



RELATIONSHIP BETWEEN PROFESSIONAL IDENTITY
AND TEACHING EFFICACY OF SECONDARY PHYSICAL
EDUCATION IN SHANDONG PROVINCE

by
CHUNYAN WU

AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENT FOR THE DEGREE OF MASTER OF EDUCATION IN
EDUCATIONAL ADMINISTRATION (INTERNATIONAL PROGRAM)

SOUTHEAST ASIA UNIVERSITY

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Independent Study Title Relationship between Professional Identity and Teaching Efficacy of Secondary Physical Education in Shandong Province

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ABSTRACT

In this study, we conducted an overall sample questionnaire survey of physical education teachers at X university in Qingdao, Shandong province, to refine the research subjects related to secondary school teachers' professional identity and teaching efficacy to supplement the survey data in this area. In this study, the scale was distributed to secondary physical education teachers, the total number of valid samples was 107. Based on the results of the study, the following conclusions were drawn. (1) Secondary physical education teachers' professional identity and teaching efficacy in Qingdao city have a high correlation. (2) The overall level of professional identity of secondary physical education teachers in Qingdao is relatively high, and the teachers' teaching efficacy is in the middle to the upper level.

Keywords: physical education teachers, career identity, teaching efficacy

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Chunyan Wu

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Chapter 1

Introduction

1.1 Statement of the Research Problem

1.1.1 Problem Statement

In this study, we surveyed the professional identity and teaching efficacy of secondary physical education teachers in X colleges and universities in Qingdao, Shandong Province through literature analysis, to sort out the current situation, influencing factors, and development deficiencies regarding the professional identity and teaching efficacy of secondary physical education teachers, and to study and verify the relationship between the professional identity and teaching efficacy of secondary physical education teachers, to improve the professional recognition of secondary physical education teachers, solidify the physical education teachers in secondary schools team and improve the sense of teaching efficacy to provide reference directions and promote the development of secondary education in Jimo District, Qingdao City.

1. To clarify the concept of career identity and avoid confusion with the concepts of career resilience, career satisfaction, and career status. Ji Zhaolin and Zhang Jianping (2006) mentioned that the process of teachers' professional growth includes the development process of changes in teachers' awareness of self-professional development, self-awareness, professional identity, self-efficacy, and achievement motivation, among which professional recognition is the key to teachers' professional growth.

2. To investigate the current situation of professional recognition of secondary physical education teachers in X colleges and universities in Qingdao, and to explore how to promote and enhance the professional recognition of secondary physical education teachers in Qingdao through research on the current situation of professional recognition at home and abroad. According to Professor Shen Jiliang of Beijing Normal University, "professional identity" is becoming an internal motivation for teachers to achieve self-growth, and the pressure felt by teachers is related to

their ability to cope, but also to the extent to which they recognize and love their work. According to Li Fang, both teachers' self-awareness of professional development and their professional development behaviors are closely related to their professional identity, and the higher the teachers' professional identity, the stronger their consciousness of improving their professionalism.

3. To clarify the concept of teaching efficacy and further explore the ways and strategies to enhance the teaching efficacy of secondary physical education teachers by analyzing and studying the factors affecting teachers' teaching efficacy. Teachers' teaching efficacy is divided into two aspects: general educational efficacy and personal teaching efficacy. General educational efficacy refers to teachers' general views and judgments on issues such as the role of education in students' growth, i.e., whether teachers believe that education can overcome the negative effects of society, family, and students' qualities on students and effectively promote students' development. Teachers' teaching efficacy refers to whether teachers believe they can effectively instruct their students and whether they believe they can teach them well.

4. Teachers' teaching efficacy is in essence a kind of teachers' teaching self-confidence, i.e., their confidence in whether they can change students and teach them well through teaching, and it is a key factor in explaining teachers' behavioral motivation. Teachers' teaching efficacy directly affects teachers' motivation to work in education, their efforts to teach, their persistence in overcoming difficulties when they encounter difficulties, and their teaching emotions.

5. To explore the relationship between teachers' professional identity and teaching efficacy, and to find the causes of the problems by analyzing the problems that exist in reality, to provide a realistic basis for the professional development of secondary physical education teachers and the improvement of their professional identity. Teachers' professional identity and teaching efficacy belong to the field of teacher psychology research. The professional identity focuses on teachers' attitudes toward the teaching profession as a whole and the teaching community while teaching efficacy focuses on individual teachers and their ability to influence

students.

1.1.2. Research Questions

Previous studies have examined teacher professional identity and teacher teaching efficacy separately, whereas individual development cannot be separated from collective development, and collective development is the result of each individual's joint development. Therefore, studying the relationship between the two broadens the field of teacher research. At the same time, the basis for promoting teachers' professional development is that teachers can stay in their positions, stay happy, and stay worthwhile. The enhancement of teachers' professional identity can promote the enhancement of teachers' teaching efficacy, the love of a line of work and the love of a line of work can make a fine line of work, and conversely, the enhancement of teaching efficacy can drive teachers' sense of achievement, thus enhancing teachers' professional identity and promoting each other. The professional development of teachers is not only the improvement of teaching efficacy but also the teachers' love for this profession from the bottom of their hearts. This love requires a high degree of identification with the teaching profession, which provides a new perspective for studying teachers' professional development. It is worthwhile for researchers to rethink how to deeply understand the concepts of professional identity and teaching efficacy and what connections exist between the two. in short, this study poses the following three questions.

1. what is the current situation of secondary physical education teachers' professional identity and teaching efficacy? How can they be improved?
2. what are the links between secondary teachers' professional recognition and teachers' teaching efficacy?
3. How do secondary physical education teachers self-regulate when they encounter a crisis of professional recognition? How to promote secondary physical education teachers' professional development by enhancing teaching efficacy?

1.2 The Research Objectives

This study used a questionnaire to investigate the current situation of professional identity and teaching efficacy of middle school physical education teachers in X colleges and universities in Qingdao, to understand the overall

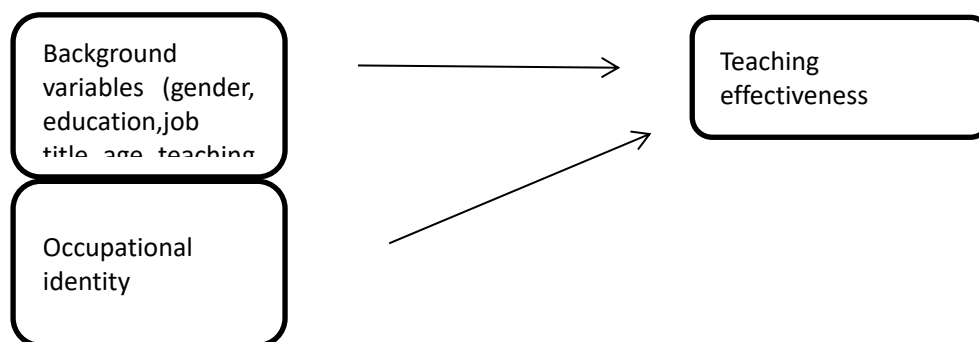
situation of professional identity and teaching efficacy of middle school physical education teachers in Qingdao, to analyze the differences and characteristics of professional identity and teaching efficacy in terms of gender, age, teaching age, job title, and education, and to explore the relationship between professional identity and teaching efficacy of middle school physical education teachers in Qingdao. This study explored the relationship between teachers' professional identity and teachers' teaching efficacy before the two based on related studies at home and abroad. Specifically, the main objectives of this study were:

1. To investigate the current situation of professional identity and teaching efficacy of middle-level physical education teachers in X colleges and universities in Qingdao, and to understand the overall situation of professional identity and teaching efficacy of middle-level physical education teachers in Qingdao.
2. To analyze the differences and characteristics of middle-level PE teachers' professional identity and teaching efficacy in Qingdao in terms of gender, age, teaching experience, job title, and education.
3. To explore the relationship between the professional identity and teaching efficacy of secondary physical education teachers in Qingdao.

1.3 Conceptual Framework

This study focuses on the relationship between secondary physical education teachers' professional identity and teaching efficacy and whether there are significant differences in demographic variables. Based on the above hypotheses, this study analyzed secondary physical education teachers' professional identity as the independent variable and teaching efficacy as the dependent variable. Simply put, the degree of secondary physical education teachers' professional identity can directly affect teachers' teaching efficacy. Therefore, this study sorted out the relationship between these two variables and proposed the following research hypotheses, as shown in Table 1.

Table 1 Relationship between secondary physical education teachers' professional identity and teaching efficacy



1.4 The Research Hypotheses

Integrating the findings of relevant studies at home and abroad as well as related studies, this study puts forward the following hypotheses from the actual secondary school physical education teachers:

Hypothesis H1: The overall level of professional identity and teaching efficacy of secondary school physical education teachers in Qingdao is high.

Hypothesis H2: There is no significant difference in the level of professional identity and teaching efficacy of secondary school physical education teachers in Qingdao city in terms of gender, education, title, age, and teaching experience.

Hypothesis H3: There is a correlation between the levels of professional identity and teaching efficacy among secondary physical education teachers in Qingdao; the higher the level of professional identity, the higher the level of teaching efficacy.

1.5 The Scope and Limitation of the Research

1.5.1 Scope of the study

To ensure the validity of the findings, the researcher used the principle of overall sampling to sample X colleges and universities in Qingdao in 2022, and the researcher divided the valid sample into two batches by time. The first preliminary questionnaire time (March 20, 2022), preliminary sample (N=20) was used to analyze the research scale of item analysis and reliability analysis, and the second official questionnaire time (April 25, 2022), official sample (N= 107) was used to verify the

deterministic factors of the dosage scale in this study. The electronic questionnaire was distributed through the WeChat group and WeChat scanning code, 150 questionnaires were planned to be collected, 116 questionnaires were collected, the actual recovery rate was 77.3%, 107 questionnaires were valid, and the actual efficiency rate was 71.3%.

1.5.2 Limitations of the study

1. In terms of the questionnaire design, although a mature scale was used and the reliability test of the scale was verified, there are still some parts of the measurement instrument that can be improved, and the content of the questions involved did not cover all the real feelings of secondary physical education teachers about professional identity, teaching efficacy and work engagement.

2. In terms of research methods, cross-sectional studies were mainly used, and although all the data could be collected in a short period, only a large amount of data could be analyzed and discussed, and no in-depth case studies were conducted, so there were shortcomings in explaining the causal relationships between variables.

3. Due to the limitation of the study, only the middle school physical education teachers in X college in Qingdao were selected as the research subjects. In addition, further research is needed to verify whether other education levels have the same characteristics.

1.6 The Benefits of the Research

1.6.1 Theoretical Implications

Teachers are the foundation of education and the source of education. The improvement of teachers' professionalism and self-improvement play a vital role in the overall quality improvement of students. By studying the relationship between the professional identity and teaching efficacy of secondary physical education teachers in Qingdao, this paper enriches the theoretical research related to the professional development of physical education teachers to a certain extent.

1.6.2 Practical significance

1. To explore and analyze the factors affecting the professional identity and

teaching efficacy of physical education teachers in Qingdao, and to improve the professional level as well as the professional quality of physical education teachers in Qingdao through various effective ways. To promote school physical education more rationally and purposefully, to complete teaching tasks, to improve students' physical quality, and to promote the realization of physical education teachers' personal and social values.

2. Through the study on the influence of secondary physical education teachers' professional identity on teaching efficacy in Qingdao, the psychological development of secondary physical education teachers' teaching is revealed, and education administration departments at all levels can propose strategies to mobilize teachers' work enthusiasm and teaching enthusiasm according to the overall situation of secondary physical education teachers' professional identity and teaching efficacy, and improve the mechanism of secondary physical education teachers' professional development, to improve the quality of secondary school education.

Chapter 2

Theory and Literature Reviews

2.1 Definition of relevant concepts

2.1.1 Teacher professional identity

2.1.1.1 Professional identity

Identity is essentially a comprehensive and integrated concept, where "identity" represents the self-definition or subjective awareness of one's own identity [1]. From a sociological perspective, the concept of "identity" is inextricably linked to the concept of "ego", which "is not innate but develops gradually in the course of social experience and activity." It represents the process by which a person tries to integrate his or her various states and roles, as well as his or her different experiences, into a coherent self-image [2]. Therefore, this study considers identity as the gradual recognition of various states and roles of the self and the recognition of a sense of self-worth and meaning in the process of interaction, influenced by a variety of factors in the process of socialization and development of the individual.

The concept of occupational identity is derived from social identity theory [3], is understood as part of social identity, and is related to the concept of work-based self [4]. Occupational identity allows for the expression of personal adequacy and satisfaction, as well as autonomy in the interpretation and performance of expected roles, through the self-image created by the individual in the socialization process. Occupational identity has two interrelated components: interpersonal relationships related to the culture, knowledge, skills, values, and beliefs of the profession that the individual has acquired; and consideration of the individual's perception of himself in the context of his profession. Thus, understanding occupational identity is important in explaining "why people think about their environments in the way they do and why they do what they do in those environments.

Moore (1988) defines occupational identity as "an individual's perception of their occupational role as most important (centripetal), attractive (valued), and compatible with other roles (congruent)." [5] Hoeve (2014) describes occupational

identity as an individual's perceptions, which may include their occupational self-concept or self-image[6]. In their study, Zhu, V.P., and Zhang, N.J. (2010) stated that the concept of occupational identity is a psychological category that refers to people's positive evaluation of the work they do [7]. According to Tian Jin (2010), occupational identity is an individual's psychological perception of occupational goals, nature, content, social value and evaluation, personal meaning, and other factors related to the occupation of others or the group in the course of long-term occupational activities [8].

In conclusion, occupational identity is an individual's role and responsibility as a particular professional in the professional world, a sense of satisfaction and pride in one's chosen field, and perception and evaluation of occupational performance. It includes the concepts of both self and occupation and is closely related to self-identity, personality traits, role, and image. Occupational identity is not fixed and is an interaction between individual experience and social context; it involves constant interpretation and reinterpretation of experience, and a weak occupational identity may directly affect the quality of work.

2.1.1.2 Teachers' professional identity

Wenger (1998) argues that teachers' professional identities are rich and complex because they emerge from a rich and complex set of practice relationships and proposes five dimensions of identity: (1) identity as negotiated experience; (2) identity as community membership; (3) identity as a learning trajectory; (4) identity as a multi-member relationship; and (5) identity as a relationship between the local and the global. All five identity dimensions have application in developing a revised view of professional identity about the social, cultural, and political (macro and micro, individual and group) aspects of teacher identity formation. Any reconceptualized concept of professional identity needs to include these characteristics [9]3.

In some studies, the concept of teacher professional identity is defined in terms of the characteristics of teachers; Sachs, J. (2001) argues that teacher professional identity is a set of attributes, a set of characteristics, and values that are added to the teaching profession by teachers themselves as well as by outsiders, thus

enabling one group to be distinguished from another [10]. In other studies, the concept of teacher professional identity is defined to explain the formation of the teaching profession. Ten Dam & Bolm (2006) deals with the framework of the individual's subjective motivation toward education and towards the interpretation of being a teacher in educational practice, based on a balanced reconciliation of society and the individual [11]. Other researchers have argued that narratives, stories, or conversations shape or construct teachers' professional identities; Cohen (2008) conducted professional identity conversations with three secondary teachers in an urban public school in the United States to understand how teachers use language to accomplish complex professional identities. The study's analysis focused on how teachers used specific discourse strategies-reported discourse, mimetic discourse, pronoun displacement, dyadic portraits, and juxtaposition of explicit discourse to construct implicit identity claims that were not directly articulated but are central to the realization of the teacher role identity. Moreover, the notion of role identity and implicit identity claims provides a convenient way to explore the complexity of teacher professional identity and helps to raise awareness of the importance of teacher professional identity in teacher education and professional development [12].

There are also conceptualizations of teacher professional identity from different perspectives; Klaassen et al. (1999) mention three perspectives: first, the social perspective, which focuses on the changing conditions of the teaching profession. The second is the cognitive perspective, which focuses solely on the processes and structures inherent in teachers' thinking and knowledge of teacher practice. The third is the biographical perspective, which adds and integrates social and cognitive perspectives [13].⁴ Akkerman and Meijer (2011) conceptualize the professional identity of teachers from a psychological perspective, using the theory of the dialogic self, where they argue that teachers' identities are both singular and multiple. It is both continuous and discontinuous, both personal and social [14]. Although researchers have viewed teachers' professional identities from different perspectives and emphasized different aspects of teachers' professional identities, they always seem to involve interactions among teachers. As a person, as a

professional teacher, operating in a specific (educational) environment, the teacher's professional identity is not static. According to Li Xiaozhuo (2018), teacher professional identity is a comprehensive attitude of individual teachers toward their profession, a combination of perceptions, feelings, and behavioral tendencies in the process of interaction and integration of "individual" and "profession". This attitude is relatively stable, but it is not static and may change in response to changes in teachers' experiences and surroundings [15].

In summary, the concept of teacher professional identity is diverse, but it is basically "socially defined" and is based on the requirements of social development to improve professional role orientation. This study argues that teachers' professional identity is the perception and identification of the teaching profession by their motivation, influenced by various factors such as work, teaching environment and background, experience, and knowledge base.

2.1.2 Teachers' teaching efficacy

Teaching efficacy was developed from the self-efficacy component of Bandura's (1986) social cognitive theory [16]. Self-efficacy, as an assessment of one's ability to achieve the desired level of performance in a given endeavor, consists of two dimensions: expected effects and expected outcomes. Efficacy expectancy refers to a person's belief in his or her ability to perform a behavior successfully, while the expected outcome is his or her belief that the behavior will lead to a specific consequence. Similar to the two dimensions of self-efficacy, teaching efficacy can be viewed as a two-dimensional construct that encompasses both personal teaching efficacy and teaching outcome expectations. Personal teaching efficacy is a teacher's beliefs about the efficacy of his or her teaching, and instructional outcome expectations are teachers' beliefs that effective teaching can produce positive student learning outcomes.

Different researchers have defined teaching efficacy from different perspectives and positions; on the one hand, teaching efficacy is attributed to a range of competency beliefs. Gresham (2008) argues that teaching efficacy is the degree of confidence in a teacher's ability to influence student performance [17].⁵ Klassen (2011) argues that teachers' teaching efficacy refers to personal beliefs about their

ability to help students learn [18]. . Our scholar, Yu Guoliang (2000), believes that teachers' teaching efficacy is a perception and belief of a teacher's ability to work effectively to achieve teaching goals and accomplish teaching work [19]. According to He Guangquan (2006), teaching efficacy is the belief that teachers as well as schools will generate very important and clear beliefs to influence students [20].

On the other hand, teaching efficacy is attributed to the perception of competence; Tschannen-Moran (2001) argues that teaching efficacy is the teacher's "judgment of his or her ability to achieve the desired outcomes of student engagement and learning, even among students who are difficult or unmotivated [21]. Jin and Yumei (2015) consider teaching efficacy as the systematic improvement of teachers' understanding of the content, process, and methods of teaching to improve the quality of student learning [22].

From the related definitions, we can see that teachers' teaching efficacy is essentially a belief, a cognition, a competence, and a holistic concept that contains multiple components. Therefore, this study argues that teacher teaching efficacy refers to teachers' beliefs about the scientific use of teaching strategies and methods to help students achieve desired to learn outcomes in the teaching process based on their professional knowledge and competence qualities.

2.2 Literature Review

2.2.1 Research on teachers' professional identity

2.2.1.1 Foreign research on teachers' professional identity

To be a successful teacher, it is important to develop a professional identity. Teachers' professional identities are rich and complex because they emerge from rich and complex relationships of practice. This richness and complexity need to be nurtured and developed under conditions of respect, mutuality, and communication. A positive teacher professional identity does not come naturally to all teachers; it must be negotiated, lived, and practiced. The development of this identity will be challenging for many and will be challenged by others, but once its elements are learned and communicated to others, it will make a significant contribution to the work of teachers and how they feel about their work in their

own eyes and the eyes of others [23]6.

Angela and Doune (2002), through a case study of five teachers in Australia, found that physical education teachers not only perform regular teaching tasks in schools but also devote some of their energy to coaching school sports teams, leading practices, and participating in competitions. This multiplicity of roles influences the level of teachers' professional identity and their level of job satisfaction [24]. Lamote and Engels (2010) measured teachers' professional identity in four dimensions: commitment to teaching, professional orientation, teaching methods, and teachers' self-efficacy. That is, teacher professional identity is about teachers' values and beliefs about teaching (commitment to teaching), how they view themselves as a teacher in terms of professional orientation (professional orientation), how they teach in practice (pedagogy), and the competencies required to be a teacher (self-efficacy) [25]. The results of Fuller (2013) et al.'s study of 31 teachers showed that praising and rewarding excellent teachers for their teaching performance through recognition has a significant contribution to teachers' professional identity and job satisfaction [26]. Mickelson (2014) interviewed 24 teachers by asking generative questions that helped guide the study and found that the structure of teachers' professional identity consisted of four components: (1) a professional "self-concept", characterized by an understanding of one's own personality and finding personal significance in professional activities and professional ambitions, which is enriched by tolerance, positivism, individuality, and professional awareness; (2) the harmony of professional identity, which includes typical personal fulfillment, achievement in all aspects of life (work, family, leisure), and general success in life, with a sense of belonging, emotional resilience and security complemented by a sense of belonging; (3) self-determination of success expressed through personal social activities, making career choices (purposeful motivation), confidence and belief in the future gaining love for people, attitudes, cooperation and diversity; (4) implementation of novelty, future creativity and creative career activities elaborated by the use of sardonic humor, added value and flexibility [27].

2.2.1.2 Domestic studies on teachers' professional identity

(1) Structure of teachers' professional identity

The structure of teachers' professional identity includes the general teachers' professional identity and the professional identity of teachers of marginalized subjects such as physical education. According to Jiang (2012), the basic aspects of teachers' professional identity are the perception of teachers' professional values, the grasp of professional role orientation, the establishment of professional emotions, and the fulfillment of professional responsibilities [28]7. In his study, Tang (2009) drew on Meyer, Allan, and Smith's related questionnaire on a professional commitment to form a teacher professional identity questionnaire consisting of three dimensions: affective identity, normative identity, and continuous identity, with six questions for each dimension and a 5-point Likert scale [29]. Sun, Li, and Zubin (2010) identified three dimensions of teachers' professional identity through an empirical analysis of 817 primary and secondary school teachers: professional perceptions, professional emotions, and professional values [30]. Zhou Ke (2012) conducted a quantitative study of 590 secondary school physical education teachers in five provinces and identified five factors of secondary school physical education teachers' professional identity as value identity, affective identity, competence identity, continuance identity, and commitment identity [31].

(2) Research on the factors influencing teachers' professional identity

Domestic studies on the factors influencing teachers' professional identity have been studied by some scholars using empirical methods, while others have conducted qualitative studies. The empirical studies mainly compare whether there are differences in the level of teachers' professional identity on demographic variables (e.g., gender, education, age, monthly income, etc.), and the qualitative studies focus on the influence of teachers' characteristics, professional background, experience, and values.

1. Qualitative research

Luo Yiting (2016) argued that the factors affecting teachers' professional identity in higher education institutions include external social environmental factors, and internal organizational environmental factors, such as organizational culture,

organizational climate, organizational resource conditions, and organizational management system. Individual teachers' factors include teachers' gender, age, education, the influence of previous teachers, subject areas, and the influence of key events [32]. Puyang (2016) summarized the factors influencing teachers' professional identity at the school, classroom, and peer levels, respectively; the school level is mainly the influence of school context and management style; the classroom level is mainly the influence of teaching subjects, course content, and teacher-student relationships; and the peer level is mainly the influence of teacher culture and peer interaction [33]. According to Sun Guangfeng (2012), the factors influencing the professional identity of physical education teachers in general universities are social and economic status, students as well as parents' satisfaction, the school's evaluation of teachers, and the understanding of profession and career [34].

2. Quantitative study

Ma Tingting (2016) conducted a quantitative study on 40 English teachers from two junior high schools in Chongqing and classified the factors influencing teachers' professional identity into personal and environmental factors. The personal factors were the influence of age, teaching age, education, and graduation institution, and the environmental factors were the influence of family environment, social environment, school environment, and policy environment[35]. An empirical study by Jing Chunxiang (2014) et al. on 380 secondary school physical education teachers in Fujian Province concluded that the personal factors affecting secondary school physical education teachers' professional identity mainly included teaching age and education, and the main environmental background factors were school level and school location [36]. Based on the Teacher Professional Identity Scale compiled by Wei Shuhua, Zhu Yan (2016) revised the scale according to the characteristics of the study population, and the revised professional identity scale included four factors: professional identity, professional belonging, professional behavior tendency, and research identity, and the study of the professional identity of 221 university teachers found that the professional identity of university teachers in terms of demographics such as gender, age, and education The study found that there were

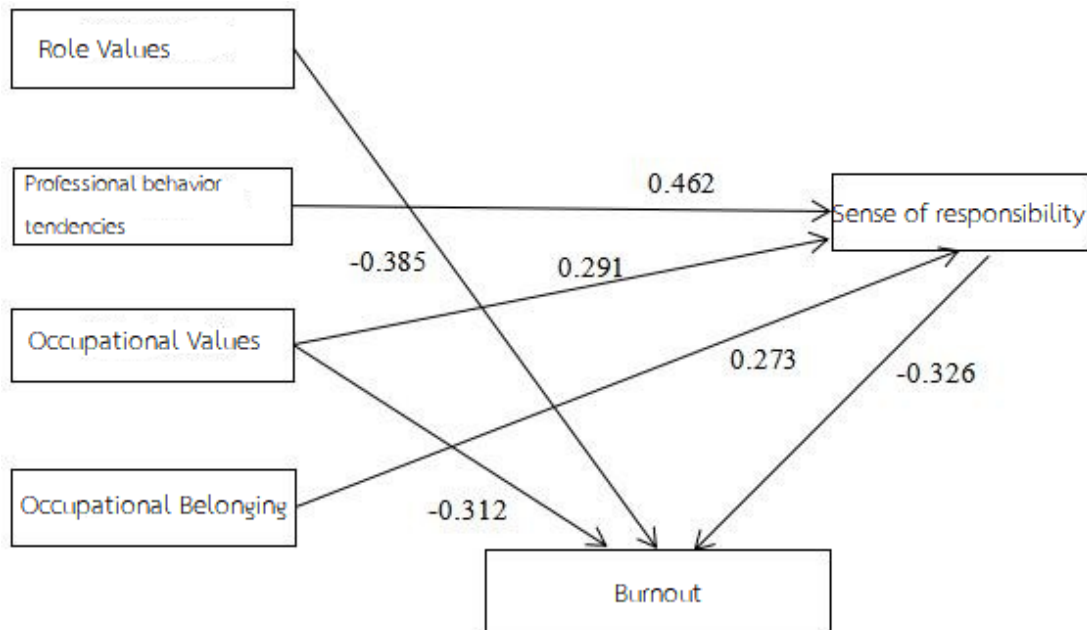
no significant differences in the demographic variables of gender, age, and education. On the research factor, there was a significant difference ($p < 0.05$) among teachers with different education and teaching age [37]. Yu Qun (2015) used Zhou Ke to compile the Secondary School Physical Education Teachers' Professional Identity Scale [31] and found that the overall level of secondary school physical education teachers' professional identity in Huai'an was high, but the distribution of the five factors of value identity, emotional identity, ability identity, sustained identity, and commitment identity was not uniform, with the highest score on the value identity factor and the lowest score on the sustained identity factor [38].

(3) Teachers' professional identity and other variables

Studies related to teachers' professional identity include job commitment, job satisfaction, burnout, and responsibility, and related scholars have shown that professional identity has a direct positive or negative predictive effect on related variables. Yu Lihong (2011) analyzed the correlation between professional identity and work engagement of physical education teachers in colleges and universities, and concluded that three dimensions of professional emotional benefit, professional motivation, and professional self-regulation of physical education teachers had positive predictive effects on work engagement, indicating that the higher the professional identity, the greater the degree of work engagement. The correlation analysis of career identity and work engagement at different career stages found that the dimension of self-regulation of physical education teachers in the pacific stage had a positive predictive effect on work engagement; emotional benefit in the maturity stage had a positive predictive effect; emotional benefit and career motivation in the establishment stage had a positive predictive effect, and emotional benefit and self-regulation in the exploration stage had a positive predictive effect [39]. Liu Min (2015) conducted a correlation analysis between teachers' professional identity, sense of responsibility, and burnout, and the results showed (in Figure 1) that role values, professional values, and sense of responsibility had direct predictive effects on teachers' burnout, with the highest predictive effect of role values, and professional values in teachers' professional identity not only directly predicted burnout but also indirectly by acting on a sense of responsibility

to predict Burnout. Professional behavioral tendencies and professional belongingness in professional identity do not directly predict teacher burnout, but they can indirectly predict teacher burnout through responsibility [40]9.

Figure 1 Path diagram of teachers' professional identity, sense of responsibility, and burnout



2.2.2 Research on teachers' teaching efficacy

2.2.2.1 Foreign research on teacher teaching efficacy

Teacher teaching efficacy is related to student learning achievement and motivation, as well as to teacher behavior, and plays a key role in school improvement. Foreign scholars have conducted more empirical studies on teachers' teaching efficacy and are using self-administered multidimensional scales for questionnaire surveys. Alrefaei (2015) studied 62 math and science teachers in three Northwest Arkansas school districts and found significant differences ($p < 0.05$) in the efficacy beliefs of Level 5 math and science teachers. Teachers with a bachelor's degree had higher overall efficacy than teachers holding a master's degree. In addition, there was no difference in teaching efficacy in terms of teachers' teaching

experience in terms of classroom management, student engagement, and teaching strategies [41]. Ahmad (2015) used the Teaching Efficacy Scale developed by Tschannen Moran and Hoy, which includes 3 dimensions of classroom management, teaching strategies, and student engagement, to survey 35 female and 35 male teachers in Atok. The results of the questionnaire survey showed that female teachers had significantly higher ($p < 0.05$) teaching efficacy than male teachers in general as well as in all 3 dimensions of teaching efficacy. Yousuf Zai and Sajid Ali (2016) surveyed teachers in four provinces of Pakistan and found that female teachers had higher efficacy than male teachers in student engagement, teaching strategies, and classroom management in the subgroup of teachers. In addition, Pakistani teachers had higher teaching efficacy in the first year of elementary school than in the higher grades [43]. Bedir (2017) used a teaching efficacy scale that included six dimensions of curriculum design, instructional strategies, technology use, classroom management, interpersonal relationships, and assessment of learning to survey 678 primary and secondary school teachers working in Tokat on gender, curriculum matching, on-the-job training, years of teaching experience, and different. The results of the teaching efficacy survey on five demographic characteristics of subjects showed that the most competent dimension for teachers was classroom management, followed by curriculum design, interpersonal relationships, learning assessment, and technology use, and the lowest competence in teaching strategies. There was no significant difference in teaching efficacy by gender, and female teachers had higher teaching efficacy than male teachers. Teachers with more than 20 years of teaching experience and less than 6 years of teaching experience had the highest teaching efficacy. On the classroom management dimension, the presence or absence of in-service training had no significant effect on teaching efficacy. There was a significant difference ($p < 0.05$) in teaching efficacy among teachers of different subjects [44].

2.2.2.2 Domestic studies on teachers' teaching efficacy

(1) Structure of teaching efficacy

Most researchers have divided the structure of teaching efficacy into general teaching efficacy and personal teaching efficacy, while some scholars have defined

the structure of teaching efficacy in multiple dimensions from other theoretical dimensions. Jiang Xinhui's (2007) self-administered teaching efficacy scale includes eight elements: knowledge transfer, classroom management, character and behavior education, self-assessment of quality and competence, expectations, student feedback, peer comparison, and emotional arousal [45]. Zhao Shouting (2012) defined teaching efficacy in terms of two levels, task and cognitive sources, based on the dimensional theory. The task level includes three elements of knowledge transfer, classroom organization and management, and moral behavior education of students; the cognitive source level includes four elements of quality and competence, student feedback, positive experience, and emotional arousal, and each of the two levels has 21 items with a four-level scale [46]. According to the principles of "domain specificity" and "domain integrity", Ma Yongzhan's (2005) teaching efficacy scale was divided into four dimensions: classroom management, clarity of material presentation, teaching strategies and techniques, and teacher-student interaction. The scale was divided into four dimensions, namely, classroom management, clarity of material presentation, teaching strategies and techniques, and teacher-student interaction, with a total of 20 items, using a 6-point Likert scale [47]11.

(2) Research on the factors influencing teaching efficacy

In domestic studies on the factors influencing teaching efficacy, qualitative studies mainly attribute them to internal factors such as teaching experience and teaching ability and external factors such as teaching environment. Empirical studies mainly attributed them to personal, family, and social factors.

Yuan Ling (2007) divided the factors affecting university teachers' teaching efficacy into internal and external factors. Internal factors include teachers' direct and indirect experience acquisition, success or failure of teaching activities, scientific conceptions of education, and emotional states. External factors include the social and school environment, whether interpersonal and teacher-student relationships are good, and the teaching characteristics of higher education, where higher education students will have more positive attitudes and motivation to learn, all of which affect teachers' teaching efficacy [48]. Li Xi (2015) summarized the factors that

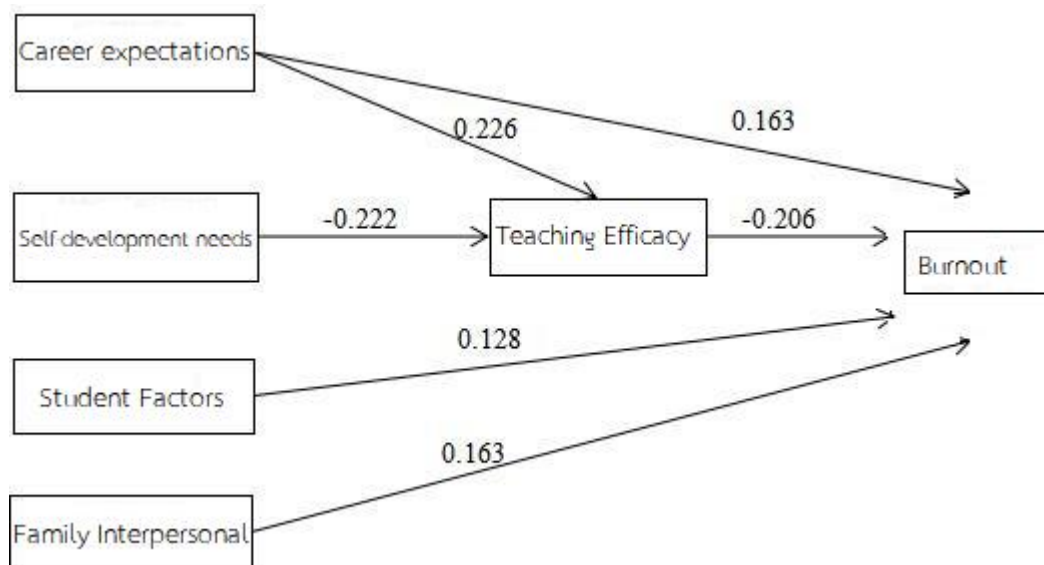
affect the teaching efficacy of higher education physical education teachers into five aspects: teachers' teaching ability factors; teachers' professional attitudes, such as professional values and career motivation of higher education physical education teachers; teachers' self-efficacy; teaching attribution factors and school factors such as the school environment [49]. Hainan Wang (2017) considered practicability and continuity as the characteristics of teachers' teaching efficacy, and three main factors affect teachers' teaching efficacy: first, the individual characteristics factors of teachers themselves, including education, teaching experience, teaching practice ability, and teaching attitude; second, the teaching environment factors of universities, including the teaching atmosphere of universities and the development and training opportunities provided for teachers; and third, the social environment factors. The third factor is the social environment, which mainly comes from the level of respect for teachers' status in society, thus affecting teachers' teaching efficacy [50].

Kong, Huang-sheng (2008) used a self-administered teaching efficacy scale questionnaire for physical education teachers and a teaching efficacy influencing factor questionnaire. The teaching efficacy scale includes three dimensions: cooperative learning, teaching reform, and teaching methods, and through an empirical study of 100 teachers, it was concluded that there was a significant upward trend in teaching efficacy among teachers holding coaching and administrative positions. The 27-item Teaching Efficacy Influencing Factors Questionnaire, using a 5-point Likert scale, concluded that workload, educational development, student factors, interpersonal relationships, organizational climate, personality traits, social factors, and family factors affect teaching efficacy [51]. Xu, Long (2013) et al. used the Teaching Efficacy Scale for Physical Education Teachers developed by Gibson, which includes general teaching efficacy and personal teaching efficacy, and through a questionnaire survey of 220 high school physical education teachers, the results showed that male teachers were significantly higher than female teachers ($p < 0.05$), and both general and personal teaching efficacy increased with the increase in teaching experience. It is believed that teachers' teaching efficacy is influenced by factors such as job stress, social support,

education, teaching experience, and support [52]12. Based on the literature such as the Tschannen-Moran teacher self-efficacy integration model, Yu, Bin (2015) developed a teaching efficacy scale including 6 dimensions of teaching self-efficacy beliefs, classroom management, materials presentation, teaching strategies, teaching evaluation, and learning climate with 34 items, and surveyed female physical education teachers in 56 colleges and universities in Tianjin, and found that female physical education teachers in Tianjin performed best in teaching evaluation. In terms of title, professors outperformed assistant professors and lecturers. In terms of position, full-time teachers outperformed teachers who also held tutorial positions [53].

(3) Teaching efficacy and other variables

Figure 2 Model of the relationship between professional identity, teaching efficacy, and burnout



The literature search revealed that teaching efficacy can both directly predict other variables and teaching efficacy can also indirectly influence other variables as an indirect variable. Wang Hongyu (2015) analyzed the correlation between teaching efficacy and teaching quality and concluded that teaching efficacy can influence teaching quality in three ways: (1) teachers with high teaching efficacy can influence teaching quality by choosing teaching methods and tools; (2) teachers with high teaching efficacy can influence teaching quality by setting teaching goals; (3)

teachers with a high sense of efficacy can influence the quality of teaching through different emotional experiences [54]. Pan and Yan-Yu (2007) analyzed the correlation between teaching efficacy, occupational stress, and burnout among secondary school physical education teachers (Figure 2) and concluded that occupational expectations, student factors, and family interpersonal aspects of occupational stress directly predicted burnout. Career expectations not only directly predicted burnout but also directly predicted teaching efficacy. Self-development needs do not directly predict burnout, but indirectly predict burnout through teaching efficacy. In contrast, neither exam stress nor workload directly predicted teaching efficacy and burnout [55].

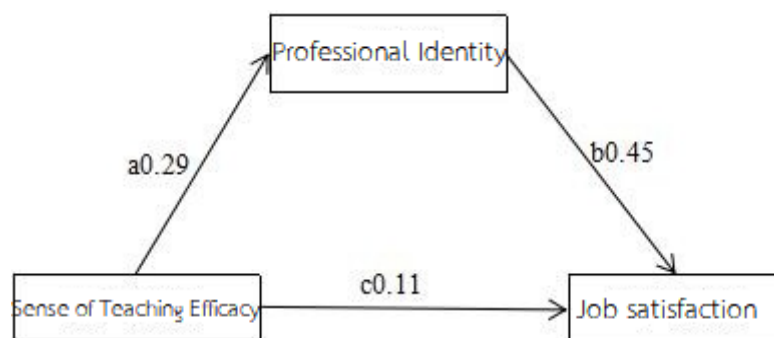
2.2.3 Research on the relationship between teachers' professional identity and teaching efficacy

A search of the literature revealed that most foreign scholars have studied the relationship between teachers' professional identity and job satisfaction, intention to leave, and other variables. Teaching efficacy was mainly studied about academic level, teaching experience, teaching style, and teaching innovation, and the only study on the relationship between teachers' professional identity and teaching efficacy.

By searching the literature on the relationship between teachers' professional identity and teaching efficacy in China, researchers generally agreed that professional identity has a highly significant positive relationship with teaching efficacy and that professional identity has a predictive effect on teaching efficacy. Han Bing (2014) concluded that secondary school physical education teachers' professional identity and teaching efficacy had a highly significant correlation ($p < 0.001$) with a correlation coefficient of $R = 0.326$, indicating that the higher the professional identity of secondary school physical education teachers, the better the teaching efficacy [56]13. Duan Ting (2011) analyzed the correlation between professional identity, teaching efficacy, and teaching monitoring ability of 300 teachers in Hubei Province, and concluded that both teachers' professional identity and teaching efficacy could positively predict teachers' teaching monitoring ability and were important factors influencing teaching monitoring ability, and teaching

efficacy played a mediating role in the influence of teachers' professional identity on teaching monitoring ability [57]. Tang Jin (2014) conducted a questionnaire survey on 347 secondary school English teachers in four provinces and found that the personal teaching efficacy of secondary school English teachers in China was higher than the general teaching efficacy; professional identity was at a high level and it had a positive predictive effect on teaching efficacy, and job burnout had a mediating effect on the influence of professional identity on teaching efficacy, according to these results, it is not difficult to find the importance of teachers' professional identity [58]. Li Yongjin (2016) conducted a correlation analysis of 252 secondary school physical education teachers' teaching efficacy, professional identity, and job satisfaction in five provinces and concluded that there was a highly significant positive correlation between the three variables of secondary school physical education teachers' professional identity, teaching efficacy and job satisfaction ($p < 0.001$), and the correlation coefficient between teachers' professional identity and teaching efficacy was 0.290 and with job satisfaction, The correlation coefficient between professional identity and teaching efficacy was 0.290, job satisfaction was 0.484, and job satisfaction and teaching efficacy was 0.242, which means that teachers with high professional identity showed high teaching efficacy and professional identity mediated the effect of teaching efficacy on job satisfaction (Figure 3) [59].

Figure 3 Schematic diagram of the mediating effect of professional identity on teaching efficacy on job satisfaction



Secondary physical education teachers are an important part of the new curriculum reform, and a more in-depth, long-term, and detailed study of secondary physical education teachers' professional identity and teaching efficacy is where the trend of reform lies. Teacher professional identity and teaching efficacy is a dynamic process, and most of the research in this area is a dissection of values and meanings. There is no very authoritative and unified scale for the study of teachers' professional identity and teaching efficacy, and the research subjects are mainly geographical, lacking a large-scale survey, while different geographical environments, conditions, and policies are important factors affecting teachers' professional identity and teaching efficacy, so the research results are not necessarily universal. Qualitative research is more specific and comprehensive, and quantitative research is more convincing, combining the two effectively, rationalizing research content, promoting the pace of research, pursuing value advocacy, and realizing the virtuous cycle of inspiring practice from theory and enriching theory from practice.

Chapter 3

Research Methodology

3.1 Research Subjects

This paper takes X college in Qingdao, Shandong province as the scope of the investigation, and selects the secondary physical education teachers in this school as the research object. According to the need of the research purpose, this study uses the overall sampling method to distribute questionnaires to the secondary physical education teachers in this school. Affected by the epidemic, the questionnaire survey of this thesis was conducted by the online method by editing the online questionnaire in advance through Questionnaire Star and distributing the questionnaire directly within the school teachers' group by contacting the secondary physical education teachers. From April 25 to May 5, 150 questionnaires were planned to be collected, 116 were collected, 9 invalid questionnaires were removed, and the total number of valid samples collected was 107.

Table 1 Basic information of survey respondents

Item	Group	Number of people	Percentage (%)
Gender	Female	19	17.8%
	Male	88	82.2%
Academic qualifications	Specialty	3	2.8%
	Bachelor's degree	93	86.9%
	Master's degree	11	10.3%
Title	Senior	14	13.1%
	Grade I	55	51.4%
	Grade 2	34	31.8%
	Grade 3	4	3.7%
Age	Under 30 years old	19	17.8%

	30-39 years old	42	39.3%
	40-49 years old	41	38.3%
	50 years old and above	5	4.7%
years of teaching experience	Less than 5 years	17	15.9%
	5-10 years	11	10.3%
	11-15 years	27	25.2%
	16-20 years	20	18.7%
	21-25 years	26	24.3%
	25 years or more	6	5.6%

3.2 Research methods

3.2.1 Literature method

According to the research needs, the author mainly searched through China Knowledge Network (CNKI), using the advanced search method, with "teachers' professional identity", "teachers' sense of teaching efficacy", "physical education teachers", etc., and including "secondary school". I also searched the English literature on the Web of Science database and sorted and summarized the retrieved literature. At the same time, the relevant regulatory documents issued by the State Council, the Ministry of Education, the General Administration of Sports, and other relevant state departments were consulted to understand the latest national policies at present, and the problems that need to be solved were taken as the entry point for systematic analysis and summarization.

3.2.2 Logical analysis method

This paper mainly analyzes the interrelationship between the professional identity and teaching efficacy of middle school physical education teachers in Qingdao, Shandong Province by analyzing and summarizing the discussion of the differences between the current professional identity and teaching efficacy of middle school physical education teachers in Qingdao, Shandong Province on demographic variables.

3.2.3 Mathematical and statistical method

The SPSS 22.0 statistical software was used to analyze and process the collected raw data, and the EXCEL table software was used to make graphs and charts of the data results. Statistical methods such as descriptive statistics, independent sample t-test, and one-way ANOVA were used to analyze the study of the differences between secondary physical education teachers' professional identity and teaching efficacy in terms of demographic variables, and correlation analysis was used to explore the study of the relationship between secondary physical education teachers' professional identity and teaching efficacy and its various dimensions.

3.2.4 Questionnaire survey method

(1) Questionnaire design

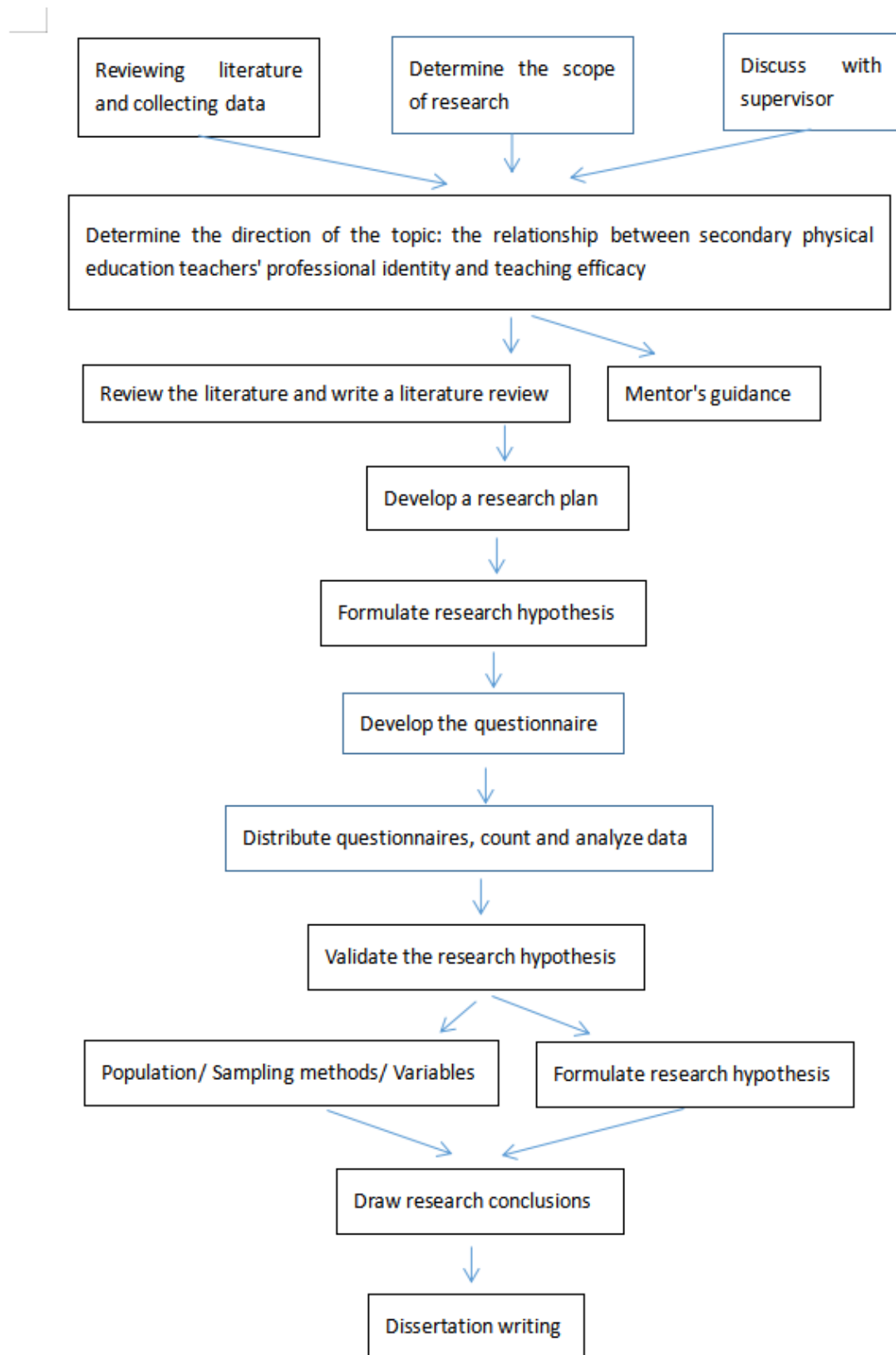
The questionnaire of this paper was divided into three parts. The first part is the basic information about the subject teachers, including gender, education, title, age, and teaching experience. The second part is the basic information about teachers' professional identity, including five aspects: value identity, emotional identity, competence identity, continuity identity, and commitment identity. The third part was the basic situation of teachers' teaching efficacy, including four factors: classroom management, clarity of material presentation, teacher-student interaction, and application of teaching strategies and techniques.

(2) Questionnaire distribution and collection

This study used the online questionnaire method, which was organized into an online questionnaire using Questionnaire Star and distributed through WeChat by sending questionnaires and pushing QR codes to physical education teachers in each secondary school.

The researcher designed the questionnaire from January to February 2022 and released it for testing in March for secondary physical education teachers in X colleges and universities in Qingdao, Shandong Province, and 20 questionnaires were collected. Later, after revising the questionnaire, the official questionnaire was released on April 25 for all secondary physical education teachers in X colleges and universities in Qingdao City, Shandong Province. A total of 116 questionnaires were collected until May 5, of which 107 were valid.

3.3 Research design



3.4 Measurement tools

3.4.1 Professional Identity Measurement Instrument

The scale for measuring professional identity was adopted from the "Secondary School Physical Education Teachers' Professional Identity Scale" developed by Ke Zhou. The scale consists of 5 factors and 18 items, using a 5-point Likert-type scale. "1" means "totally disagree"; "5" means "totally agree".

The internal consistency coefficient of the scale was 0.891, and the coefficients of the five dimensions were 0.802, 0.808, 0.808, 0.726, and 0.736 for value identity, emotional identity, competence identity, continuance identity, and commitment identity, respectively, so the reliability of the scale was good.

In the validity test, the correlation coefficients between the factors of the scale ranged from 0.229 - 0.480, which showed a moderate correlation; the correlation coefficients between the factors of the scale and the total score ranged from 0.633 - 0.781, which also showed a significant correlation and were higher than the correlation between the factors. Combining the above data, the Professional Identity Scale for Secondary School Physical Education Teachers developed by Ke Zhou has reliable reliability and validity.

3.4.2 Teaching efficacy measurement instrument

The scale was selected from Sports Science (Vol. 25, No. 3, 2005) and was designed by Yongzhan Ma (2005) based on Bandura et al.'s (1997) study for the measurement of physical education teachers' teaching efficacy. The scale consists of 20 questions on four factors, and four factors of the scale consist of classroom management (F1), clarity of material presentation (F2), teacher-student interaction (F3), and application of teaching strategies and techniques (F4). There are six levels of scoring: "6 I completely agree", "5 I agree", "4 ~ somewhat agree", "3 I somewhat disagree", "2 I disagree", and "1 I disagree".

Among them, the subscale of classroom management (F1) includes questions 1, 2, 3, 4, and 5 of the Teaching Efficacy Scale, which mainly reflects teachers' beliefs about the efficacy of managing content-mediated activities for students in a given classroom setting. The clarity of instructional material presentation subscale (F2)

includes questions 6, 7, 8, 9, and 10 of the Instructional Efficacy Scale, which reflect teachers' beliefs about their ability to provide conceptual structures, accurately communicate instructional content, and present instructional material in the actual teaching process, using students' current cognitive level as a starting point. The Teaching Strategies and Techniques Application subscale (F3) includes questions 11, 12, 13, 14, and 15 of the Teaching Efficacy Scale, which mainly reflects teachers' beliefs about their ability to flexibly use a variety of effective teaching strategies and techniques to improve teaching objectives in the actual teaching process according to students' levels. The teacher-student interaction subscale (F4) includes questions 16, 17, 18, 19, and 20 of the teaching efficacy scale, which mainly reflects teachers' beliefs about their ability to communicate with each other and their students to establish a good teacher-student relationship in the actual teaching process.

Reliability: The study used the internal consistency method to test the reliability of the scale, and the internal consistency coefficient of the total scale was 0.95; the Cronbach's α coefficients of the total scale and the four subscales were between 0.89 and 0.95, which were 0.95, 0.90, 0.89, and 0.89; the reliability of the composition of the four factors was between 0.964 and 0.97. The reliability of the four factors was between 0.964 and 0.97, which explained about 69% of the total variance of the 20 questions of the full scale; the individual reliability of the 20 questions was between 0.68 and 0.90.

Validity: The study used Lisrel software for validation factor analysis of the structural model of the scale, and the model was evaluated using χ^2 , GFI, AOFI, NFI, NNFI, CFI, IFI, RFI values, and the values were 1003.5, 164, 0.96, 0.96, 0.97, 0.97, 0.97, 0.97, 0.97, 0.97, 0.97, all of which are greater than 0.90, and the model constructs fit well with the actual data.

In conclusion, the Teaching Efficacy Scale for Physical Education Teachers developed by Yongzhan Ma has good internal consistency and stability.

3.5 Statistical and data analysis

In this study, based on the above literature review and related theories and research purposes, a questionnaire was used to determine the structure and subjects of the study. A measurement instrument suitable for this study was

selected. This questionnaire consists of the Effective Practice Teaching Evaluation Scale, the Student Professional Competence Evaluation Scale, and the Career Planning Scale. An online electronic questionnaire was used for the distribution, measurement, and collection of SPSS data analysis directly from the web context for classification and analysis.

3.5.1 Analysis of the overall status of career identity

Table 2 Career identity and mean and standard deviation of each factor

	Value Identity	Emotional Identity	Competence Identity	Continuity Identity	Commitment Identity	Professional Identity
Average value	4.46	4.33	4.53	4.16	4.39	4.39
Standard deviation	0.64	0.75	0.59	0.70	0.57	0.53

The mean score of 5 factors is higher than 4, among which, the highest score is 4.53 for ability identity and the lowest score is 4.16 for continuous identity. The mean scores of all five factors were higher than 4. This result is consistent with the studies of Li Yongjin [59], Wei Shuhua [60], and others, and is in line with the overall development of the education level in China.

3.5.2 Analysis of the overall teaching efficacy

Among the four factors, classroom management had the highest score of 5.09, and teacher-student interaction had the lowest score of 4.97. The scores were, in descending order, classroom management > clarity of teaching materials > application of teaching strategies and techniques > teacher-student interaction.

Table 3 Teaching efficacy and the mean and standard deviation of each factor

	Classroom Management	Clarity of textbook presentation	Application of teaching strategies and techniques	Teacher-Student Interaction	Teaching efficacy
Average value	5.09	5.01	4.99	4.97	5.02
Standard deviation	0.30	0.31	0.31	0.31	0.25

The above analysis revealed that the professional identity and teaching efficacy of secondary physical education teachers in Qingdao were generally at a moderate to high level, which verified hypothesis H1: The overall level of professional identity and teaching efficacy of secondary physical education teachers in Qingdao was high.

Chapter 4

Data Analysis Result

4.1 Analysis of secondary physical education teachers' current professional identity

4.1.1 Differences in gender

The independent sample t-test was conducted on secondary physical education teachers in X colleges and universities in Qingdao. As shown in Table 4, there is no significant difference in the professional identity of secondary physical education teachers in X colleges and universities in Qingdao in terms of gender, and the overall level of professional identity of female physical education teachers is higher than that of male physical education teachers. There is a significant difference in emotional identity ($p < 0.05$).

Table 4 Professional identity of secondary physical education teachers and the differences of each factor on gender

	M	SD	SD	M	SD	P
Value Identity	4.65	0.37	0.67	4.51	0.67	0.138
Emotional Identity	4.60	0.34	0.81	4.48	0.81	0.007
Competence Identity	4.61	0.36	0.63	4.66	0.63	0.560
Continuity Identity	4.44	0.50	0.72	4.36	0.72	0.054
Commitment Identity	4.49	0.48	0.59	4.36	0.59	0.392
Professional Identity	4.57	0.30	0.57	4.49	0.57	0.110

4.1.2 Differences in educational attainment

One-way ANOVA was conducted on the educational level of middle school physical education teachers in X colleges and universities in Qingdao, and Table 5 shows that there is no significant difference in the overall professional identity of middle school physical education teachers in X colleges and universities in Qingdao, and there is no significant difference in the five factors. With the reform of national education policy and the increase of emphasis and financial investment in higher education, major universities have sent many talents with higher education to society while expanding their enrollment. The increase in the number of teachers with higher education has affected the opportunities for teachers with lower education to improve their teaching and evaluate their titles. Some in-service teachers, to further improve their professional knowledge and skills, have begun to consciously choose to further their education and to re-educate themselves to keep up with the times to obtain higher education. As a result, the proportion of teachers with specialist degrees in the secondary school teaching force is becoming smaller and smaller, while the number of teachers with bachelor's and graduate degrees is increasing, and the structure of the teaching force is becoming more and more highly educated.

Table 5 Professional identity of secondary physical education teachers and the differences of each factor in terms of education

	M	SD	M	SD	M	SD	P
Value Identity	4.67	0.23	4.44	0.66	4.51	0.49	0.804
Emotional Identity	4.89	0.19	4.29	0.78	4.48	0.58	0.309
Competence Identity	4.58	0.72	4.52	0.61	4.66	0.42	0.747
Continuity Identity	4.56	0.77	4.12	0.71	4.36	0.59	0.341
Commitment Identity	4.89	0.19	4.38	0.58	4.36	0.55	0.307
Professional Identity	4.70	0.33	4.37	0.55	4.49	0.44	0.469

4.1.3 Differences in job titles

One-way ANOVAs were conducted on middle-level physical education teachers in Qingdao X colleges and universities in terms of their job titles. As shown in Table 6, from the overall level of professional identity, there was no significant difference in the professional identity of middle-level physical education teachers with different job titles, and the overall professional identity level was high, and there was no significant difference in each factor. By comparing the mean values, the highest level of professional identity of Title III secondary physical education teachers was 4.67, and the lowest level of professional identity of Title I secondary physical education teachers was 4.35. On all factors, the level of professional identity of Title III secondary physical education teachers was the highest. Title II middle-level physical education teachers have the lowest level of professional identity on the factor of value identity and input identity. The level of professional identity was the lowest in the factors of emotion, ability, and continuity, and the trend of these three factors was the same as the overall level of professional identity.

Table 6 Professional identity of secondary physical education teachers and the differences of each factor in their job titles

	M	SD	M	SD	M	SD	M	SD	P
Value Identity	4.63	0.47	4.41	0.77	4.41	0.46	4.80	0.28	0.448
Emotional Identity	4.42	0.87	4.23	0.85	4.38	0.53	4.75	0.50	0.482
Competence Identity	4.70	0.40	4.47	0.72	4.53	0.45	4.81	0.24	0.440
Continuity Identity	3.93	0.99	4.12	0.72	4.30	0.49	4.33	0.72	0.329
Commitment Identity	4.42	0.64	4.39	0.62	4.32	0.47	4.83	0.19	0.406
Professional Identity	4.46	0.49	4.34	0.64	4.40	0.36	4.72	0.32	0.534

4.1.4 Differences in age

A one-way ANOVA was conducted on the age of middle school physical education teachers in X colleges in Qingdao, and from Table 7, there is no significant difference in the overall level of professional identity among teachers of different ages, and there is no significant difference in each factor. In terms of mean values, the highest overall level of professional identity was 4.73 for physical education

teachers aged 50 and above, and the lowest overall level of professional identity was equal for physical education teachers aged 30-39 and 40-49. In terms of each factor, the highest level of professional identity was found in the age group of 50 and above, while the lowest level of professional identity was found in the age group of 30-39 for the factors of value identity, competence identity, and commitment identity, and the lowest level of professional identity was found in the age group of 40-49 for the factors of emotional identity and continuity identity. In terms of value identity, emotional identity, and commitment identity, the level of professional identity of physical education teachers in the age group below 30 was only lower than that of physical education teachers in the age group of 50 and above.

Table 7 Professional identity of secondary physical education teachers and the differences of each factor in terms of age

	M	SD	M	SD	M	SD	M	SD	P
Value Identity	4.51	0.50	4.40	0.62	4.45	0.74	4.84	0.17	0.513
Emotional Identity	4.44	0.63	4.30	0.65	4.24	0.92	4.80	0.30	0.407
Competence Identity	4.57	0.50	4.49	0.53	4.54	0.70	4.70	0.54	0.891
Continuity Identity	4.21	0.60	4.23	0.67	4.01	0.75	4.60	0.72	0.219
Commitment Identity	4.46	0.47	4.29	0.59	4.42	0.60	4.67	0.47	0.432
Professional Identity	4.45	0.47	4.36	0.51	4.36	0.61	4.73	0.32	0.466

4.1.5 Differences in teaching age

One-way ANOVA was conducted on secondary physical education teachers in Qingdao X colleges and universities in terms of their job titles. As shown in Table 8, there is no significant difference in the overall level of professional identity among secondary physical education teachers of different teaching ages, and the overall level of professional identity is high, and there is no significant difference in each factor. By comparing the means, the highest level of professional identity of

secondary physical education teachers with more than 25 years of teaching experience is 4.76, and the lowest level of professional identity of teachers with 11-15 years of teaching experience is 4.25. On all factors, the highest level of professional identity of secondary physical education teachers with more than 25 years of teaching experience is found, and the lowest level of professional identity of secondary physical education teachers with 11-15 years of teaching experience is found on the factor of value and ability identity, and the factor of emotional identity. On the factor of affective identity, secondary physical education teachers with 16-20 years of teaching experience had the lowest level of professional identity; on the factor of continuous identity, secondary physical education teachers with 21-25 years of teaching experience had the lowest level of professional identity; on the factor of commitment, secondary physical education teachers with 5-10 years of teaching experience had the lowest level of professional identity.

Table 8 Professional identity of secondary physical education teachers and the differences of each factor in terms of teaching age

	under 5y		5-10y		11-15y		16-20y		21-25y		over 25y		
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	P
Value Identity	4.54	0.53	4.58	0.38	4.26	0.65	4.30	0.96	4.59	0.46	4.80	0.18	0.186
Emotional Identity	4.41	0.68	4.48	0.31	4.21	0.72	4.05	1.02	4.42	0.75	4.83	0.28	0.207
Competence Identity	4.56	0.53	4.66	0.28	4.37	0.59	4.44	0.91	4.65	0.41	4.75	0.50	0.428
Continuity Identity	4.27	0.62	4.27	0.55	4.10	0.73	4.13	0.62	4.00	0.82	4.67	0.67	0.364
Commitment Identity	4.53	0.47	4.18	0.48	4.22	0.61	4.35	0.67	4.51	0.51	4.72	0.44	0.143
Professional Identity	0.50	4.48	0.27	4.46	0.56	4.24	0.74	4.27	0.44	4.47	0.30	4.76	0.220

4.2 Analysis of the current situation of teaching efficacy of junior high school physical education teachers

4.2.1 Differences in gender

As shown in Table 9, there were significant differences in the overall teaching efficacy and teacher-student interaction factors among the physical education teachers of different genders in X colleges in Qingdao ($p < 0.05$), but not in the factors of classroom management, clarity of material presentation and application

of teaching strategies and techniques. In terms of the means, the overall level of teaching efficacy was higher, and female teachers had slightly higher teaching efficacy than male teachers. This is similar to the findings of Guoliang Yu et al. First, in the context of a significant increase in social productivity, women enjoy the same equitable access to education and career choices as men, and they receive the same good education and social support as men, and it has gradually become rare for women to take the initiative to choose a career as a physical education teacher, which is considered to be only for men. According to Lu, and Yanyan (2010), "In modern society, where men and women are equal and women have also received good educational experiences and social support, their performance and confidence levels are sometimes higher than those of men, so the gender factor is not a major source of difference in the teaching efficacy of physical education teachers[61] ." Second, male and female physical education teachers experience the same process of understanding education, and when faced with the relatively stable job of teaching, female teachers are more motivated to teach, love teaching more than male teachers, will devote more time and effort, and have a higher level of job satisfaction than male teachers. From a traditional cultural perspective, the social roles that male teachers take on make them have different motivations and achievement goals than female teachers, and female teachers are more likely to derive satisfaction from simple teaching outcomes; therefore, positive affective experiences lead to a slightly higher sense of teaching efficacy for female teachers than for male teachers. The significant difference in classroom management factors may be because female teachers were more amiable, calm, patient, and good at regulating the learning atmosphere through careful observation and classroom management than male teachers.

Table 9 Secondary physical education teachers' teaching efficacy and the differences of each factor in terms of gender

	Female		Male		P
	M	SD	M	SD	
Classroom Management	5.18	0.23	5.07	0.31	0.157
Clarity of textbook presentation	5.04	0.22	5.01	0.33	0.657
Application of teaching strategies and techniques	5.07	0.17	4.98	0.33	0.213
Teacher-Student Interaction	5.11	0.20	4.94	0.32	0.037
Teaching efficacy	5.10	0.11	5.00	0.27	0.011

4.2.2 Differences in education

One-way ANOVA was conducted on the teaching efficacy of middle school physical education teachers in Qingdao X. As shown in Table 10, there was no significant difference in the overall level of teaching efficacy and the four factors among middle school physical education teachers with different education levels, and the overall level of teaching efficacy was high. The mean value of the factors of teaching strategies and skills application was the lowest among the PE teachers with specialist degrees, while the mean value of the other three factors and the overall level of teaching efficacy was the highest among the PE teachers with specialist degrees. In the three factors of classroom management, application of teaching strategies and techniques, teacher-student interaction, and overall teaching efficacy, the mean values of graduate degree PE teachers were higher than those of undergraduate degree teachers, probably because education reflects the knowledge structure and professional level of teachers to a certain extent, which are the prerequisites for teachers to complete their teaching tasks. The teachers with higher education have received more in-depth and extensive basic theories and professional knowledge, and more training in educational skills and their long-time professional training has formed solid basic skills and excellent professional techniques.

Table 10 Secondary physical education teachers' teaching efficacy and the differences of each factor in terms of education

	Specialty		Undergraduate		Master's degree		P
	M	SD	M	SD	M	SD	
Classroom Management	5.27	0.31	5.08	0.31	5.11	0.16	0.567
Clarity of textbook presentation	5.27	0.12	5.01	0.32	4.95	0.20	0.290
Application of teaching strategies and techniques	4.93	0.31	4.99	0.32	5.02	0.24	0.914
Teacher-Student Interaction	5.07	0.31	4.96	0.31	5.07	0.30	0.438
Teaching efficacy	5.13	0.18	5.01	0.26	5.04	0.19	0.683

4.2.3 Differences in job titles

A one-way ANOVA was conducted on the secondary physical education teachers of X colleges in Qingdao in terms of their titles. As shown in Table 11, there was no significant difference in the overall level of teaching efficacy and the four factors among the physical education teachers with different titles. Senior title physical education teachers and title III physical education teachers had the highest overall level of teaching efficacy, and title I physical education teachers had the lowest. On the factors of classroom management and application of teaching strategies and techniques, senior title physical education teachers had the highest level of teaching efficacy, and title III physical education teachers had the lowest. On the factors of clarity of material presentation and teacher-student interaction, Title III physical education teachers had the highest teaching efficacy, followed by senior title physical education teachers, and Title I physical education teachers had the lowest teaching efficacy on the factor of teacher-student interaction. The high teaching efficacy of senior title physical education teachers may be mainly based on their solid and abundant subject knowledge reserve, and after years of teaching practice, physical education teachers' teaching management and organizational skills have been improved, and their rich teaching experience makes them believe they can choose reasonable teaching methods, provide students with a complete conceptual structure, convey teaching contents to students in a clear and easily acceptable way, and ensure students effective classroom management during

activities, and effective teaching. In addition, leadership affirmation of work helps to reinforce beliefs about teaching and thus increases teaching efficacy. The higher teaching efficacy of Title III physical education teachers may be because they are still young at heart when they first step out of campus and into the workplace, and they can adapt to the students' world faster and dare to try new teaching ideas; students will have positive performance in class, and physical education teachers can easily gain a sense of accomplishment in their work. However, because of insufficient teaching experience, they have not yet shaped a unique teaching style that shows their personality qualities. They will be slightly rusty in the application of teaching strategies and skills and score lower, while the lively classroom atmosphere will make students too excited and neglect classroom discipline and classroom management will be inadequate.

Table 11 Secondary physical education teachers' teaching efficacy and the differences of each factor in their job titles

	Senior Title		Title I		Title II		Title III		P
	M	SD	M	SD	M	SD	M	SD	
Classroom Management	5.16	0.30	5.08	0.34	5.09	0.24	5.05	0.19	0.806
Clarity of textbook presentation	5.12	0.28	5.00	0.34	4.96	0.28	5.20	0.16	0.253
Application of teaching strategies and techniques	5.11	0.37	4.98	0.35	4.97	0.23	4.95	0.10	0.505
Teacher-Student Interaction	5.04	0.25	4.94	0.35	4.97	0.26	5.20	0.00	0.311
Teaching efficacy	5.11	0.23	5.00	0.30	5.00	0.17	5.10	0.07	0.412

4.2.4 Differences in age

A one-way ANOVA was conducted on the teaching efficacy of middle school physical education teachers in Qingdao X. From Table 12, it can be seen that there is no significant difference in the overall level of teaching efficacy among middle school physical education teachers of different ages, and the overall level of teaching efficacy is high, and there is no significant difference in the four dimensions of teaching efficacy. In terms of clarity of material presented and the overall level of

teaching efficacy, teaching efficacy increased with age. On the factors of classroom management, application of teaching strategies and techniques, and teacher-student interaction, physical education teachers aged 50 and above had the highest teaching efficacy. In the classroom management factor, physical education teachers in the age group of 30-39 had the lowest efficacy, in the application of teaching strategies and techniques factor, physical education teachers in the age group of 30 and younger had the lowest efficacy, and in the teacher-student interaction factor, physical education teachers in the age group of 40-49 had the lowest scores. The analysis concluded that the process of increasing age is also the process of accumulating knowledge and teaching experience. The new teachers were too eager to show their teaching achievements and realize their values, but they had counterproductive effects due to their ability limitations. With increasing age and honed by teaching practice, teachers can comfortably grasp the rhythm of the classroom, reasonably use teaching strategies, quickly understand students' characteristics based on their experience, and teach in a targeted manner, with significant teaching effects and a relatively high sense of teaching efficacy.

Table 12 Secondary physical education teachers' teaching efficacy and the differences of each factor in terms of age

	under 30y		30-39y		40-49y		50-50y		
	M	SD	M	SD	M	SD	M	SD	p
Classroom Management	5.09	0.23	5.02	0.29	5.13	0.31	5.36	0.30	0.073
Clarity of textbook presentation	4.91	0.29	4.99	0.30	5.07	0.33	5.16	0.26	0.182
Application of teaching strategies and techniques	4.92	0.24	5.02	0.28	4.97	0.37	5.20	0.20	0.265
Teacher-Student Interaction	4.98	0.27	4.98	0.30	4.96	0.35	5.00	0.24	0.979
Teaching efficacy	4.97	0.19	5.00	0.23	5.03	0.29	5.18	0.14	0.403

4.2.5 Differences in teaching age

A one-way ANOVA was conducted on the teaching age of middle-level physical education teachers in X colleges in Qingdao, as shown in Table 13 shows that there

is no significant difference in the overall level of teaching efficacy, and the factors of classroom management, application of teaching strategies and techniques and teacher-student interaction among secondary PE teachers of different teaching ages, and there is a significant difference in the factor of clarity of teaching materials presentation ($p < 0.05$), and the overall level of teaching efficacy is higher. In terms of means, physical education teachers with more than 25 years of teaching experience had the highest scores on the overall and each factor of teaching efficacy. physical education teachers with less than 5 years of teaching experience had the lowest scores on the factor of application of teaching strategies and techniques, physical education teachers with 5-10 years of teaching experience had the lowest scores on the factors of classroom management, clarity of presentation of teaching materials and overall teaching efficacy, and physical education teachers with 16-20 years of teaching experience had the lowest scores on the factor of student-teacher interaction.

Table 13 Secondary physical education teachers' teaching efficacy and the differences of each factor in terms of teaching age

	under 5y		5-10y		11-15y		16-20y		21-25y		over 25y		P
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
Classroom Management	5.13	0.23	4.98	0.21	5.03	0.34	5.04	0.35	5.15	0.23	5.40	0.28	0.048
Clarity of textbook presentation	4.93	0.32	4.91	0.14	4.98	0.33	4.99	0.42	5.12	0.22	5.23	0.29	0.120
Application of teaching strategies and techniques	4.92	0.25	4.98	0.19	5.00	0.33	4.93	0.43	5.03	0.28	5.23	0.20	0.332
Teacher-Student Interaction	5.02	0.29	4.96	0.20	4.93	0.33	4.90	0.43	5.02	0.25	5.03	0.23	0.718
Teaching efficacy	5.00	0.20	4.96	0.13	4.99	0.27	4.97	0.36	5.08	0.17	5.23	0.17	0.165

The discussion of the above two individual variables in the analysis of differences in demographic variables verified hypothesis H2: There are no significant differences in the levels of professional identity and teaching efficacy of middle school physical education teachers in X colleges and universities in Qingdao in terms of gender, education, job title, age, and teaching experience.

4.3 Relationship between junior high school physical education teachers' professional identity and teaching efficacy

4.3.1 Correlation analysis between professional identity and teaching efficacy

As shown in Table 14, the professional identity and the five factors of value identity, emotional identity, ability identity, continuity identity, and commitment identity of middle school physical education teachers in Qingdao X colleges and universities had highly significant positive correlations with teaching efficacy and the four factors of classroom management, clarity of teaching material presentation, application of teaching strategies and techniques, and teacher-student interaction ($p < 0.01$). The correlation coefficient between professional identity and teaching efficacy was $R = 0.727$, indicating that the higher the level of professional identity, the higher the teaching efficacy.

Table 14 Correlation analysis between professional identity and teaching efficacy of secondary school physical education teachers and the factors

	1	2	3	4	5	6	7	8	9	10
2	.775**	1								
3	.667**	.747**	1							
4	.461**	.588**	.478**	1						
5	.653**	.611**	.520**	.570**	1					
6	.887**	.905**	.833**	.722**	.784**	1				
7	.527**	.470**	.339**	.312**	.466**	.515**	1			
8	.545**	.500**	.455**	.304**	.481**	.557**	.529**	1		
9	.636**	.593**	.597**	.441**	.434**	.665**	.493**	.609**	1	
10	.584**	.571**	.553**	.309**	.456**	.608**	.503**	.524**	.562**	1
11	.710**	.661**	.604**	.423**	.568**	.727**	.776**	.826**	.827**	.802**

Note: 1=value identity, 2=emotional identity, 3=competency identity, 4=continuous identity, 5=commitment identity, 6=professional identity, 7=classroom management, 8=clarity of material presentation, 9=application of teaching strategies and techniques, 10=teacher-student interaction, and 11=teaching efficacy.

** indicates $p < 0.01$

Teachers' professional identity is the perception and identification of their profession and the psychological feeling of their professional role. Teaching efficacy is a belief that assesses one's competence. Teachers' subjective initiative in work situations will bring positive work attitudes, and they will be able to take the initiative to adjust their mindset when facing the pressure of work and getting into a difficult situation and choose a reasonable coping method to solve the difficult situation, and they will be less likely to choose a new career, and the higher the overall identification of this part of physical education teachers with the value, ability, emotion, and commitment of the teaching profession they are engaged in, the higher they will be able to communicate with students and Therefore, by improving physical education teachers' perception of their profession, their level of identification with their profession, and thus their level of professional identity, the decrease in their teaching efficacy due to their lack of confidence in their teaching ability can be changed. the phenomenon, so that teaching efficacy can be improved.

Through the above analysis and discussion, hypothesis H3 is verified: there is a correlation between the level of professional identification and teaching efficacy of secondary physical education teachers in Qingdao; the higher the level of professional identification, the higher the level of teaching efficacy.

4.3.2 Regression analysis of professional identity and teaching efficacy

4.3.2.1 Regression analysis of five factors of professional identity and teaching efficacy

Table 15 Regression analysis of the five factors of professional identity and teaching efficacy among secondary physical education teachers

Dependent variable	Independent variable	R^2	ΔR^2	F	β	t
Teaching efficacy	Value Identity	0.535	0.526	59.785***	0.193	4.677***
	Emotional Identity				0.092	2.627*

Note: * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$, same below.

According to the correlation analysis, a stepwise regression analysis was conducted with the five factors of physical education teachers' professional identity as the independent variables and teaching efficacy as the dependent variable, and as shown in Table 15, $R^2=0.535$ and $\Delta R^2=0.526$. the regression model was tested for significant validity by variance test ($F=59.785$, $p<0.001$). The two variables of value identity and emotional identity were selected in the regression equation, indicating that value identity and emotional identity have a positive predictive effect on teaching efficacy.

4.3.2.2 Regression Analysis of the Five Factors of Professional Identity and Classroom Management

A stepwise regression analysis was conducted with the five factors of professional identity of physical education teachers as the independent variables and classroom management as the dependent variable, and as shown in Table 16, $R^2=0.278$ and $\Delta R^2=0.271$. the regression model was tested for significant validity by ANOVA ($F=40.451$, $p<0.001$). Only the variable of value identity was selected in the regression equation, indicating that value identity has a positive predictive effect on teaching classroom management.

Table 16 Regression analysis of the five factors of secondary physical education teachers' professional identity and teaching efficacy

Dependent variable	Independent variable	R^2	ΔR^2	F	β	t
Classroom Management	Value Identity	0.27	0.27	40.4	0.24	6.36*
		8	1	51***	6	**

4.3.2.3 Regression analysis of the five factors of professional identity and clarity of presentation of teaching materials

A stepwise regression analysis was conducted with the five factors of professional identity of physical education teachers as the independent variables and clarity of

presentation of teaching materials as the dependent variable, and as shown in Table 17, $R^2=0.324$ and $\Delta R^2=0.311$. The regression model was tested for significant validity by variance test ($F=24.967$, $p<0.001$). The two variables of value identity and input identity were selected in the regression equation, indicating that value identity and input identity have a positive predictive effect on the clarity of presentation of educational materials.

Table 17 Regression analysis of the five factors of secondary physical education teachers' professional identity and clarity of textbook presentation

Dependent variable	Independent variable	R^2	ΔR^2	F	β	t
Clarity of textbook presentation	Value Identity	0.324	0.311	24.967***	0.198	3.791***
	Emotional Identity				0.119	2.039*

4.3.2.4 Regression Analysis of Five Factors of Professional Identity and Teaching Strategies and Techniques Application

A stepwise regression analysis was conducted with the five factors of professional identity of physical education teachers as the independent variables and teaching strategies and skills application as the dependent variables, as shown in Table 18, $R^2=0.458$ and $\Delta R^2=0.448$. The regression model was tested for significant validity by ANOVA ($F=43.949$, $p<0.001$). The two variables of value identity and competence identity were selected in the regression equation, indicating that value identity and competence identity have a positive predictive effect on the application of teaching strategies and skills.

Table 18 Regression analysis of the five factors of secondary physical education teachers' professional identity and the application of teaching strategies and skills

Dependent variable	Independent variable	R^2	ΔR^2	F	β	t
Application of teaching strategies and techniques	Value Identity	0.458	0.448	43.949***	0.21	4.412***
	Competence Identity				0.164	3.22**

4.3.2.5 Regression analysis of the five factors of secondary physical education teachers' professional identity and teacher-student interaction

A stepwise regression analysis was conducted with the five factors of physical education teachers' professional identity as the independent variables and teacher-student interaction as the dependent variable, and as shown in Table 19, $R^2=0.389$ and $\Delta R^2=0.378$. The regression model was tested for significant validity by variance test ($F=33.145$, $p<0.001$). The two variables of value identity and competence identity were selected in the regression equation, indicating that value identity and competence identity have a positive predictive effect on teacher-student interaction.

Table 19 Regression analysis of the five factors of secondary physical education teachers' professional identity and teacher-student interaction

Dependent variable	Independent variable	R^2	ΔR^2	F	β	t
Teacher-Student Interaction	Value Identity	0.389	0.378	33.145***	0.189	3.778***
	Competence Identity				0.153	2.853**

Chapter 5

Conclusions and Discussion

5.1 Conclusion

5.1.1 Professional identity of secondary physical education teachers in Qingdao city

The level of professional identity of secondary physical education teachers in Qingdao city is high and in the middle to upper range. There is no significant difference in gender, education, job title, age, and teaching age, but there is a significant difference in the emotional identity factor by gender ($p < 0.05$), and the level of emotional identity of female teachers is significantly higher than that of male teachers.

5.1.2 Teaching efficacy of secondary physical education teachers in Qingdao

The level of teaching efficacy of secondary physical education teachers in Qingdao was high. There was a significant gender difference ($p < 0.05$), and female teachers' teaching efficacy was higher than that of male teachers, and there was no significant difference in education, title, age, and teaching age. There were also significant differences between gender on the factor of teacher-student interaction and age of teaching on the factor of classroom management, with the highest level of teaching experience of 25 years or more and the lowest level of teaching experience of 5-10 years.

5.1.3 Relationship between professional identity and teaching efficacy of secondary school physical education teachers in Qingdao

The relationship between professional identity and teaching efficacy of secondary physical education teachers in Qingdao was highly significant and positive ($p < 0.01$) with a correlation coefficient of $R = 0.727$, indicating that the higher the level of professional identity, the higher the teaching efficacy. Among the factors of professional identity and factors of teaching efficacy, value identity and emotional

identity had positive predictive effects on teaching efficacy; value identity had positive predictive effects on teaching classroom management; value identity and input identity had positive predictive effects on clarity of material presentation; value identity and competence identity had positive predictive effects on the application of teaching strategies and techniques; value identity and competence identity had positive predictive effects on teacher-student interaction Value identity and competence identity have positive predictive effects on teacher-student interaction.

5.2 Suggestions for middle-level physical education teachers in Qingdao

5.2.1 Strengthen the professional awareness of physical education teachers and improve their professional identity

The subjective motivation of people in front of the environment is the cornerstone of constructing teachers' professional identity, and the beliefs and values inherent in teachers' selves will affect their self-subjectivity and determine their behaviors. Therefore, physical education teachers must develop their professional identity with a healthy posture, conduct a comprehensive analysis of their selves, recognize their personality qualities, knowledge, and abilities, and recognize the nature, characteristics, status, role, and requirements of the physical education teaching profession, and put The positive spirit of physical education is integrated into the whole process of professional identity. The physical education teacher is not only a teacher who teaches and solves problems but also a guide for students' physical and mental growth.

5.2.2 Strengthen subject knowledge and improve their quality

Today, with the rapid updating of knowledge and the development of education, the educational ability of teachers cultivated in the traditional mode cannot meet the new expectations for the comprehensive quality of teachers and the new requirements for the quality of education, while the mastery of subject knowledge and the level of teaching practice ability of physical education teachers closely affect the interest of students in participating in sports and the quality of teaching

tasks. To ensure that students can better achieve their learning goals, physical education teachers should be strict in dissecting themselves, mastering the basic theoretical knowledge of the subject during their student years, solidifying their professional skills, integrating theoretical knowledge with practical knowledge, converting educational concepts into effective educational behaviors, keeping up with the pace of the times, and taking the first solid step to further improve themselves.

5.2.3 Establishing new interpersonal relationships and creating a good teaching atmosphere

Interpersonal relationships include the relationship between teachers and students and the relationship between teachers and teachers.

Teachers are not simply "teachers", but students are an important reference group for teachers' identity. Physical education teachers respect and love students, and face them with a sincere attitude, which is the basis for establishing a good teacher-student relationship.

A good interpersonal relationship between teachers and teachers is the basis for building a harmonious collective atmosphere. The school management should pay attention to the special nature of the work of physical education teachers, give more support, affirm the efforts made by physical education teachers in their work, take the initiative to communicate with physical education teachers, understand the ideological dynamics, pay attention to individual dynamics, and eliminate hierarchy and functional consequences. The exchange of teaching experience between teachers is the most direct way for teachers to improve their abilities, especially novice teachers, who should pay attention to learning how good teachers grasp the classroom, think more, ask more questions, and improve the practical wisdom of physical education teachers.

5.3 Suggestions for schools

5.3.1 Pay attention to physical education in schools and improve the social status of physical education teachers

Schools should first pay attention to physical education from the source, pay

attention to the law of physical education in line with the overall development of the school, implement national policies, change the passive situation of physical education classes, put an end to "sheep-herding" teaching, do not let fixed thinking to limit the view of physical education, more focus on the teaching achievements of physical education teachers and students feedback on physical education classes. We can set up open classes, invite parents to participate in physical education learning with students, update the understanding of physical education teachers' quality, face up to the work of physical education teachers through personal experience, reverse the prejudice against physical education teachers, increase publicity, establish the correct public opinion guidance, and create a more optimistic social cognitive environment for physical education teachers.

5.3.2 Increase funding for physical education and improve the physical education teaching environment

One of the characteristics of physical education different from other subjects is the rigid requirements for sports fields and equipment facilities. Whether the field materials and sizes are standard and whether the equipment facilities are perfect are related to the degree of students' awareness of various sports and the depth of sports transportation understanding can be involved. Therefore, schools should further increase the financial investment in physical education equipment and facilities to alleviate and improve the lack of venues and facilities at all levels of schools, to improve the physical education environment, to create good pre-conditions for the smooth implementation of physical education, physical education teachers to make the best use of the accumulated years of professional knowledge and expertise to teach, students to master solid motor skills, improve the level of competition, both The physical education teacher teaching the value of the show, but also for lifelong sports to lay a solid foundation.

5.3.3 Reasonable pay system and improved evaluation system

With the dynamic nature of teachers' professional identity as the starting point, an optimistic, harmonious, and fair staff support system is established within the school to avoid the phenomenon of "different pay for the same work", which causes

a sense of imbalance among physical education teachers, to break the traditional idea of seniority, and to establish positive hints of positive energy in the psychology of physical education teachers to improve their professional identity and their identification with the school. The school should also establish a scientific compensation system. At the same time, the school should establish a scientific salary system and a diversified evaluation system, which, in addition to the assessment by colleagues and leaders, can also qualitatively evaluate physical education teachers, transform retrospective evaluation mechanisms, such as establishing monitoring groups, focusing on scientific research results, participating in teachers' classrooms for inspection, using outstanding teachers as role models, establishing a performance system that is not based solely on objective performance, treating all teachers equally. The university should also soften the hard indicators, develop a fair reward and punishment system, and a reasonable promotion program to motivate teachers to work.

References

- [1] Antonek J L, McCormick D E, Donato R. The student teacher portfolio as autobiography: developing a professional identity[J]. *Modern Language Journal*, 2011, 81(1): 15-27.
- [2] Zhang Shiping. Experimental discussion on early childhood teachers' professional identity on their development [J]. *Basic Education Research*, 2016(10): 11-14.
- [3] Humphrey A R H . Emotional labor in service roles: the influence of identity[J]. *The Academy of Management Review*, 1993, 18(1): 88-115.
- [4] Slay H S, Smith D A. Professional identity construction: Using narrative to understand the negotiation of professional and stigmatized cultural identities[J]. *Human Relations*, 2011, 64(1): 85-107.
- [5] Moore M, Hofman J E. Professional identity in institutions of higher learning in Israel[J]. *Higher Education*, 1988, 17(1): 69-79.
- [6] Hoeve C D, Urton E R, Bell T W. Management of Content Development and Subject Engagement through an Arts Matrix Model: A Case Study[M]. 2014.
- [7] Zhu Fuping, Zhang Ningjun. Research on the relationship between professional identity and organizational identity[J]. *Business Research*, 2010(01): 68-71.
- [8] Tian Jin. Research on the professional identity of physical education teachers[J]. *Journal of Southwest Jiaotong University (Social Science Edition)*, 2010, 01: 66-69.
- [9] Wenger E. Communities of practice: learning, meaning, and identity[J]. *Continuing Success in Knowledge Management*, 1998, 29(3): 259-272.
- [10] Sachs, Judyth. Teacher professional identity: discourses, competing outcomes[J]. *Journal of Education Policy*, 2001, 16(2): 149-161.
- [11] Ten Dam, Gait T M., Bolm Sarah. Learning through participation. The potential of school-based teacher education for developing a professional identity[J]. *Teaching and Teacher Education*, 2006, 22(6): 647-660.

- [12] Cohen J L. That's not treating you as a professional: teachers constructing complex professional identities through talk[J]. *Teachers & Teaching*, 2008, 14(2): 79-93.
- [13] Klaassen, C., D. Beijaard, G. Kelchtermans. Perspectives on the professional identity of teachers[J]. *Pedagogisch Tijdschrift*, 1999, 24(4): 375–399.
- [14] Akkerman, S.F., P.C. Meijer. A dialogical approach to conceptualizing teacher identity[J]. *Teaching and Teacher Education*, 2011, 27(2): 308–319.
- [15] Li Xiezu, Yan Hanbing. Model construction and scale development of teachers' professional identity[J]. *Teacher Education Research*, 2018, 30(2): 72-81.
- [16] Bandura A. Fearful expectations and avoidant actions as coeffects of perceived self-inefficacy[J]. *American Psychologist*, 1986, 41(41):1389-1391.
- [17] Gresham, G. Mathematics anxiety and mathematics teacher efficacy in elementary pre-service teachers. *Teaching Education*, 2008, 19: 171-184.
- [18] Robert M. Klassen, Virginia M. C. Tze, Shea M. Betts,etl. Teacher Efficacy Research 1998–2009: Signs of Progress or Unfulfilled Promise?[J]. *Educational Psychology Review*, 2011, 23(1): 21-43.
- [19] Yu G-L, Luo X-L. Teachers' teaching efficacy [J]. *Journal of Beijing Normal University (Social Science Edition)*, 2000(1).
- [20] He Guangquan, Zhang Tao, Wang Yi. Research on teacher effectiveness in foreign countries[J]. *Continuing Education Research*, 2006(5): 109-112.
- [21] Tschannen-Moran, M. & Woolfolk Hoy, A. Teacher efficacy: Capturing an elusive construct. *Education*, 2001, 17: 783-805.
- [22] Jin Yumei, Gao Yueqin. Teacher efficacy and academic burden in the context of new curriculum reform[J]. *The debate on teachers' effectiveness and academic burden in the context of new curriculum reform*[J].
- [23]Judyth Sachs. Teacher professional identity: competing discourses, competing outcomes[J]. *Journal of Education policy*, 2001, 16(2): 149-161.
- [24]Angela o'Connor & Doune Macdonald. Up Close and Personal on Physical Education Teachers' Identity: Is Conflict an Issue?[J]. *Sport, Education and Society*, 2002, 7(1): 37-54. [25]Carl Lamote, Nadine Engels. The development

- of student teachers' professional identity[J]. *European Journal of Teacher Education*, 2010, 33: 3-18.
- [26]C. Fuller, A. Goodwyn, E. FrancisBrophy. Advanced skills teachers: professional identity and status[J]. *Teachers & Teaching*, 2013, 19(4): 463-474.
- [27]Mikelsone I, Odina I, Grigule L. Conceptualizing the Understanding of Professional Identity in Teacher's Career[J]. *European Scientific Journal*, 2014, 12(1): 238-249.
- [28] Jiang Xiaohong. Teacher professional identity and teacher professional development [J]. *Journal of Northeast Normal University (Philosophy and Social Science Edition)*, 2012,1: 231-233.
- [29] Tang Guojie. A theoretical model and empirical study on the professional identity of physical education teachers in general universities[J]. *Journal of Beijing Sport University*, 2009, 32(3): 98-101.
- [30] Sun Li, Zuo Bin. The structure and measurement of professional identity of primary and secondary school teachers[J]. *Educational Research and Experimentation*, 2010(5): 80-84.
- [31] Zhou Ke, Wang Chongxi, Zhou Yanli. A study on the structure and scale of physical education teachers' professional identity--a case study of secondary school physical education teachers[J].
- The structure and scale of professional identity of physical education teachers: an example of secondary school physical education teachers[J]. *Journal of Beijing Sports University*, 2012, 35(3): 93-98.
- [32] Luo Yiting. The factors affecting the professional identity of higher vocational teachers[J]. *Journal of Tianjin Vocational College*, 2016, 18(12):51-54.
- [33]Pu Yang. A review of research on teachers' professional identity and factors influencing schools [J]. *Journal of Ningbo University (Education Science Edition)*, 2016, 38(5): 75-82.
- [34] Sun Guangfeng. Research on the countermeasures of physical education teachers' professional identity in general colleges and universities [J]. *Journal of China Institute of Labor Relations*, 2012, 26(5):112-115.
- [35] Ma Tingting. Research on the current situation of secondary school teachers'

- professional identity and its influencing factors[D]. Yunnan Normal University, 2016.
- [36][36] Jing Chunxiang, Shi Xiaoju, Pan Huashan et al. An empirical study on the professional identity characteristics of secondary school physical education teachers [J]. Sports, 2014(08): 41-43.
- [37] Zhu Yan. A study on the current situation of university teachers' professional identity [D]. Soochow University, 2016.
- [38] Yu Qun, Cai Xianfeng. Research on the professional identity of secondary school physical education teachers in Huai'an City [J]. Contemporary Sports Technology, 2015, 5(27):176-177.
- [39] Yu LH, Tang GJ, Gao KQ. A study on the relationship between professional identity and work commitment of physical education teachers in high schools[J]. Chinese Sports Science and Technology, 2011, 47(6): 136-141.
- [40] Liu Min. A study on the relationship between teachers' professional identity, responsibility and burnout in secondary vocational schools: A case study of classroom teachers in eight secondary vocational schools in Hunan[D]. Hunan Agricultural University, 2015.
- [40] Alrefaei Nouf. Teachers' sense of efficacy: examining the relationship of teacher efficacy and student achievement[D]. University of Arkansas, 2015.
- [41] RN Ahmad , SA Khan, S Ur Rehman. Comparative study to investigate the sense of teacher efficacy between male and female teachers[J]. Asian Journal of Management Sciences & Education, 2015, 4(2): 29-35.
- [42] Yousuf Zai, Sajid Ali. Investigating the factor structure of the teachers' sense of efficacy scale with Pakistani inservice and pre-service Teachers[D]. University of Arkansas, 2016.
- [43] Bedir G. Perception of teaching efficacy by primary and secondary school teachers[J]. International Electronic Journal of Elementary Education, 2017, 8(1): 509-522.
- [45] Jiang Xinhui. Research on the structure of teaching efficacy and the application of dimensional theory [D]. Guizhou Normal University, 2007.
- [46] Zhao Shouying, Yang Jianyuan, Zang Yunhong. A multi-dimensional model-based

- teaching efficacy scale[J]. Psychological Science, 2012, 35(6): 1484-1490.
- [47] Ma YZ. The construction of a teaching efficacy scale for physical education teachers[J]. Sports Science, 2005, 25(3): 47-51.
- [48] Yuan Ling. On university teachers' teaching efficacy and its cultivation strategy[J]. Journal of Shenyang Agricultural University (Social Science Edition), 2007, 29(1): 49-52.
- [49] Li Xi, Hua Jiao. Teaching efficacy and its influencing factors of physical education teachers in colleges and universities [J]. Contemporary Sports Technology, 2015, 5(13):165-166.
- [50] Wang Hainan. Research on the characteristics and influencing factors of teachers' teaching efficacy[J]. Modern Communication, 2017(12): 1-2.
- [51] Kong, Huang-sheng. An empirical study on the significant teaching efficacy of secondary school physical education teachers in Shanghai [D]. Shanghai Normal University, 2008.
- [52] Xu L, Wang QB, Chen XK. A study of high school physical education teachers' teaching efficacy and influencing factors[J]. Journal of Jixi University, 2013, 13(1): 146-148.
- [53] Yu B. A study on the current situation and relationship between social support and teaching efficacy of female physical education teachers in Tianjin universities[D]. Beijing Sports University, 2015.
- [54] Wang Hongyu, Yan Faping. Research on the teaching efficacy of university physical education teachers and its influence on teaching quality[J]. Journal of Nanjing Institute of Physical Education (Natural Science Edition), 2015, 14(5): 1-3+15.
- [55] Pan Yanyu. A study on teaching efficacy, occupational stress, burnout and their interrelationships among secondary school physical education teachers in southern Fujian [D]. East China Normal University, 2007.
- [56] Han Bing. Professional identity, teaching efficacy and their interrelationship among secondary school physical education teachers [D]. [57] Duan Ting, The relationship between professional identity, teaching efficacy and teaching

monitoring ability [A]. Chinese Psychological Association. Enhancing the awareness and function of psychology in serving society: Proceedings of the 90th Anniversary Conference of the Chinese Psychological Association and the 14th National Psychology Conference [C]. Chinese Psychological Society: Chinese Psychological Society, 2011: 1.

- [58] Tang J. An investigation and study of secondary school English teachers' professional identity, job burnout and teaching efficacy[J]. Foreign Language and Literature, 2014(1): 19-25.
- [59] Li YJ. Research on the relationship between teaching efficacy, professional identity and job satisfaction of secondary school physical education teachers[D]. Beijing Sports University, 2016.
- [60] Wei Shuhua. Research on teachers' professional identity [D]. Southwest University, 2008.
- [61] Lu Yanyan. A study on physical education teachers' teaching efficacy and its influence on teaching effectiveness in general universities in Wuhan [D]. Huazhong University of Science and Technology, 2010.

Appendix

Questionnaire

Dear Teacher.

Hello! I am a graduate student at the University of Southeast Asia, Thailand, and I am currently conducting a study on the relationship between professional identity and teaching efficacy of secondary physical education teachers in X colleges and universities in Qingdao, so I am distributing this questionnaire. There is no standard answer to the questionnaire, so please fill in the questionnaire according to your actual situation and your true feelings.

This questionnaire is anonymous, and the information filled in is for academic research only, and the contents will be kept strictly confidential.

Thank you from the bottom of my heart for your help in answering this questionnaire!

Please tick the boxes that match your situation.

I. Basic information

1. Your gender

A、 Female B、 Male

2、 Your education

A、 Specialist B、 Bachelor C、 Master

3、 Your title

A、 Senior B、 First C、 Second D、 Third

4、 Your age

A、 Under 30 years old B、 30-39 years old C、 40-49 years old D、 50 years old and above

5、 Your teaching experience

A、 Less than 5 years B、 5-10 years C、 11-15 years D、 16-20 years E、 21-25 years

F、 25 years or more

II. Professional Identity

No.	Title	quite non-confor mance	normal non-conforma nce	Uncertain	normal conformance	quite conformance
1.	I want to develop students' interest in sports through my own work.	1	2	3	4	5
2、	Students are made progress through my efforts, and I feel very high	1	2	3	4	5
3、	I hope I can become a popular teacher with my students.	1	2	3	4	5
4、	Through my efforts, I hope to make physical education work to get more from the school	1	2	3	4	5
5、	I am very happy to exchange teaching ideas with my colleagues.	1	2	3	4	5
6、	I feel that the work of physical education teachers is full of passion and energy.	1	2	3	4	5
7、	I feel very happy in my work.	1	2	3	4	5
8、	I think it is a very meaningful thing to devote myself to physical education.	1	2	3	4	5
9、	I am able to do all kinds of work as a physical education teacher.	1	2	3	4	5
10、	The knowledge and skills I have can meet the requirements in teaching.	1	2	3	4	5
11、	I am a very competent secondary school physical education teacher.	1	2	3	4	5
12、	I believe I have the ability to solve some problems I encounter in my work.	1	2	3	4	5
13、	physical education work I put in a lot, the status quo is not easy to replace this	1	2	3	4	5
14、	I think that after physical education teachers receive professional training in physical education, they should not	1	2	3	4	5

15、 I became a physical education teacher because I like physical education.	1	2	3	4	5
16、 I think physical education teachers should have the concept of lifelong learning.	1	2	3	4	5
17、 I am willing to do some work that is good for students, but not necessarily	1	2	3	4	5
18、 I am willing to participate in various teaching and research activities and business studies.	1	2	3	4	5

III. Sense of teaching efficacy

No.	Title	absolut ely impracti cable	normall y impracti cable	a bit impracti cable	a bit practica ble	normall y practica ble	absolut ely practica ble
1.	I can establish a set of classroom behavior rules that are binding on students 1.	1	2	3	4	5	6
2.	I can quickly calm down chaotic and noisy situations in the classroom.	1	2	3	4	5	6
3、	I can make those naughty students obey classroom discipline.	1	2	3	4	5	6
4.	I can deal with unexpected problems in the classroom in a timely manner and maintain a smooth and compact 1	1	2	3	4	5	6
5、	I can easily deal with the disruptive behavior of students in the classroom.	1	2	3	4	5	6
6、	I can make the abstract and complicated material clear and easy for students to understand.	1	2	3	4	5	6
7.	I can integrate students' acquired skills and experiences with the content of new materials.	1	2	3	4	5	6
8.	I can provide effective demonstrations to help students understand and master skills.	1	2	3	4	5	6
9、	I can make boring materials interesting and arouse students' enthusiasm for learning.	1	2	3	4	5	6
10、	I can adjust the pace and difficulty of teaching according to students' different levels 1	1	2	3	4	5	6
11、	I can use various methods and techniques to motivate students to learn.	1	2	3	4	5	6

12、 I can give timely recognition and encouragement to students' progress.	1	2	3	4	5	6
13、 I can encourage students to put forward their own ideas in response to problems.	1	2	3	4	5	6
14、 I can use different teaching methods to improve the teaching effect to achieve the lesson 1	1	2	3	4	5	6
15、 I can accurately judge the students' mastery of the teaching content.	1	2	3	4	5	6
16、 I can discuss various problems with students in an equal manner.	1	2	3	4	5	6
17、 I can give students the opportunity to express themselves and make decisions.	1	2	3	4	5	6
18、 I can share my experience with students to promote the relationship between teachers and students. 1	1	2	3	4	5	6
19、 Even if I am very busy, I can find time to participate in student-organized activities.	1	2	3	4	5	6
20、 I can be a reliable friend to my students.	1	2	3	4	5	6

Biography

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