

Full Length Research Paper

A study on the competency of physical education teachers at the basic education level in China

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The aim of this study was to investigate the competency of physical education teachers at the basic education level in China. The study was conducted using a qualitative approach, using purposive sampling to conduct in-depth interviews with 12 physical education teachers from schools at the basic education level in China using the behavioral event interview method and extracting themes using coding techniques with the thematic analysis method. The results of the study show that the competencies of physical education teachers at the basic education level in China include 6 themes: Competency characteristics, knowledge characteristics, teacher moral characteristics, motivation characteristics, values characteristics and personality characteristics.

Key words: Basic education, physical education teachers, teacher competency.

INTRODUCTION

The Chinese Ministry of Education has continued to reform the curriculum for the teaching of physical education at the basic education level in China (Hu, 2021). China's Ministry of Education issued the Outline of Curriculum Reform for Basic Education, which sets out clear requirements for the professional competence of teachers at the basic education level in China (Hu et al., 2022) emphasizing that 'health comes first' and that attention should be paid to the all-round physical and mental development of young students (Fang, 2022). Thus, new challenges and higher demands are placed on physical education teachers at the basic education level (Cao, 2022). Faced with the grim situation of the frequent occurrence of mental health problems among Chinese

adolescent students and the continued 30-years decline in physical health (Wen, 2021), the Chinese government has enacted a continuous push for physical education reform measures, and it is physical education teachers who have taken on this important reform role (Xu, 2022). The diversity of roles is a necessary requirement for physical education teachers to adapt to the needs of the physical education curriculum reform, and the diversity of roles requires physical education teachers to be highly qualified (Eizaguirre et al., 2021). The diversification of the role of physical education teachers poses new challenges in terms of knowledge, competencies and values (Ehninger et al., 2021). This requires teachers to have the necessary basic professional knowledge,

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Table 1. Behavioral incident interview outline form.

No.	Behavioral incident interview questions
1	What were the specific circumstances, background and causes of the incident?
2	Who were the people or groups involved in this incident?
3	What role did you play in the process?
4	What did you say or do at each stage and what were your thoughts and feelings at the time?
5	What difficulties or obstacles did you encounter in dealing with the situation? How did you resolve them?
6	What attributes of yours do you think contributed to your handling of the situation?
7	What was the final outcome? What do you think were the reasons for the good/bad handling of the matter?

Source: Author.

scientific, humanistic and social knowledge, as well as the ability to learn on their own, to communicate with others, to access information, to reflect on their teaching and to have the right professional values (Faruqe et al., 2021).

Physical education teachers are important determinants of the success or failure of physical education reform and provide the impetus for curriculum change in physical education (Katz and Mishler, 2003). An important task in the reform is to build a team of physical education teachers who can ensure the successful implementation of the curriculum reform, and it is crucial that this team has a good level of competence in teaching physical education (Lucas et al., 2021).

Teacher competency is a key topic in the study of teacher professional development (McClelland, 1987). It can be any individual characteristic that can be reliably measured or counted, such as motivation, traits, self-image, attitudes or values, knowledge of a domain, cognitive or behavioral skills, and that significantly distinguishes good performance from average performance (McClelland and Boyatzis, 1982). Competency research is not only prevalent in the field of management, but is also widely and deeply developed in the field of education (Roberto, 2011). With the development of competency theory and practice in education, there has been an expansion from the beginning of the focus on educational administrators to the teacher population (Sudirman et al., 2019).

Physical education at the basic education level in China is the foundation for physical education for young people and is an important part of school education (Liu, 2016). In the reality that the physical and mental health of China's youth continues to decline, physical education teachers at the basic education level bear the burden of training outstanding reserve talents for China (Liu, 2022), and the competence of physical education teachers directly affects the quality of physical education teaching as well as the success or failure of teaching reform (Li, 2012). Physical education teacher competency research is a practical application of competency theory based on the characteristics of physical education teacher positions (Wardani et al., 2021) and is a further enrichment and

development of competency theory (Vaughn et al., 2022). In previous studies on teacher competency in China, the main focus has been on the performance of school leadership in improving teacher management, but not much research has been conducted on using teacher competency to improve the overall professionalism of teachers. However, with the frequent occurrence of youth health problems and the implementation of the physical education curriculum reform, the research on the competency of physical education teachers at the basic education level in China is slightly weak. In view of the above research background, this study conducts a qualitative research on the competency of physical education teachers at the basic education level in China, so as to summarize the competency characteristics of excellent physical education teachers and provide a theoretical reference for the improvement of the competency of physical education teachers at the basic education level in China.

METHODOLOGY

The STAR interview instrument form was used in this study and the content of the behavioral event interview outline is shown in Table 1, based on the requirements of the study. Prior to formalizing the interview outline, the researcher first created an interview outline and sought the views of the 5 Chinese physical education teachers interviewed at the basic education level, each of whom provided their personal views on the interview questions from the perspective of their individual work practices.

For the semi-structured interview outline, a panel of experts (consisting of 6 experts at the basic education level in China, 2 of whom were administrative leaders of local and municipal education bureaux involved in teaching and learning management, 2 of whom were secondary school principals with a subjective view of school teaching, and 2 of whom were university professors who had been involved in basic education research for a number of years) was invited to review the interview outline prior to the study. After review by the expert panel, changes were made based on the panel's comments and suggestions, after which semi-structured interviews were conducted. As shown in the contents of Table 2.

Data collection and analysis

This study used China Ten cent conferencing software to conduct the web-based video interviews. The collected interviews were

Table 2. Semi-structured interview outline form.

No.	Semi-structured interview questions
1	Could you please describe your current day-to-day teaching of Physical Education in terms of your main duties and responsibilities?
2	Please briefly describe your experience of teaching PE and what outstanding achievements you have made? What efforts have you made to achieve these achievements?
3	What personal characteristics do you think have contributed to your success in teaching PE?
4	As a PE teacher, you are a multi-talented teacher, which sport are you best at? What are your specific strengths? What specific requirements do you have for yourself in terms of movement demonstration?
5	The PE teaching reform has placed high demands on the physical fitness of PE teachers, how do you maintain your good physical fitness?
6	Could you please describe your current main daily tasks and responsibilities in teaching Physical Education?
7	Please briefly describe your experience of teaching PE and what outstanding achievements you have made? What efforts have you made to achieve these achievements?
8	What personal characteristics do you think have contributed to your success in teaching PE?
9	As a PE teacher, you are a multi-talented teacher, which sport are you best at? What are your specific strengths? What specific requirements do you have for yourself in terms of movement demonstration?
10	The PE teaching reform has placed high demands on the physical fitness of PE teachers, how do you maintain your good physical fitness?
11	You certainly have to deal with a wide variety of people in your PE teaching, can you briefly explain which interpersonal relationships are very important?
12	What knowledge and abilities do you think are necessary to be a good PE teacher?
13	What do you think distinguishes a good PE teacher from a mediocre one?
14	What personal characteristics do you think are required to be a good PE teacher?
15	Can you make some personal suggestions on the current reform of physical education teaching at the basic education level?

Source: Author

numbered in advanced anonymous files and personal information was edited and collated. All interviews lasted a total of 795 min, with an average of 66 min, or nearly 13.25 h of in-depth interview transcription.

This study divides the data analysis of the interview data into four stages: the impression stage where the text is read to obtain initial information, the categorization stage where the text is analyzed for coding, the extraction stage where the structural meaning is distilled, and the extension stage where the data is interpreted. After the interview data are collated, the task of data collection ends and the coding stage is entered, where the data is objectively sorted, refined and analyzed. Faced with the huge amount of fragmented data information, extracting from it the key elements of physical education teachers' competency at the basic education level in China was an immensely challenging and arduous task for this study. The most important aspect of the process was to ensure objectivity and scientific validity between the information provided by the interviewees and the personal coding and analysis. In this study, after converting the interview data into text, we first read the interview data in depth, one by one, trying to capture the intention behind the information provided by the interviewer, and coding it word by word, keeping an open mind, without personal bias or preconceptions, trying to start from objective data information, coding close to the data itself, and using the interviewee's language as much as possible to express their core views and opinions.

Working group

This study used "intentional sampling" to select the key informants

who could provide the most information for this study, Chinese physical education teachers at the basic education level. There were clear requirements for the selection of the sample in this study; the physical education teachers were selected as frontline teachers and teaching and research leaders with a background in physical education, mainly based on their teaching experience, title and social reputation (McKoy, 2013). Physical education teachers must meet the following criteria: criterion one, those who have been honored as excellent teachers at provincial and municipal levels (municipalities directly under the Central Government); criterion 2, those who have been teaching physical education for 10 years or more; and criterion three, teachers with a senior or higher teaching title.

Based on the above criteria, this study sampled schools in different regions of China at the basic education level and conducted behavioral incident interviews with teachers who met the criteria in them. Respondents who participated in this study were divided by geographical location in China and the cities selected were: Beijing in northern China, Shijiazhuang and Hengshui in Hebei Province, Nantong and Yancheng in Jiangsu Province in southern China; Quanzhou and Jinjiang in Fujian Province; Zhengzhou and Kaifeng in central Henan Province; and Urumqi in Xinjiang Uyghur Autonomous Region in western China. The teachers interviewed consisted of 12 physical education teachers at the basic education level, as shown in 1: 2 in Beijing, 2 in Hengshui, Hebei Province, 2 in Jiangsu Province, 2 in Henan Province, 2 in Fujian Province, and 2 in Urumqi, Xinjiang Uyghur Autonomous Region, at the basic education level distributed among primary, middle and high schools, all of which were state-owned and public in nature. There are 2 senior primary school teachers, one full

Table 3. Table of interviewees and information about the interviews.

Interviewer	Gender	Teaching experience	Province	Title	Honors
Teacher A	Male	33	Hebei	Senior teacher	Outstanding Coach in Hebei Province
Teacher B	Male	26	Hebei	Senior teacher	Second Prize in the Hebei Primary and Secondary School Physical Education (and Health) Quality Class Competition
Teacher C	Female	26	Henan	Full senior teacher	National Outstanding Coach
Teacher D	Female	30	Henan	National level 1 coach	Advanced Sports Worker in Hebei Province
Teacher E	Female	34	Xinjiang	Senior teacher	National Advanced Individual in Mass Sports
Teacher F	Female	30	Xinjiang	Senior teacher	Advanced Individual in Sports Teaching in Xinjiang
Teacher G	Female	25	Beijing	Senior teacher	National Outstanding Table Tennis Instructor
Teacher H	Female	33	Beijing	Senior teacher	Outstanding Physical Education Teacher in Changping District
Teacher I	Male	20	Jiangsu	Senior teacher	Excellent Coach of Yancheng City
Teacher J	Male	29	Jiangsu	Senior teacher	Jiangsu Province High School Physical Education Teaching Competent Person
Teacher K	Female	20	Fujian	Senior teacher	Backbone Teacher of Quanzhou City
Teacher L	Male	24	Fujian	Senior teacher	National Outstanding Teacher

Source: Author

senior primary school teacher, one national-level coach (full senior), 6 senior secondary school teachers, and 2 full senior secondary school teachers. There were 5 male PE teachers and 7 female PE teachers, of whom the longest teaching experience was 34 years and the shortest was 20 years, as shown in Table 3.

RESULTS

Based on the analysis of the results of the data coding, the first theme of the competency characteristics of physical education teachers at the basic education level in China is the knowledge characteristic. Knowledge is the sum of the results of human exploration of the material world as well as the spiritual world, in line with the direction of civilization.

Knowledge, too, does not have a uniform and clear definition. However, the value of knowledge is judged in terms of its usefulness, in terms of whether it enables human beings to create new substances, to gain power and authority, etc. The concept of knowledge is one of the most important concepts in the field of philosophical epistemology, and a classic definition comes from Plato: for a statement to qualify as knowledge it must satisfy three conditions: it must be verified, correct, and believed.

A total of 3 negative themes are included in the knowledge characteristics theme, which are: sports

expertise, e.g. Teacher A says: "*Strengthen your own theoretical learning and cultivation and improve your professional skills and knowledge in order to take the lead and set an example.*" General expertise, for example, teacher D said, "*You want students to enjoy your class, you need to master with understanding know the knowledge of the physical education curriculum prescribed by the school.*" Physical education teaching theory, for example, Teacher L said, "*students are a blank sheet of paper, they don't have anything, how the teacher leads forms a habit, and the gap between what you teach elementary and middle and high school students is particularly large.*"

Based on the analysis of the data coding results, the second theme of the competency characteristics of physical education teachers at the basic education level in China is the competency characteristics. Competence refers to the subjective conditions necessary for the successful completion of an activity, and is a psychological characteristic of personality that directly affects the efficiency of the activity and enables it to be completed successfully, and is always associated with the completion of a certain activity by a person.

There are 6 sub-themes in this study's competency structure, namely: The ability to innovate, for example, Teacher E said: "*I think this is something I should learn from. Don't say keep holding on to your original set of*

inherent things, but keep experimenting and being bold and innovative. This is something that touches me very much." I have no problem demonstrating and explaining accurately in every lesson; no matter what kind of content I am teaching." The team's management skills, such as Mr. I, said, *"When we go out to play, each teacher has an exchange with each other, we get along very well together and have fun, and go out to see the advantages of others to learn more."* The ability to train in amateur sports, for example, Teacher C said, *"It's not the same as this, he belongs to a special group, we serve the public group, he is a special group, special groups are not treated the same."* For example, Teacher D said, *"We started practicing here with a mat underneath, and there was definitely protection. 2 students are next to each other for protection."* For example, I teacher said, *"Physical education teachers special upgrading course, I participated in a 6-months knowledge and skills each upgrade, theory, their own professionalism to consolidate solid."*

Based on the analysis of the data coding results, the third theme of the competency characteristics of physical education teachers at the basic education level in China is the teacher moral cultivation characteristics. The teacher moral cultivation characteristics should be accurately referred to as teacher public morality, which is the social public morality that teachers should abide by in order to safeguard the public interest of society. It is the moral code and code of conduct that teachers and all education workers must abide by in their educational activities, as well as the moral concepts, sentiments and qualities that are compatible with them. It is the code of conduct that teachers should follow and the moral qualities that they must possess in order to carry out their work as teachers.

The themes of teacher moral cultivation in this study include 10 sub-themes, which are: integrity of character, for example, Teacher F said, *"To have good professional ethics and moral cultivation of behavior is the bottom line of being a teacher."* Hard-working, for example, Mr. M said, *"I am able to adjust my mind in time when facing difficulties, I am not afraid of hard work and I am able to bear hardships."* A love of sport, for example, Mr. I said, *"You have to love sport and love the sport."*, love the teaching profession, for example, Mr. C said, *"First of all, love the profession of teacher, a degree of importance to this profession, right."* Strive to study the business of the job, for example, Mr. D said, *"If you don't know how to do it yourself, ask your teachers and your colleagues. I am more down-to-earth."* Caring and loving students, for example, Ms. I said, *"I rarely scold, I'm their mother, so that means I have a deeper bond with the children."*, Dedication to the spirit. For example, Mr. E says, *"It is this love for my students that keeps me going. I arrive at school at 6.30am for training. Basically, the earliest group of teachers in the school teaches by example. For example, Teacher E says: "Rigour is the key to dealing*

with this issue. As a teacher, one must do what one says and act what one does." Understanding acceptance, for example, Teacher D said, *"I often make a deliberate effort to find some of his strengths and praise him, and now he particularly enjoys PE lessons and likes me."* Calm and collected, for example, Mr. J said, *"I'm a bit impatient in the process of training as a coach, but I also have to be meticulous and patient to get this right."*

Based on the analysis of the data coding results, the fourth theme of the competency characteristics of education teachers at the basic education level in China is the motivational characteristics. The dynamic characteristic refers to the combined force generated by various factors internal and external to teaching and learning, which motivates the teaching subject to engage in teaching activities and promotes the operation and development of the teaching process from week to week in order to achieve the teaching objectives. The dynamical characteristics theme of this study comprises 5 sub-categories that, respectively: love of sports. For example, Mr. L said, *"I am usually myself in this gym, athletic field; also do a series of their own exercise."* Professional well-being, for example, Mr. E said, *"The students know how to be grateful and whenever they come back after graduation and say they want to play, they come to me to come. We all have a good time too."* Work performance, for example, Mr. K said, *"Our special students won the boys' team at the National Secondary School Table Tennis Championships."* Internal drive, for example, Teacher D said, *"In our day there really wasn't too much of anyone forcing you to do anything, you were just kind of voluntary and spontaneous."*

Based on the analysis of the data coding results, the fifth main category of competency characteristics of teachers in basic education in China is personality traits. Personality traits are formed gradually in the practice of social life, and once formed; they are more stable and can be expressed at different times and in different places. However, the fact that a personality is stable does not mean that it is immutable, but rather that it can be molded. After a personality has been formed in a person's life, major changes in life circumstances must bring about significant changes in his personality traits. Character differs from temperament in that it is influenced by social history and culture, has a clear sense of social and moral evaluation, and directly reflects a person's moral style. Therefore, temperament is more a reflection of the biological attributes of personality, while personality is more a reflection of the social attributes of personality, and the core of personality differences between individuals is the difference in personality.

The personality trait theme of this study consists of nine sub-categories that, respectively, including responsibility for, for example, teacher C said, *"I feel a little more responsible myself"*. Career, for example, Mr I said, *"It's better to be down to earth now. Get down to earth and be practical."* Progressive mind, for example, teacher B said,

"First of all, we should carry out to strengthen this own business ability, be open-minded to ask teachers for advice and learn, and prepare lessons carefully." Competitive, for example, Mr. K said, "It should be hard work and motivation, people will only pose badly if they don't work hard and motivate themselves, so to get results do your best to study." Toughness, for example, Mr. M said, "I myself have a spirit of non-conformity, first of all, not to give up, it is this characteristic of not giving up practicing sports can bring some characteristics of not giving up." Perseverance, for example, Mr. I said, "From the teaching side, must be a little bit of foot to teach, must do fine, must be key to the action elements." The teacher has a clear self-concept." Teacher C, for example, says: "I am good at spotting and guiding. I am more approachable myself, and I also pay more attention to some of the language I use with the children." Physical and mental health, for example, Teacher C said, "Keeping one's body in good shape and health first comes through at this time." Affinity, for example, Mr. H said, "It might be more inclined to be friends with your classmates and I would go and listen to some of their ideas first."

Based on the analysis of the data coding results, the 6th main category of the competency characteristics of education teachers at the basic education level in China is the values characteristics. Values are the perceptions, understandings, judgments or choices made on the basis of certain senses of human thinking, i.e. a way of thinking or orientation in which people identify things and determine what is right and wrong, thus reflecting certain values or roles of people, things and objects. In a class society, different classes have different values. Values are stable and enduring, historical and selective, and subjective. Values have an orienting effect on motivation and reflect the state of people's perceptions and needs.

The values identity theme of this study comprises 5 sub-categories that, respectively: including the view of sport, for example, Teacher D said, "The leadership must take PE seriously, whether it's the leadership of the school, parents, and the community." Student view, for example, Teacher B said, "If you can solve it, go for it first time. To reinforce this sense of student participation in physical activity,". The concept of fame and fortune, for example, Teacher C said, "There is no commitment in the school or what kind of reward you will be given if you lead a team and the students reach a certain level, so I am a little bit less concerned in this regard." View of parenting For example, Teacher B said, "In PE, every element of PE is based around nurturing." In view of happiness, for example, Teacher C said, "So that's why I think it's important to just say nurture a child. The first thing is to train a child to be a human being to learn to be grateful."

DISCUSSION

The study by Ding et al. (2016) supports this conclusion,

but there is no uniform and clear definition of knowledge, but this study finds that the value of knowledge is judged by its practicality in terms of whether it allows humans to create new substances, gain strength and power, etc.

Competence is the subjective condition necessary for the successful completion of an activity, a psychological characteristic of personality that directly affects the efficiency of the activity and enables its successful completion, and is always linked to the completion of a certain activity by a person. This result seems reasonable from the viewpoint of Wang (2021) study, which all together put forward the importance of competence, pointing out that the important attribute of competence, which can neither be expressed nor developed without a specific activity, is consistent with the findings of this study.

Motivational characteristics refer to various factors, internal and external to teaching and learning, that motivate the teaching subject to engage in teaching and learning activities. This research perspective is reasonable in relation to that of Ju (2008). Through this study, it can be seen that the motivational characteristics are the same as the results of previous studies in terms of the combined forces that drive the teaching and learning process to operate and develop over and over again in order to achieve the goals of teaching and learning.

Character traits are formed gradually in the practice of social life and are more stable once formed; it will manifest itself at different times and in different places, However, the fact that personality has stability does not mean that it is set in stone, but that it is malleable (Zhang, 2020). After character is formed in a person's life, major changes in life circumstances will definitely bring about significant changes in his character traits. Unlike temperament, which is influenced by social history and culture, character has obvious implications for social and moral evaluation and directly reflects a person's moral style. Therefore, temperament is more a reflection of the biological attributes of personality, while character is more a reflection of the social attributes of personality, and the core of personality differences between individuals is the difference in character.

The characteristics of teacher moral cultivation should accurately be teacher public morality, which is the social public morality that teachers should abide by in order to safeguard the public interest of society, it is the moral code and code of conduct that teachers and all education workers must abide by in engaging in educational activities, as well as the moral concepts, sentiments and qualities that are compatible with it, the results of this study are reasonable with the findings of Luo et al. (2022). The commonality analyses teacher moral cultivation as the code of conduct that teachers should follow and the moral qualities that they must possess in order to engage in their teaching work.

Values are cognitions, understandings, judgments or choices based on certain human thinking senses, that is,

a kind of thinking or orientation in which people identifies things and debate right and wrong, thus reflecting certain values or roles of people, things and objects. In a class society, different classes have different values, and the results of this study differ from those of Zhou (2009). The difference lies in the fact that this study considers values to be stable and enduring, historical and selective, and subjective, whereas previous studies have examined the role of values in orienting motivation, while reflecting people cognitive and need status.

Conclusion

This study focuses on the competency characteristics of physical education teachers at the basic education level in China. The findings of this study are that the competency characteristics of physical education teachers at the basic education level in China include 6 characteristic dimensions, namely: knowledge characteristics, ability characteristics, motivation characteristics, personality characteristics, teacher moral characteristics and value characteristics.

Recommendations

The effective enhancement of learning awareness and learning action, the establishment of scientific teaching concepts to strengthen the accumulation of teaching experience, the effective improvement of training mechanisms to update school management concepts, and the strengthening of teachers' psychological guidance provide reliable and favorable protection to help enhance the competence of physical education teachers at the basic education level in China.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

- Cao H (2022). A study on the competency of physical education teachers' classroom work in junior high schools in Hefei Economic Development Zone [M.Sc. Thesis, Northwest Normal University].
- Ding RC, Wang LF, Mao YP, Gao DX (2016). A study on the application of competency model for physical education teachers in higher education institutions. *Physical Education Research and Education* (01):48-50.
- Ehninger J, Knigge J, Schurig M, Rolle C (2021). A new measurement instrument for music-related argumentative competence: the MARKO competency test and competency model. In *Frontiers in Education* 6:668538). Frontiers Media SA.
- Eizaguirre A, García-Feijoo M, Beneitone P, Yarosh M (2021). A Methodological Proposal to Analyse the Process for Implementing Competency-Based Learning (CBL) in a Business School. In *Integration and Application of Business Graduate and Business Leader Competency-Models* 4(7):27-48.
- Faruqe F, Watkins R, Medsker L (2021). Competency model approach to AI literacy: Research-based path from initial framework to model. arXiv preprint arXiv 9(12):1-5.
- Fang CC (2022). Research on the improvement of physical education teachers' teaching competency in the context of specialization of high school physical education. M.Sc. Thesis, Shanghai Institute of Physical Education.
- Hu D, Wang YJ, Guo Y (2022). The relationship between psychological empowerment and teacher competency in rural primary and secondary school teachers in ethnic areas: The mediating role of teaching efficacy. *Chinese Journal of Health Psychology* (4):571-575.
- Hu XX (2021). Research on primary school teachers' competency in the new era. M.Sc. Thesis, Hebei University of Technology.
- Ju FJ (2008). Teaching practice of basketball refereeing ability training for college students in general universities. *Shandong Sports Science and Technology* 20(5):82-83.
- Katz AM, Mishler EG (2003). Close encounters: exemplars of process-oriented qualitative research in health care. *Qualitative Research* 3(1):35-56.
- Liu XX (2016). Constructing a competency model for primary school physical education teachers [M.Sc. Thesis, Beijing University of Physical Education].
- Liu SQ (2022). A study on the competency characteristics of arts teachers in physical education colleges under the blended teaching model. M.Sc. Thesis, Chengdu Institute of Physical Education.
- Li X (2012). Construction and testing of a model of competent characteristics of physical education teachers in primary and secondary schools. Ph.D. dissertation, Huazhong Normal University.
- Lucas M, Bem-Haja P, Siddiq F, Moreira A, Redecker C (2021). The relation between in-service teachers' digital competence and personal and contextual factors: What matters most? *Computers and Education* 160:104052.
- Luo BY, Wei X, Yang WN (2022). Statistical analysis of journal papers in archival questionnaire method in China. *Archives Management* (04):108-111+114.
- McClelland DC (1987). Characteristics of successful entrepreneurs. *The Journal of Creative Behavior*.
- McClelland DC, Boyatzis RE (1982). Leadership motive pattern and long-term success in management. *Journal of Applied Psychology* 67(6):737-743.
- McKoy CL (2013). Effects of selected demographic variables on music student teachers' self-reported cross-cultural competence. *Journal of Research in Music Education* 60(4):375-394.
- Roberto VGL (2011). Development of a network environment to offer discrete responses to complex problems: the case of breast cancer in Mexico City cases. *International Journal of Technology Intelligence and Planning* 7(1):19-32.
- Sudirman A, Lie D, Sherly S, Dharma E (2019). The impact of work discipline and work ethic on the teacher performance of Sultan Agung Pematangsiantar Private Middle School Teachers TA 2018/2019. *International Journal of Business Studies* 3(3):125-135.
- Vaughn S, Rye J, Allen A, Bok A, Mauk K, Park L (2022). Updated competency model for professional rehabilitation nursing: Practice applications. *Rehabilitation Nursing Journal* 47(1):12-23.
- Wang F (2021). A study on the construction of a competency evaluation index system for career guidance of general high school teachers. M.Sc. Thesis, East China Normal University.
- Wen JY (2021). Research on the construction and application of online teaching competency model for primary and secondary school teachers. M.Sc. Thesis, Liaoning Normal University.
- Wardani L, Sekarini D, Syaputra R, Kartikawati M, Dawanti R, Mulia D, Malek M (2021). Career of horizontal education mismatch workers: Career competency, job crafting, and work engagement. *Journal of Education and Learning (EduLearn)* 15(3):414-424.
- Xu MQ (2022). A study on the competency of junior high school physical education teachers, M.Sc. Thesis, Shandong Normal University.
- Zhang XJ (2020). Research on the Competence of Early Childhood Teachers in Teaching Physical Education [M.Sc. Thesis Shandong Institute of Physical Education].
- Zhou XM (2009). Research on Competence Characteristics and Index Evaluation of Physical Education Teachers in General Universities. *Journal of Shandong Institute of Physical Education* (3):94-96.