (what kind of

educational problems are discovered)-analyzing (analyzing the causes of problems)-solving (finding strategies to solve problems)-introspection (reflecting on one's own growth and harvest from the perspective of metacognition)", so as to find the entry point of personal teaching and research learning.

Third, it is necessary to create democratic evaluation and cultivate the quality of teaching and research.

Humanistic teacher management attaches great importance to the subjective position of teachers, and each teacher's way of thinking and acting is valuable for the school to optimize the operation of the school, and teachers have the right to participate in the evaluation of their own impact and use the evaluation results to promote teaching. Improving metacognitive skills is conducive to the realization of this right of teachers. Humanistic management advocates the creation of an atmosphere of trust and co-governance, so that teachers' discussions turn to find evidence of the positive effects of teaching and research learning, and allow, encourage, and maintain such discussions to become the routine of teachers' work, to express themselves, to hear others, and to reflect on themselves, to bring about rich conversational evaluation in which teachers participate together.

Giving full play to the guiding role of metacognitive strategies is also an important way to transform and implement localized teaching and research achievements based on teachers' experience. Under the guidance of metacognitive strategies, primary and secondary school teachers will internalize the consciousness of self-planning, monitoring and regulation, use a more systematic way of thinking, break through their own passive participation in teaching and research work, perceive their own awakening and the motivation to promote professional work, and more confirm the value of teaching and research to their own professional growth in the high-quality promotion of teaching and research work, form a spiral based on benign interaction between individuals and groups, and create a new pattern of teaching and research.

5.2 Recommendation

- (1) The planning strategy of metacognitive strategies is applied to help teachers establish the goals of teaching and research activities, formulate reasonable plans, and be fully prepared for improving the efficiency of teaching and research.

The planning strategy of metacognitive strategy refers to the goal of cognitive behavior to be achieved before carrying out cognitive activities, formulating a cognitive plan that meets one's own ability, selecting the corresponding method, and predicting

the results of the activity according to this plan to judge whether the process is feasible and effective. The application of planning strategies to teachers' teaching and research activities can make teachers understand that teaching and research activities are aimed at allowing teachers to reflect on their own experience and lessons, strengths and shortcomings, form personalized learning needs, strategies and methods, promote the improvement of education quality and the development of scientific research capabilities, and open the road of personalized teaching and research. At the same time, the planning strategy requires cultivating teachers' awareness of problems, finding and excavating core problems worthy of exploration from the teaching process, stimulating teachers' motivation for in-depth learning, consciously and actively devoting themselves to curriculum reform, teaching reform, teaching and research, and gradually generating new ideas, new knowledge, new skills and new methods while continuously enriching professional knowledge, subject knowledge and basic methods. Therefore, when formulating teaching and research plans, teachers should focus on key issues and core issues around the teaching and research themes, design teaching and research activities and tasks, and carry out a reasonable layout. Based on analyzing tasks and goals, combined with their own professional growth and development plans, they can set short-term, medium-term and long-term goals for themselves, list specific action plans, allocate time, and be as detailed as possible, to effectively improve the efficiency of teaching and research activities and improve their teaching and research management capabilities.

- (2) Teachers should be encouraged to self-monitor teaching and research activities by using the monitoring strategy of metacognitive strategies, which can eliminate internal and external interference and effectively optimize and adjust teaching and research activities in the implementation process.

In teaching and research activities, teachers can observe, record, analyze, and sort out, and provide feedback, correction, adjustment, reflection, and evaluation in a timely manner, to adjust and optimize teaching and research activities in a timely manner, form a sense of self-monitoring, enhance self-monitoring ability, and then improve teaching and research management ability. Teachers can monitor in a timely manner by keeping a study diary, establishing teaching files, and so on. With the help of a study diary, teachers can review and examine the process of forming their old and new knowledge. The learning diary should not be a running account, and teachers should deeply reflect on the successes and failures of their own teaching and learning process according to the purpose and focus of their own phased learning and put forward improvement measures. Teachers need to review in a timely manner after recording a learning diary, and different problems may be found at different stages, which should be constantly revised and adjusted in the process of review and reflection. In addition to recording their daily teaching experience and process, teachers can also record various teaching and research activities and lectures of famous teachers in the school after a certain induction. After the teacher has written a learning diary for a long period of time, it can

be organized and summarized to form a teaching portfolio. The documentation of the teaching dossier needs to be carefully selected, preferably representative of the teaching philosophy, self-development, and achievements of the teacher in the process of long-term self-reflection and self-evaluation. After being organized into archives, they can not only be used for self-reflection, but also circulated to each other, and continuously improve self-monitoring, teaching and research capabilities in self-evaluation and mutual evaluation. Research has shown that multiple practice notes and retrospectives help teachers to summarize or provide examples quickly and alertly, and to connect the questions raised by students to the teaching objectives.

- (3) It is necessary to make good use of the adjustment strategy, diagnose and evaluate the cognitive results of teaching and research in stages, and check the effectiveness of the cognitive strategies used in teaching and research activities.

Adjustment strategies are often used as a supplement to be planning and monitoring strategies in applications. In the process of teachers' teaching and research cognitive activities, the adjustment strategy is used to check the effectiveness of the cognitive strategy in teaching and research activities, and once problems are found, corresponding improvements should be made. If teachers encounter problems that are difficult to solve in the process, unable to continue teaching and research activities, or do not develop towards the expected goals, teachers should consciously adjust the teaching and research plan, including adjusting the teaching and research goals, cognitive strategies, changing the perspective of thinking about problems, etc., and adopting new cognitive strategies to ensure the continuity of teaching and research activities. At the end of teaching and research activities, teachers should conduct self-evaluation and reflection on the process and results of teaching and research cognitive activities, including two aspects: one is to diagnose and evaluate their own teaching and research results with reference to the expected results of teaching and research activities, so as to build a set of their own evaluation system, so as to promote the normalization of self-reflection and self-evaluation; and appropriately adjust the teaching and research plan to lay the foundation for the smooth development of teaching and research activities again. In addition, teachers should also learn to regulate their emotions and improve their willpower in teaching and research, guide their emotions, thoughts and actions in a positive and productive direction, maintain an optimistic attitude in teaching and research activities, often ask themselves "whether they are committed enough", and believe that no effort will pay off.

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Appendix

1. Your sex
A. Male B. Female
2. The grade you are taking
A. Senior 1 B. Sophomore year of high school C. Senior year D. Follow-up teaching
E. Miscellaneous
3. Your age:
A.20-30 B.30-40 C.40-50 D.50 or above
4. Your teaching experience
A. One to three years B. Four to six years C. Seven to ten years D. More than 10 years
5. Your character belongs
A. Extroverted B. Introverted
6. I have excessive emotions because of too much stress
A. Yes B. No
7. I know what important skills a good teacher needs to have
A. Yes B. No
8. I know what students want to learn
A. Yes B. No
9. I have always used teaching methods that have worked before
A. Yes B. No
10. I am very clear about why I use this teaching method in my teaching
A. Yes B. No C. Medium
11. In teaching, I can use my strengths to make up for my weaknesses
A. Yes B. No C. Not sure
12. I know in what situations the teaching methods I employ are useful
A. Yes B. No C. Not sure
13. I always set a good teaching goal before the teaching activity starts
A. Yes B. No C. Not necessarily
14. Which form were mainly used in your teaching process
A. Multimedia teaching B. Traditional teaching
15. I often ask myself if I am meeting my teaching goals in teaching
A. Often B. Occasionally C. Very little D. Nope
16. I evaluate the effectiveness of my own teaching methods in my teaching activities
A. Often B. Occasionally C. Very little D. No assessment
17. At the end of the teaching activity, I often reflect on how well the teaching objectives have been accomplished often
A. Often B. Occasionally C. Very little D. No, it won't