



Inclusive Education Competency of Primary and Secondary Physical Education Teachers and Its Influencing Factors

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Abstract

Objective: Teachers' inclusive education competency was an important factor influencing the realization of high-quality inclusive education. This study investigated the inclusive education competency of Physical Education (PE) teachers and its influencing factors.

Method: The questionnaire in this study was adapted from the Questionnaire on the Professional Quality of Teachers in Compulsory Education. There were 286 P.E. teachers participating in the study.

Results: The score of professional attitude dimension in inclusive education competency of P.E. teachers was significantly higher than that of professional knowledge, professional skills and capacity of acquiring supports, while the score of professional knowledge dimension was significantly lower than that of professional skills and ability to obtain support, and the score of professional skills dimension was higher than that of capacity of acquiring supports dimension.

Conclusion: There was no significant difference in the inclusive education competency of P.E. teachers in gender, school district and study section, while there were significant differences in the teaching age, whether taught special children or not, and the cumulative length of training related to inclusive education. The inclusive education competency of P.E. teachers needed to be further improved.

Keywords: Physical education teacher; Inclusive education; Inclusive physical education; Inclusive education competency; Influencing factors

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Introduction

Inclusive education emphasizes that all children had the right to receive education, and proposed that children's characteristics and actual needs should be taken into account when providing education [1]. Up to now, inclusive education was considered as "children with special needs and ordinary children study and live together in the same physical space, and enjoy equal, non-discriminatory and high-quality education" [2]. In the 1990s, China carried out the work of learning in regular class for children with disabilities [3]. With the vigorous implementation of learning in regular class, its quality had attracted more attention. Two periods of special education promotion plans had been issued successively, aiming to put forward requirements for running special education well in the new era and caring for special children. On December 31st, 2021, the General Office of the State Council forwarded "14th Five-Year Plan" Special Education Development and Upgrading Action Plan, which clearly pointed out that it was necessary to explore an inclusive education model that could adapt to the common growth of children with disabilities and ordinary children, and promote the integration of children with disabilities and ordinary children [4]. The importance of inclusive education could be clearly seen. However, in the implementation of inclusive education, "along with the class but just sitting", "mixed study with class" and students reflux frequently occurred [5] and the teaching effect of inclusive education had always been questioned. Therefore, how to improve the quality of inclusive education is more and more important.

Relevant studies had found that inclusive physical education could promote the active communication behavior of special children, stabilize emotions, reduce problem behaviors, improve social communication and social adaptation ability [6-8], realize life care for students weak in sports, promote students' all-round development, and promote education equity [9]. Therefore,

improving the quality of inclusive physical education could not only promote the physical and mental healthy growth of special and ordinary children [10,11], but also promote the overall development of inclusive education in China. The direct implementers of inclusive physical education were physical education teachers, who determined the quality of inclusive physical education. Among them, the inclusive education competency of physical education teachers played an important role [3]. Teachers' competency referred to the basic conditions and abilities that teachers had to engage in educational and teaching activities [3]. Relevant studies had found that, compared with physical factors such as class size, environment and students' personal factors, teachers' competency played a more important role in students' learning performance [12]. Inclusive education put forward new requirements for teachers' qualities, including the concept, knowledge and skills of inclusive education, so as to meet the needs of special children and ordinary children receiving education under the same roof [3]. On the basis of previous studies, this study defined the inclusive education competency of physical education teachers as the basic conditions and abilities that physical education teachers needed to have when carrying out inclusive physical education teaching activities, including professional attitude, professional knowledge, professional skills and the capacity of acquiring supports.

To sum up, the development of inclusive physical education in China was still in its initial stage. A large number of studies remained in the exploration of inclusive physical education theories, and the relevant research on improving the quality of inclusive physical education was few. High-quality inclusive physical education could not only promote the physical and mental development of special children, but also realize the care for the life of special children, so that special children could enjoy life. While there are few studies pay attention on the inclusive education competency of physical education teachers. In order to provide practical implication for improving the quality of our inclusive physical education, this study analyzed the factors influencing the inclusive educational quality of physical education teachers in primary and secondary schools based on the analysis of the inclusive education quality of P.E. teachers in primary and secondary schools.

Method

Participants

P.E. teachers in primary and secondary schools were selected as the subjects by convenient sampling throughout the country. It covered 20 provinces, including the northeast, east, central and west, with a total of 317 people. After screening, 286 valid questionnaires were obtained, with an effective rate of 90.2%. Sample information was shown in Table 1.

Measures

On the basis of the "Questionnaire on Professional Quality of Teachers in Compulsory Education" compiled by Wang Yan et al. [3], a preliminary questionnaire was prepared. In order to investigate the structure of the questionnaire and the expression of the items, five primary and middle school P.E. teachers and one special education expert were consulted for their opinions. After adjusting the items and expression, the questionnaire on Inclusive Educational Competency of Primary and Middle School P.E. Teachers was formed. The questionnaire consisted of the basic information of the subjects and the status quo of inclusive education competency. The first part was the basic information of the subjects. The contents include gender,

province, school district, education background, teaching age, study section, taught special children or not and the length of training related to inclusive education. The second part was the core content of the questionnaire, which was the current situation of the inclusive education competency. It was divided into four parts with a total of 28 questions. Part one, professional attitude, 9 questions; Part two, professional knowledge, 6 questions; part three, professional skills, 7 questions; part four, capacity of acquiring supports, 6 questions. The questionnaire used a five-level scoring method. According to whether the respondents agreed with the item description, the options were divided into "strongly agree", "relatively agree", "not sure", "not quite agree" and "strongly disagree", which were respectively scored 5, 4, 3, 2 and 1 points. The higher the score, the higher the inclusive education competency of the teacher. The reliability analysis of the questionnaire showed that the internal consistency coefficients of the four factors of professional attitude, professional knowledge, professional skills and capacity of acquiring supports were 0.931, 0.951, 0.958 and 0.952, respectively. The internal consistency coefficient of the total questionnaire was 0.968, indicating that the reliability of the questionnaire was good. The construct validity of the questionnaire was tested, and the KMO value was 0.937, and the significance level of chi-square value of Bartlett sphericity test was $P=0.000<0.001$, so this questionnaire was suitable for exploratory factor analysis. The principal component analysis method was used to extract the common factors, and the maximum variance method was used to rotate the factors. Finally, four common factors were extracted, and the cumulative variance contribution rate was 78.58%. Confirmatory factor analysis of the questionnaire was performed, the result found $\chi^2/df=1.416$, $p<0.001$, $GFI=0.968$, $AGFI=0.922$, $RMSEA=0.051$, showed that the questionnaire structure validity is good.

Data analysis

In this study, the data were obtained by distributing questionnaires, carefully screening questionnaires and eliminating extreme values and outliers. SPSS 26.0 software was used to test the reliability and validity of the data and analyze the differences.

Results

P.E. Teachers' inclusive education competency

In order to investigate the scores of each dimension of the inclusive education competency of the subjects, Table 2 showed the mean and standard deviation of the scores of each dimension. Among them, the score of professional attitude dimension of P.E. teachers was significantly higher than that of professional knowledge ($t=8.639$, $p<0.001$), professional skills ($t=4.903$, $p<0.001$) and capacity of acquiring supports ($t=6.296$, $p<0.001$), and the score of professional knowledge dimension was significantly lower than that of professional skills ($t=-5.664$, $p<0.001$). and the capacity of acquiring supports ($t=-3.873$, $p<0.001$). The score of professional skills was higher than that of the capacity of acquiring supports ($t=1.980$, $P<0.05$).

Difference analysis of P.E. teachers' inclusive education competency

Under different background variables, the differences of inclusive education competency of P.E. teachers were analyzed, and it was found that there were no significant differences in gender, school district and study section, while the statistical test results of four background variables, teaching age, taught special children or not, and the cumulative duration of training related to inclusive education,

Table 1: Demographic information of the participants (N=286).

Teacher's information	n	100%
Gender		
Male	228	79.7
Female	58	20.3
The school district		
City	204	71.3
Town	58	20.3
Village	24	8.4
Education background		
Master degree or above	40	14
Undergraduate	242	84.6
Junior College and below	4	1.4
Teaching age		
Novice (0-5 years)	142	49.7
Skilled (6-15 years)	80	28
Expert (over 16 years)	64	22.4
Study section		
Primary school	82	28.7
Junior high school	90	31.5
High school	114	39.9

Table 2: The general situation of inclusive education accomplishment of P.E. teachers in primary and secondary schools.

Dimensions	M ± SD
Professional attitude	4.08 ± 0.79
Professional knowledge	3.41 ± 0.97
Professional skills	3.73 ± 0.89
Capacity of acquiring supports	3.64 ± 0.90
Inclusive education competency	3.76 ± 0.74

reached the significant level. Furthermore, one-way Analysis of Variance (ANOVA) was conducted on the length of training related to inclusive education, and independent sample t-test was conducted on whether the children with special needs had been taught up (Table 3, 4).

We found on the teaching age background variables, novice and expert P.E. teachers in professional knowledge dimension and the capacity of acquiring supports dimension of dab at significantly higher scores of P.E. teachers, in general, the novice and expert P.E. teachers' education quality is significantly higher than for a master type fusion of P.E. teachers' education quality. In terms of the background variable of whether brought special children or not, P.E. teachers who have brought special children have significantly higher scores in all dimensions of inclusive education competency than those who have not brought special children. P.E. teachers who have brought special children have higher inclusive education competency. In terms of the background variables of cumulative duration of inclusive education-related training, the scores of P.E. teachers who have received inclusive education-related training in the three dimensions of professional knowledge, professional skills and capacity of acquiring supports were significantly higher than those who have not received inclusive education-related training. However, the length of time receiving inclusive education-related training had

no significant effect on the inclusive education competency of P.E. teachers. In general, the inclusive education competency of P.E. teachers who had received inclusive education-related training was higher than that of P.E. teachers who had not received inclusive education-related training.

Discussion

P.E. Teachers' inclusive education competency

The study found the inclusive education competency of physical education teachers in Chinese primary and middle schools needed to be further improved. Among the four dimensions, professional attitude scored the highest, followed by professional skills, capacity of acquiring supports, and professional knowledge scored the lowest.

In the professional attitude dimension, most P.E. teachers held a positive attitude towards inclusive physical education. They generally believed that special students should receive physical education on an equal basis with ordinary students. They also believed that special students and ordinary students attending classes together was conducive to the social development of special children and the alleviation of social discrimination against special groups, which could also have a certain positive impact on the physical and mental development of ordinary students.

In the professional knowledge dimension, most P.E. teachers believed that their theoretical knowledge of inclusive education was not enough. On the one hand, they did not know much about the relevant policies, laws and regulations of inclusive education, on the other hand, they did not master the specific teaching methods of inclusive physical education and did not have the knowledge of how to analyze and adjust the psychology of special children. The reason for this problem was that most physical education teachers usually graduated from the major of physical education, while students majoring in physical education in China had not received the study of inclusive physical education related knowledge [13]. In addition, 72 percent of teachers had no post-service training related to inclusive education. Therefore, there was a lack of inclusive education and other relevant training in both pre-service training and post-service training systems, which hindered the accumulation of teachers' professional knowledge and further affected the improvement of teachers' inclusive education quality.

In the professional skills dimension, the score of professional skills was significantly lower than the score of professional attitudes, but higher than the score of professional knowledge and capacity of acquiring supports. Some P.E. teachers believed that they lacked the ability to adjust the teaching objectives and teaching strategies according to special students in P.E. teaching, and they had low self-efficacy in implementing group cooperative learning and effective management for special students. The lack of training related to inclusive education would have a negative impact on the accumulation of professional knowledge, as well as the promotion of professional skills. However, the score of the dimension of professional skills was higher than that of the dimension of professional knowledge and capacity of acquiring supports. The reason was that, on the one hand, professional skills could accumulate practical experience in physical education and improve by imitating other teachers or professional teachers. On the other hand, most physical education teachers had not participated in the inclusive physical education teaching or the training of relevant professional knowledge and skills, which led to their lack of understanding of the actual classroom teaching situation,

Table 3: Summary of descriptive statistics of different teaching years, special children and training duration in each dimension.

Dimensions	Teaching age				Taught special children or not				Length of training related to inclusive education			
	Level	N	M	SD	Level	N	M	SD	Level	N	M	SD
Professional attitude	Novice (A)	142	4.18	0.69	Yes (A)	82	4.35	0.71	Never (A)	206	4	0.81
	Skilled (B)	80	3.84	0.85					Within 1 month (B)	40	4.17	0.62
	Expert (C)	64	4.17	0.87	No (B)	204	3.97	0.79	More than 1 month (B)	40	4.4	0.76
Professional knowledge	Novice (A)	142	3.54	0.9	Yes (A)	82	3.95	0.88	Never (A)	206	3.19	0.93
	Skilled (B)	80	3.08	0.96					Within 1 month (B)	40	3.92	0.74
	Expert (C)	64	3.55	1.06	No (B)	204	3.2	0.92	More than 1 month (B)	40	4.07	0.92
Professional skills	Novice (A)	142	3.83	0.75	Yes (A)	82	4.3	0.7	Never (A)	206	3.53	0.88
	Skilled (B)	80	3.5	0.98					Within 1 month (B)	40	4.2	0.61
	Expert (C)	64	3.77	1.04	No (B)	204	3.5	0.86	More than 1 month (B)	40	4.28	0.71
Capacity of acquiring supports	Novice (A)	142	3.8	0.77	Yes (A)	82	4.11	0.88	Never (A)	206	3.44	0.89
	Skilled (B)	80	3.27	1.01					Within 1 month (B)	40	4.07	0.65
	Expert (C)	64	3.76	0.9	No (B)	204	3.45	0.84	More than 1 month (B)	40	4.28	0.71
Inclusive education competency	Novice(A)	142	3.87	0.63	Yes (A)	82	4.2	0.69	Never (A)	206	3.59	0.7
	Skilled (B)	80	3.47	0.78					Within 1 month (B)	40	4.1	0.56
	Expert (C)	64	3.85	0.83	No (B)	204	3.58	0.68	More than 1 month (B)	40	4.27	0.74

Table 4: Summary of ANOVA in different dimensions for different teaching ages, taught special children or not and training duration.

Sources of variation	Dimensions	F/t	Posterior comparisons
Teaching age	Professional attitude	2.686	
	Professional knowledge	3.306*	A>B; C>B
	Professional skills	1.805	
	Capacity of acquiring supports	5.030**	A>B; C>B
	Inclusive education competency	4.272*	A>B; C>B
Taught special children or not	Professional attitude	2.629**	A>B
	Professional knowledge	4.443***	A>B
	Professional skills	5.271***	A>B
	Capacity of acquiring supports	4.149**	A>B
	Inclusive education competency	4.880***	A>B
Duration of relevant training for inclusive education	Professional attitude	2.299	
	Professional knowledge	11.483***	C>A; B>A
	Professional skills	10.424***	C>A; B>A
	Capacity of acquiring supports	11.431***	C>A; B>A
	Inclusive education competency	11.018***	C>A; B>A

Note: *: p<0.05; **: p<0.01; ***: p<0.001

and their cognition of professional skills stayed in the general physical education classroom teaching, which could result in a high score of the dimension of professional skills.

In the capacity of acquiring supports dimension, the score of capacity of acquiring supports was only higher than that of professional knowledge. On the one hand, the lack of professional knowledge of physical education teachers could affect their capacity of acquiring supports. Lack of understanding of relevant policies, laws and regulations could affect teachers' understanding of the channels through which they can obtain relevant support. On the other hand, due to the traditional examination evaluation system for pursuing higher education, physical education teachers paid more attention to the physical education examination of all students, but ignored the children with special needs, which limited the initiative of teachers to

obtain relevant support.

Influencing factors of P.E. Teachers' inclusive education competency

Difference of inclusive education competency of P.E. Teachers with different teaching age: First, we analyzed the inclusive education competency of P.E. teachers with different teaching age. It was found that different teaching ages were the main factors affecting the inclusive education quality of primary and secondary school teachers. On the whole, the inclusive education competency of novice P.E. teachers was significantly higher than that of skilled P.E. teachers, and the inclusive education competency of expert P.E. teachers was significantly higher than that of skilled P.E. teachers. Generally speaking, the longer they had been teaching, the longer they had received training related to inclusive education, and the more likely they were to improve their

inclusive education competency. Therefore, the longer they had been teaching, the higher their integrated education competency was. However, the data of this study showed that the longer the teaching time, the higher the inclusive education competency was not necessarily. The score of inclusive education competency of skilled teachers was the lowest, while the score of novice teachers (0 to 5 years of teaching) and expert teachers (more than 16 years of teaching) had no significant difference. Relevant studies had found that skilled teachers (who have been teaching for 6 to 15 years) were in the most serious stage of job burnout [14]. Teachers in this stage had negative emotions towards work and low sense of self-efficacy, resulting in the lowest inclusive education competency. Novice teachers were relatively rich and skilled in theoretical knowledge and skills, and had a high sense of self-efficacy. Moreover, they might not have been exposed to inclusive education-related work, leading to high scores. Constrained by their original thoughts and limited training, expert teachers held a negative attitude towards such a form of education and were unwilling to adjust their teaching strategies to promote the development of inclusive physical education [15], resulting in a low score of their inclusive education competency.

In terms of experience of teaching children with disabilities, we found that “taught special children or not” had a significant impact on the inclusive education competency of P.E. teachers. The scores of physical education teachers who had taught special children in all dimensions of inclusive education competency were significantly higher than those who had not taught special children. Through interviews of physical education teachers who had taught special children, it was found that physical education teachers who had taught special children had certain teaching experience, had certain understanding of the characteristics of physical and psychological development of special children, and could adjust teaching strategies and teaching methods so that all students could adapt to physical education, so as to show high inclusive education competency. Relevant studies also showed that teachers’ experience in inclusive education was an important factor affecting teachers’ attitude toward inclusive education, and experienced teachers had more positive attitudes [16]. The quality of education experience had a significant impact on teachers’ attitudes towards inclusive education. Teachers with successful inclusive education experience had a more positive attitude than teachers without successful inclusive education experience [17]. Continuous contact with special children could also improve teachers’ professional knowledge and skills related to inclusive education, to a certain extent, so as to improve their inclusive education competency.

Influence of training on inclusive education competency for P.E. Teachers: It was found that whether they had received training related to inclusive education had a predictive effect on the inclusive education competency of physical education teachers, and the inclusive education competency of physical education teachers who had received relevant training was significantly higher than that of physical education teachers who had not received relevant training. Generally speaking, the longer the relevant training time, the higher the inclusive education competency of teachers would be. However, the results of this study showed that there was no significant difference in the inclusive education competency of teachers who received training within one month and more than one month, which was consistent with the research results of Wang [5]. Through interviews with teachers who have participated in relevant training, this study found that the reasons for this situation could lie in the following

two points. First, the training content was too shallow. The training related to inclusive education mostly stayed on the concept, without real and systematic teaching. Second, teachers lacked practical exercise. The training content was completely lecture-style without practical training, which hindered the improvement of inclusive education competency.

Practical Implications

Firstly, enhance support for P.E. teachers implement inclusive education. Relevant studies showed that external adequate support could improve teachers’ attitude towards inclusive education [18], and thus improve their inclusive education competency. Therefore, this study suggested that physical education teachers should be equipped with sufficient external support to carry out inclusive physical education, so as to promote the improvement of inclusive education competency of physical education teachers. First, improve the construction of resource classrooms to ensure that every school had at least one resource classroom. Resource classroom was the most important part of inclusive education. The resource classroom was also equipped with special resource teachers who had rich experience in special education. Under such a condition, improving the construction of resource classrooms could not only provide individualized education for students with special needs, but also promote the mastery of knowledge and skills of ordinary physical education teachers and improve their inclusive education competency. Second, bring in a variety of sports equipment. Various kinds of equipment could be customized to meet the needs of different special children, to promote the steady progress of the teaching plan.

Secondly, increase the pre-service and post-service training on inclusive education for P.E. teachers. It was found in the survey that teachers who had received training related to inclusive education had significantly higher inclusive education competency than those who had not received training, and inclusive education courses for pre-service physical education teachers could improve their self-efficacy when teaching special children [19]. Therefore, carrying out training related to inclusive education was the key to improve the inclusive education competency of physical education teachers, mainly in the following two points. First, improve the pre-service training. Relevant content such as inclusive education and special education should be embedded into the compulsory curriculum system of physical education major. Relevant teaching content could be learned from western countries to improve the pre-service training system. Second, improve post-job training. Experts and scholars related to inclusive education and special education were invited to compile training programs. In terms of content, due to the strong practical characteristics of physical education, it was necessary not only to have reasonable teaching content with increasing difficulty, but also to have practical operation content, so that physical education teachers could fully explore and understand relevant theories in practice, but also to ensure frequent training and promote the specialization of post-service training.

Thirdly, incorporate the inclusive education competency into teacher assessment of P.E. Teachers. As a baton, evaluation could effectively intervene teachers’ actions, and the school’s reward mechanism was an important factor affecting teachers’ enthusiasm [20,21]. Therefore, this study suggested that inclusive education competency should be included in teacher assessment to enhance the external motivation of physical education teachers to improve inclusive education competency.

Author Contributions

Conceptualization, Methodology, Writing - Original Draft Preparation, Rui Xue; Formal Analysis, Resources and Data, Review and Editing, Hongqin Chai; Investigation, Danxu Zhu and Rui Li; Supervision, Review and Editing, Wangqian Fu.

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