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Teacher's role perception, support and working environment in Chinese higher vocational colleges: Basis for professional development

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Abstract

This study used descriptive research to determine the teacher's role perception, support and working environment in Chinese higher vocational colleges. The study surveyed 400 teachers at three vocational colleges in Guangdong Province, China to assess their role perception, the support they received, and their work environment. The research showed that majority of the respondents were females, between the ages of 31 and 40, with 6 to 10 years of teaching experience; Also, they had sound perception of their role as teachers, which played a positive role in the professional development of teachers. Most of vocational teacher's perceived the support level was consistent in six aspects: research and teaching conditions, soft environment, leadership style, management system, career development and organizational identity, indicating that school support played an important role in teacher professional development; Respondents agreed on the importance of a teacher's working environment in terms of resource adequacy, student support, affiliation, professional interest, participatory decision making, and work stress. The working environment affected the job involvement of higher vocational teachers. A good working environment played an important role in the construction of highquality teachers and promoted the professional development of teachers. When responses on the perception of the teacher's role were compared according to the profile grouping, the responses varied widely by age and years of teaching, especially in terms of interpersonal communication. The study found that respondents aged over 50 who had worked between 11 and 15 years rated themselves more highly than others. Significant differences in participatory decision-making were observed when grouped by sex, and the study found that men rated better than women. There were significant correlations between teacher's role perception and support, between teacher's role perception and working environment, and between support and working environment; Based on the results, a professional development plan for teachers in higher vocational colleges was developed to improve teachers' teaching ability, enhance their career satisfaction and promote the high-quality development of education. Schools may implement a system to support teachers' professional development, improve research and teaching

conditions, encourage teachers to participate in academic activities such as training and seminars, promote exchanges and sharing among teachers, create a positive cultural atmosphere, and improve teachers' organizational identity and professional happiness.

Keywords: teacher's role perception, support, working environment

Teacher's role perception, support and working environment in Chinese higher vocational colleges: Basis for professional development

1. Introduction

In recent years, with the transformation and upgrading of China's economic structure and the vigorous development of science and technology, the industrial focus has gradually shifted from manufacturing to service industry and other innovative fields (Jiang, 2016; Zhang, et. al., 2022). Therefore, the demand for high-quality technical skills and vocational education is growing day by day. The Chinese government's support for vocational education continues to strengthen, the scale of investment expands constantly (Fei, 2022), and the enrollment scope of vocational colleges expands year by year (Zhang et al., 2023). The higher vocational education in China presents a tendency of prosperity and development.

Higher vocational colleges are not only an important channel for personnel training, but also a bridge connecting students with the actual vocational needs. With the characteristics of vocational orientation and practical education, higher vocational colleges have successfully made up for the shortcomings of vocational skills training in traditional colleges and universities. This change not only has a positive impact on the career development of individual students, but also meets the social demand for all kinds of high-quality technical skills and has a profound social impact. In 2021, China's vocational education conference stressed that in order to meet the urgent needs of modern society for high-quality technical talents, skilled craftsmen and great power craftsmen, it is necessary to accelerate the construction of a modern vocational education system. Higher vocational education pays more attention to the cultivation of practical skills while attaching importance to the imparting of theoretical knowledge, providing students with education and training closer to the actual workplace (Cai, 2020). This kind of applied education mode can help vocational college students adapt to the working environment faster, improve the employment competitiveness, and provide a large number of excellent applied talents for the society.

However, with the high quality development of vocational education, teacher's moral outlook, knowledge level, teaching ability and academic accomplishment fundamentally determine the quality of higher education personnel training, the level of academic research and the ability of social service. Therefore, the problem of teacher's professional development is becoming increasingly prominent. The professional level and teaching quality of teachers directly affect the learning effect and professional ability of students (Peng, et. al., 2022). Teacher's professional development depends on their teaching behavior, which is controlled by teacher's decision making, and teacher's role perception influences teaching decision making (Liu, 2021). Therefore, in the process of teacher development, the first thing to be clarified is the perception of teacher's roles.

Teacher role refers to the identity, status, responsibility and corresponding behavior pattern of teachers in the education system (Nie et al.,2013). The perception of teacher's role is the understanding and cognition of teacher's behavior pattern and attitude towards themselves when they carry out relevant teaching activities (Ding, 2013). This involves not only teacher's mastery of professional knowledge and skills, but also their teaching attitudes, methods and interactions with students, parents and colleagues, as well as their guidance of class organization and student development. A teacher with a clear and engaged role can often create a positive and interactive learning environment that inspires students to learn and guides them to reach their full potential. At the same time, it also helps to enhance the sense of responsibility of teachers, urging them to consciously improve their professional quality and constantly improve their professional development with a lifelong learning attitude (Zhang,2021).

Teacher professional development mainly refers to the improvement of teachers' professional knowledge, skills and quality, which is a continuous and dynamic process (Sancar et al, 2021). In the process of teachers' development, their values, beliefs, knowledge, skills and behaviors need to be constantly adjusted and revised. Professional development of teachers cannot be separated from individual efforts, but also from the support and

guidance of university organizations. Teacher's support not only covers the cooperation of school leaders and colleagues, but also includes the resource guarantee, system construction and cultural atmosphere of the school, and also includes the professional training and career development opportunities for teachers (Ma, 2018). Whether the resources and system provided by the school are properly matched with the needs of teachers is an important basis to measure the positive impact of school support.

Adequate support is conducive to improving teacher's career happiness and work performance, prompting teachers to constantly update their knowledge system and teaching skills, enhance their teaching self-confidence, and thus improve the level of education and teaching (Mo, 2021). Therefore, in the professional development process of teachers, apart from role perception, the support received is also an important factor. Working environment mainly covers the material conditions, management system, interpersonal relationship and development space of the school (Tian, 2021). A good working environment should include advanced teaching facilities, a positive collaborative atmosphere, reasonable rules and regulations, and a moderate workload. The working environment has a direct impact on teacher's work efficiency and career satisfaction (Chen et al., 2023). Teachers achieve their own growth through continuous interaction with the school working environment, which is another important factor supporting and guaranteeing teacher development. However, at present, many schools have deficiencies in hardware facilities, transparency of management system, learning atmosphere and development opportunities for teachers (Tian, 2021), resulting in a lack of effective support and positive atmosphere in the working environment. In this case, teacher's teaching enthusiasm may be affected, and even job burnout and turnover intention may occur (Simon, et. al., 2015). The hardware facilities, system construction, humanistic environment and development opportunities of the school will be reflected in the psychological level of teachers, affecting their work experience and teaching practice. By optimizing the working environment, it can help to reduce the pressure and challenges faced by teachers in the teaching process, stimulate their work enthusiasm, improve teaching results, and enhance their sense of identity and commitment to work.

In the current field of higher vocational education, the relationship between teacher's role perception, support and working environment and the impact on teachers' professional development have not been fully explored. This makes people's understanding of the overall picture of vocational teachers' career development have certain limitations, and also affects the formulation of supporting policies and the improvement of the quality of vocational education. To fill this research gap, this study aims to explore in depth the interrelationship between teacher's role perception, support, and working environment, and how they affect teacher professional development.

First of all, this paper briefly reviews the relevant theories of teacher role and analyzes its performance in teaching work. Then, tease out the importance of support to the teacher's work and how it affects the teacher's working environment and role perception. In addition, the teacher's working environment is analyzed to understand its impact on teacher's professional development.

An in-depth study of the role perception, support received by teachers in vocational colleges and the influence of their working environment will not only help teachers understand their own situation, but also better analyze the aspects that need to be improved in the process of professional development, so as to improve the level of teacher education and teaching. Meanwhile, for school administrators, through analyzing data, they can understand the factors affecting the professional development of teachers. Then optimize the management decision, improve the school working environment, lay a solid foundation for the sustainable development of higher vocational education. In addition, this study can also provide empirical data support for education departments at all levels to formulate management systems, and has reference value for relevant policy formulation and implementation, and it plays an important role in improving the quality of higher vocational education.

The purpose of this study was to determine the relationship among teacher's role perception, support and working environment in Chinese higher vocational colleges. Specifically, it aimed to determine the teacher's role perception in terms of teacher's cognition of curriculum knowledge and teaching skills, understanding of class operation and control of interpersonal communication; identify the teacher's support in terms of research and

teaching conditions, soft environment, leadership styles, management systems, career development, and organizational identity; assess the working environment of teachers as regard as resource adequacy, student support, affiliation, professional interest, participatory decision making and work pressure; test the relationship between teacher's role perception, support and working environment; propose a development program for Chinese higher vocational college teachers.

2. Methods

Research Design - Descriptive research was a research method that focused on describing the characteristics of the research object, and focused more on answering the "what" question than the "why" question (Siedlecki, 2020). This approach was primarily concerned with providing a detailed description of a population or phenomenon, rather than focusing on explaining why it occurred (Siedlecki, 2020). In short, descriptive research does this by showing all aspects of the research topic without delving into the reasons behind it. This study adopted descriptive research to understand the status quo of teacher's sense of role, support and working environment in Chinese higher vocational colleges, and to analyze their impact on teachers and the relationship between them. Descriptive research usually uses basic statistical analysis methods to summarize and present data, outline the characteristics of the group or phenomenon being investigated, and contribute to a comprehensive grasp of the object of study. This study used this approach to collect response data on the professional development of vocational teachers in China, focusing on their perception of roles, the support they received, and the work environment in which they worked. Through investigation, the method describes in detail the current situation of teacher development.

Participants of the Study - The subjects of this study are teachers in three vocational colleges in Guangdong Province. The three institutions, including Jiangmen Polytechnic, Guangdong Jiangmen Chinese Medicine College and Guangdong Industry Polytechnic, have a total of about 2,100 teachers. As practitioners in the field of higher vocational education, these teachers directly participate in students' teaching and educational activities. The stratified random sampling technique was used in the study, and the initial target was a sample size of 325 people. When calculating the sample size, the study used a Raosoft sample size calculator to achieve a 5% error range with 95% confidence to ensure the rationality of the sample size. To expand the scope of the study, the sample was later expanded to 400 faculty, and the sample sizes of respondents at the three institutions were 200, 100, and 100, respectively. These teachers came from various professional fields and have certain teaching experience and practical ability. In order to ensure the validity and reliability of the research results, the sample size was strictly controlled in order to obtain representative research results. All teachers participated voluntarily and with their informed consent. At the same time, in order to facilitate the participating teachers to complete the questionnaire, the research selected the mobile "questionnaire star" platform. The platform has the characteristics of simple operation, friendly interface, fast data statistics, etc., and is well received by participants.

Data Gathering Instrument - The first part of the questionnaire contains a demographic item, asking respondents about their sex, age, and years of teaching. The second part discusses the teacher's role perception. The questionnaire comes from the questionnaire of Teacher's Role Perception by Shen (2008). It consists of four parts, Interpersonal communication, Class operation, Curriculum knowledge and Teaching skills, and contains a total of 23 items, scored on a 4-point Likert scale. The third part is adapted from the questionnaire "Sense of Organizational Support" of Hu (2022), including six dimensions of Research and teaching conditions, Soft environment, Leadership style, Management system, Career development and Organizational identity, with a total of 28 items. Finally, the work environment part of the questionnaire is based on the School-Level Environment Questionnaire (SLEQ) of Johnson, et. al., (2001). It has six sections -Resource adequacy, Student support, Affiliation, Professional interest, Participatory decision making, and Work Pressure - with a total of 32 items. Respondents rated these items using a 4-point Likert scale. The instrument was ethically accepted and the questionnaire was analyzed and validated by experts in the field of educational administration. The statistics teacher tested the reliability of the questionnaire. Cronbach's alpha of each variable and each sub-dimension ranged from 0.881 to 0.955, all of which were greater than 0.7, indicating that the research data had strong reliability and

high internal consistency. Using the guidelines set by George and Mallery(2003), the reliability coefficients (Cronbach Alpha values) for the variables range from "good" to "excellent". This shows that the indicators within each questionnaire consistently measure their respective structures, thus improving the validity of any conclusions drawn from their results.

Data Gathering Procedure - The process of questionnaire survey on teachers in higher vocational colleges in China can be divided into the following aspects: At the beginning of the questionnaire design, the questionnaire covering the basic information of teachers, the perception of teacher's role, the support level and the view of the working environment was designed with full reference to the relevant research at home and abroad and combined with the actual situation of higher vocational colleges in China. At the same time, in order to facilitate the respondents to participate in the survey, the questionnaire was used in both Chinese and English. Before the formal distribution of questionnaires, 30 teachers were selected to conduct a pilot study to assess their understanding of the questionnaires. Through the pilot study, problems existing in the questionnaire were timely improved, such as ambiguous meaning, etc. At the same time, reliability test was conducted on the obtained data, and the questionnaire was revised according to the test results, so as to ensure the reliability of the questionnaire and improve the rationality and operability of the questionnaire. After obtaining the approval of Jiangmen Polytechnic, Guangdong Jiangmen Chinese Medicine College and Guangdong Industry Polytechnic, the researchers used the online survey platform "Questionnaire star" to distribute questionnaires to 400 teachers in higher vocational colleges from September to November 2023. Before sending the questionnaire, explain the purpose of the research to the respondents and inform them of the real answers to ensure the accuracy and validity of the data.

A total of 400 valid questionnaires were statistically analyzed to explore the regular conclusions on the teaching status quo, needs and challenges of teachers in China's higher vocational colleges. After data analysis, research results are presented to the school in the form of a paper, so as to improve education and teaching policies and management measures based on these conclusions. In the process of questionnaire survey, the research always upholds a scientific and rigorous attitude to ensure the authenticity and reliability of the survey results, in order to contribute to the development of higher vocational education in China.

In order to facilitate the participating teachers to complete the questionnaire, the research selected the mobile "Questionnaire star" platform. The platform has the characteristics of friendly interface, easy operation, fast data statistics, etc., and is well received by users. In the process of questionnaire design, the actual needs and teaching situation of teachers are fully considered to ensure that the questionnaire content is targeted and practical. In this way, the education practice of teachers in higher vocational colleges is better understood, so as to provide reference for the development of higher vocational education in China.

Data Analysis - To perform data analysis, the following statistical tools were used. Weighted means and ranking were used to determine the teacher's role perception in terms of teacher's cognition of curriculum knowledge and teaching skills, understanding of class operation and control of interpersonal communication; identify the teacher's support in terms of research and teaching conditions, soft environment, leadership styles, management systems, career development, and organizational identity; assess the working environment of teachers as regard as resource adequacy, student support, affiliation, professional interest, participatory decision making and work pressure. Likewise, Pearson Product Moment Correlation was used to test the significant relationship of the treated variables. In addition, post hoc test was also conducted. In addition, all data were treated using a statistical software known as PASS version 26 to further interpret the result of the study using an alpha level of 0.05 and 0.01.

Ethical Considerations - Prior to data collection, it is important to obtain the informed consent of vocational school teachers. the respondents need to have a clear understanding of the objectives, content and potential risks of the research, and to participate voluntarily. Personal information and materials of teachers shall be kept strictly confidential, and the identity and privacy of teachers shall not be disclosed to the public. To facilitate statistical analysis, the data collected from the questionnaire are distributed in code or numerical form in the table. The

research has been approved by the LPU-B-Research Ethics Review Committee.

3. Results and discussion

Table 1Summary Table on Teacher's Role Perception

Indicators	Weighted Mean	Verbal Interpretation	Rank
Interpersonal Communication	3.47	Agree	4
Class Operation	3.48	Agree	2.5
Curriculum Knowledge	3.48	Agree	2.5
Teaching Skills	3.49	Agree	1
Composite Mean	3.48	Agree	

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

Table 1 shows the views of respondents on teacher's role perception, mainly focusing on interpersonal communication, class operation, curriculum knowledge and the application of teaching skills. The overall average score is 3.48, which indicates that most of the teachers survey have a good perception of their roles, and there is a general consensus on the effectiveness of role perception among vocational teachers in China.

Teachers in particular agree on the importance of teaching skills in improving their perception of roles, ensuring that they came top with an average score of 3.49. As the necessary professional ability of teachers, teaching skill is very important in the teaching process. Through the use of teaching theories, professional knowledge and teaching experience, students can master the basic knowledge and basic skills of the subject, and students can be influenced by ideas and concepts. Teaching skills are the key factors that affect teaching quality and promote students' learning. It includes the analysis of textbook content, the design of classroom teaching links, the implementation of classroom teaching, the demonstration of teaching aids, and the regulation of classroom teaching atmosphere. Mastering these teaching skills was a necessary professional quality for qualified teachers (Fu, 2015).

Curriculum knowledge and class operation are tied for second place with a weighted average score of 3.48. Curriculum knowledge is a teacher's cognition, experience and behavior ability of curriculum system, which is an important part of teacher knowledge. Curriculum knowledge is not only the core element of school education activities, but also the link between teachers and students. teacher's mastery and application of curriculum knowledge directly affects teaching behavior and quality (Backfisch et al., 2020). Class is the basic unit of school education and the basic organizational form for teachers and students to carry out activities. The scientific and effectiveness of class operation is directly related to the physical and mental development of each student and plays an important role in the growth of students. Class management is a complex and interesting work, and its success directly affects students' conduct, studies and prospects, as well as the status, reputation and future of the school (Xiong, 2018).

Interpersonal communication has a positive impact on teacher's role perception, with a weighted average score of 3.47. the importance of teacher role perception in interpersonal communication, class operation, curriculum knowledge and application of teaching skills is self-evident. In order to improve the quality of education and teaching, teachers should constantly improve themselves in these aspects so as to better fulfill their teaching duties. The teacher-student relationship is the most basic interpersonal relationship in the school. Educational activities are realized through information communication between teachers and students. Teachers should maintain communication with parents of students in various forms, enhance understanding of students, actively pay attention to students, strengthen emotional exchanges, and carry out healthy competition and cooperation among colleagues to improve the level of communication among teachers (Hargreaves, 2021).

Table 2 shows the respondents' perception of teacher support and details it in six key aspects, mainly in terms of research and teaching conditions, soft environment, leadership style, management system, career development, and organizational identity. The comprehensive average score is 3.43, which indicates that there is a general consensus on the effectiveness of teacher support. Among them, teacher's perception of organizational identity is

the highest, with a weighted average score of 3.46. Organizational identity plays an important role in teacher career development, which is consistent with the study of Sun(2023), who believed that organizational identity was the internal driving force to promote teacher's professional growth.

 Table 2

 Summary Table on Teacher's Support

Indicators	Weighted Mean	Verbal Interpretation	Rank
Research and Teaching Conditions	3.41	Agree	4.5
Soft Environment	3.43	Agree	3
Leadership Style	3.44	Agree	2
Management System	3.41	Agree	4.5
Career development	3.40	Agree	6
Organizational Identity	3.46	Agree	1
Composite Mean	3.43	Agree	

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

Strengthening organizational support could significantly enhance the sense of identity and loyalty of teacher's organizations, enhance the sense of ownership, and make teachers more regard school as home. The study of Bai et al. (2022) showed that organizational support played a positive regulating role in the role of organizational identity on job engagement, which was conducive to stimulating occupational identity and thus improving job engagement. Leadership style followed closely behind organizational identity, with a weighted average score of 3.44. Leadership style plays a role in organizational climate, teamwork, and employee performance. One of the key factors affecting teacher's career choice is school management, especially school leadership style. Leadership style has been a focus of attention among management practitioners and academics because of its significant impact on positive outcomes for individuals and teams (Gill, et. al., 2018). As a part of organizational support, the research found (Wang, 2022) that the level of support teachers feel from leaders affected teacher's career stability, affected teacher's work participation, shaped teacher's work attitude and values, and had a significant impact on team behavior.

Soft environment ranks third with a weighted average score of 3.43. A good soft environment can provide a positive cultural atmosphere, help to establish the spirit of cooperation, and enhance teacher's job satisfaction. This is consistent with the study of Qi, et. al., (2022), who pointed out that cultural environment promoted the generation and development of academic activities and had an important impact on the conduct of scientific research activities. A good cultural environment is the basis for cultivating outstanding scientific and technological personnel, stimulating the innovation vitality of scientific researchers, and is more conducive to improving the level of education.

Research and teaching conditions and management systems tie for fourth place with a weighted average score of 3.41. Good research and teaching conditions can provide support and motivation and help teachers to increase their satisfaction and sense of belonging, so as to continuously improve their educational level and professional literacy. The report "Learning Policy Institute" released by Learning Policy Institute (2021) pointed out that teaching conditions had a positive correlation with teacher retention rate and school performance. Toropova et al. (2021) showed that there was a substantial link between school teaching conditions and teacher's job satisfaction. Teacher workload and teacher cooperation were the most closely related factors to teacher job satisfaction.

The school management system plays an important role in promoting the development of teachers and improving the quality of education, and has a non-negligible impact on the professional development of teachers, the teaching level and the improvement of the overall quality of education in schools. Zhang (2021) pointed out that the performance appraisal management of university teachers played a crucial role in both the realization of the strategic goals of universities and the personal development of teachers. Li (2021) believed that the construction of teaching evaluation management system for college teachers was of great significance to the development of colleges and universities. Zhao (2019) stressed the importance of establishing a management system for teacher training.

Career development ranks last, with a weighted average score of 3.40, indicating that career development has an important and positive effect on teachers, helping to improve professional standards, job satisfaction and education quality. Ma et al. (2023) believed that in order to improve the quality of education, the government should create a loose policy environment on the basis of clearly defining the professional development needs of teachers in vocational colleges, vocational colleges should establish sustainable development training strategies, and teachers should have the awareness of independent development. Liu (2021) believed that in order to promote teacher career development, school support system should be improved, including promoting the construction of policy guarantee system, improving the construction of teacher support system, optimizing the construction of teacher environment system, enhancing the motivation of teacher career development, and stimulating the vitality of teacher career development.

 Table 3

 Summary Table on Working Environment

Indicators	Weighted Mean	Verbal Interpretation	Rank	
Resource Adequacy	3.41	Agree	4	
Student Support	3.45	Agree	3	
Affiliation	3.47	Agree	1	
Professional Interest	3.46	Agree	2	
Participatory Decision Making	3.40	Agree	5	
Work Pressure	3.15	Agree	6	
Composite Mean	3.39	Agree		

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

Table 3 shows the environment of teachers at work, focusing on resource adequacy, student support, Affiliation, professional interest, participatory decision-making, and work pressure. The comprehensive average value is 3.39, indicating that the working environment plays a positive role in predicting the professional development of teachers. The working environment of teachers is crucial, and the working environment of teachers is the learning environment of students, and the teaching environment without problems is also a comfortable learning environment. Colleague relationship ranked first with a weighted average of 3.47, interpersonal relationship plays an important role in teacher's work, establishing a positive and satisfying relationship with colleagues can relieve work stress and discomfort, good colleague relationship, promote cooperation, communication and comradeship, It is also important for improving student learning and achievement (Marcionetti, et. al., 2022).

In the process of teaching development, if teachers want to get their own development, they need to take good relationship with colleagues as the driving force. Teachers should fully realize the importance of the relationship between colleagues, master certain communication skills, and learn to correctly understand and deal with the problem of the relationship between colleagues. Schools should establish and improve relevant systems to provide a good internal guarantee for the development of teacher-colleague relations. The society should create a good atmosphere, pay attention to the personal problems of teachers, and provide a healthy external environment for the development of teacher-colleague relationship (Long, 2015).

Professional interest, with a weighted average of 3.46, ranks second. Teacher professional development is the continuous development process from generalization to specialization in the aspects of professional thought, professional knowledge and professional ability. With the gradual professionalization of the teaching profession, the professional development of teachers have become a hot topic in the research of teachers. Teacher professional development is a continuous process. At different stages of teacher professional development, teachers show different states of emotional experience and behavioral input to their profession. Therefore, in the professional development of teachers, teacher's professional interest is an important structural element. teacher's career interest not only affect teacher's pre-service career view, but also run through the whole process of teacher's professional development, which has an important impact on teacher's professional development (Feng, 2013).

Good professional quality is the basic guarantee for teachers to do a good job in education. The weakening or loss of interest and love in majors and work lead to teacher's general boredom with majors and seriously restricts professional development (Zhang, 2019). Student support, with a weighted average of 3.45, plays an important

role in the development of teachers as the energy and motivation for their growth (Li, 2023). From the perspective of students, Wang (2023) explored the impact of students' participation on teacher's supportive behavior and proposed corresponding strategies for optimizing teacher's supportive behavior and promoting students' learning and development. Stimulate students' active participation and promote the interaction between teaching and learning. Pay attention to the role of students' positive emotional experience in teacher-student teaching interaction. Pay attention to various factors that influence students' participation inside and outside the classroom, and promote students' participation. When teachers have positive relationships with students, they engage in higher quality teaching practices.

When relational needs are met in a specific setting, such as the classroom, individuals are more motivated to act in adaptive ways, engage in tasks, persevere in the face of failure, and creatively respond to challenges in that setting (Li et al., 2022). Positive teacher-student relationships can also increase teacher motivation, effort, engagement, well-being, and confidence, which in turn may lead to greater use of complex, high-impact teaching practices (Van der Lans et al., 2020).

Sufficient resources, with a weighted average of 3.41, rank fourth. Teaching resources are an important element in the teaching process and an important carrier of teaching information transmission, which have a crucial impact on students' learning outcomes and teacher's work efficiency. Therefore, in the field of education, the importance of teaching resources can not be ignored. By optimizing teaching resources, students can better understand knowledge, stimulate learning interest and improve learning results. At the same time, teachers can also promote the improvement of classroom teaching quality through rich teaching resources (Yang, 2019). Chen (2023) pointed out that the construction of learning situations with sufficient quantity, abundant resources, convenient technology, appropriate scenes and remarkable effects could effectively promote the improvement of teaching quality. Zhou(2023) pointed out that experimental resources were an important guarantee for experimental teaching. In order to improve students' experimental operation ability, teachers must first provide students with sufficient and high-quality scientific experiment resources to escort students' experimental operation.

Participatory decision-making, with a weighted average of 3.40, has a positive effected on the working environment, which not only stimulate the members of the organization, but also provide a guarantee for the realization of organizational goals. In response to the strong needs of The Times, the management of contemporary institutions of higher learning select and implement the value orientation of norms, democracy, science, efficiency and aesthetics, and adopt four organizational means of participatory decision-making, legitimate data drive, integration of professional forces and visible results to encourage kindness, cultivate virtues and build value-driven schools (Zhang, 2020).

Teacher's participation in school decision-making is conducive to the democratization and science of school management, the improvement of teacher's work enthusiasm and satisfaction, the improvement of the quality of school decision-making, the effective implementation of school decision-making programs, and the optimization of the overall organizational atmosphere of schools (Sun, 2016). The research of Brezicha, et al. (2020) showed that when principals provided opportunities for teachers to participate in meaningful decision-making, teachers develop a greater sense of ownership and responsibility for their profession and school. These positive feelings may in turn increase teacher's job satisfaction. Working pressure, weighted average of 3.15, the lowest score. The existence of job stress itself does not mean the reduction of job performance. Studies have shown that a lower than moderate level of stress can help improve performance, but if the pressure is too high or the duration of low level of stress is too long, it reduces performance. Therefore, appropriate pressure is conducive to development (Chen, 2021).

Bu (2019) pointed out that work pressure was a very important driving force in the process of enterprise development, and the positive and positive role of challenging performance pressure should be given full play, the negative and negative effects of obstructive performance pressure should be reduced, positive guidance should be advocated, negative pressure should be eased, and the motivation and potential of employees should be stimulated

to the greatest extent. Gao, et. al., (2021) pointed out that effective management of stress was an effective way to solve the problem of teacher's job burnout and improve their mental health index and professional efficacy.

Table 4 shows the link between teacher's role perception and support. The calculated r-value indicates a strong direct correlation, and the resulting p-value is less than the alpha level. This means that there is a significant relationship and means that the better the teacher's role perception, the better the support. It describes in detail the substantive correlation between teacher's role perception and the support received by Chinese vocational teachers. Obviously, the r-values and p-values shown in the table indicate that interpersonal communication, class operation, curriculum knowledge and teaching skills are highly significantly correlated with teacher's research and teaching conditions, soft environment, leadership style, management system, career development and organizational identity.

According to the data analysis, interpersonal communication and teacher's support shows a highly significant correlation, and the stronger the interpersonal communication ability, the more support teachers get. In many organizations, employees with strong interpersonal skills are valued for their pleasant demeanor and positive, problem-solving oriented attitude, which lead to more organizational support and promotes continuous employee promotions and salary increases (Hargie, 2021). Good interpersonal skills help teachers communicate more effectively with leaders, colleagues, students and family members, adjust teaching methods better, demonstrate professionalism, and get more organizational support. Cao (2019) emphasized the importance of improving the interpersonal support system, including the accumulation of teacher-student communication experience, the filling of interpersonal communication knowledge gaps, and the correction of interpersonal cognitive biases.

 Table 4

 Relationship Between Teacher's Role Perception and Support

Interpersonal Communication	r-value	p-value	Interpretation
Research and Teaching Conditions	.698**	0.000	Highly Significant
Soft Environment	.753**	0.000	Highly Significant
Leadership Style	.724**	0.000	Highly Significant
Management System	.680**	0.000	Highly Significant
Career Development	.706**	0.000	Highly Significant
Organizational Identity	.749**	0.000	Highly Significant
Class Operation			
Research and Teaching Conditions	.744**	0.000	Highly Significant
Soft Environment	.771**	0.000	Highly Significant
Leadership Style	.742**	0.000	Highly Significant
Management System	.716**	0.000	Highly Significant
Career Development	.706**	0.000	Highly Significant
Organizational Identity	.758**	0.000	Highly Significant
Curriculum Knowledge			
Research and Teaching Conditions	.794**	0.000	Highly Significant
Soft Environment	.792**	0.000	Highly Significant
Leadership Style	.773**	0.000	Highly Significant
Management System	.747**	0.000	Highly Significant
Career Development	.767**	0.000	Highly Significant
Organizational Identity	.788**	0.000	Highly Significant
Teaching Skills			
Research and Teaching Conditions	.782**	0.000	Highly Significant
Soft Environment	.793**	0.000	Highly Significant
Leadership Style	.763**	0.000	Highly Significant
Management System	.747**	0.000	Highly Significant
Career Development	.747**	0.000	Highly Significant
Organizational Identity	.787**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

There is a significant correlation between class operation and teacher's support, which means that the stronger the class operation ability, the more support teachers got. Class operation is an important part of school work, and effective class management can create a positive, harmonious and orderly learning environment (Li, 2021), which is conducive to the establishment of a good relationship between teachers and students and the smooth progress of

teaching activities, so as to get support and recognition from leaders, colleagues and students. Hoferichter et al. (2022) showed that teacher support was associated with higher coping ability.

There is also a significant correlation between curriculum knowledge and teacher's support. The richer curriculum knowledge is, the more support teachers get. Curriculum knowledge refer to the professional knowledge that teachers need to create an effective teaching and learning environment (Guerriero, 2017) and is an important factor in promoting teacher's professional development. Only with rich subject knowledge can teachers better teach and explain subject content, solve students' problems in learning, and help build students' trust in teachers, so as to obtain more in-depth and quality education support. Liu, et. al., (2022) proposed a significant positive impact of organizational support on teacher's knowledge. Only by providing guarantees could the professional development of teachers be sustained for a long time, and teachers could timely grasp the new information of education and profession and the new content of industrial technology, and their knowledge can be continuously enriched and updated.

There is a significant positive correlation between teaching skills and teacher's support, which means that there is a close relationship between teaching skills enrichment and teacher's support. Wu (2018) pointed out that the "supportive" environment in an organization and the mutual support among organization members were strong guarantees for the high quality and efficient completion of teaching tasks. Attaching importance to the construction of organizational culture, emphasizing the role of teacher's support and establishing a symbiotic mechanism between teaching organization and teacher's teaching development are the possible ways to improve the development of teaching organization and teacher's teaching development. Teachers with a variety of teaching skills are better at implementing personalized teaching, providing personalized feedback, timely adjusting teaching strategies to meet different learning needs of students, and better communicating and cooperating with students, parents and colleagues, so as to get a comprehensive educational support network and promote teacher professional development (Zhou, 2021). Therefore, teacher's support is a powerful catalyst to improve teacher's perception of their roles. Liu (2023) believed that creating a democratic organizational environment and increasing psychological support for teachers were conducive to clarifying multiple roles, improving teacher's self-initiative, and enhancing their awareness of professional independent development.

 Relationship Between Teacher's Role Perception and Working Environment

Interpersonal Communication	r-value	p-value	Interpretation
Resource Adequacy	.701**	0.000	Highly Significant
Student Support	.673**	0.000	Highly Significant
Affiliation	.719**	0.000	Highly Significant
Professional Interest	.722**	0.000	Highly Significant
Participatory Decision Making	.671**	0.000	Highly Significant
Work Pressure	.334**	0.000	Highly Significant
Class Operation			
Resource Adequacy	.696**	0.000	Highly Significant
Student Support	.723**	0.000	Highly Significant
Affiliation	.750**	0.000	Highly Significant
Professional Interest	.733**	0.000	Highly Significant
Participatory Decision Making	.687**	0.000	Highly Significant
Work Pressure	.358**	0.000	Highly Significant
Curriculum Knowledge			
Resource Adequacy	.749**	0.000	Highly Significant
Student Support	.742**	0.000	Highly Significant
Affiliation	.801**	0.000	Highly Significant
Professional Interest	.771**	0.000	Highly Significant
Participatory Decision Making	.724**	0.000	Highly Significant
Work Pressure	.343**	0.000	Highly Significant
Teaching Skills			
Resource Adequacy	.713**	0.000	Highly Significant
Student Support	.736**	0.000	Highly Significant
Affiliation	.790**	0.000	Highly Significant
Professional Interest	.763**	0.000	Highly Significant
Participatory Decision Making	.695**	0.000	Highly Significant
Work Pressure	.353**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Table 5 describes the correlation between teacher's role perception and different dimensions of Chinese vocational teacher's working environment. The r-value and p-value shown in the table indicate that interpersonal communication, class operation, curriculum knowledge and teaching skills are significantly correlated with teachers in various dimensions such as resource adequacy, student support, affiliation, professional interest, participatory decision-making and job stress.

By the data in the table show that interpersonal communication existed significant correlation on working environment, more and more companies value their interpersonal skills, can help you with your colleagues and to establish a good relationship, help to create a positive working environment, and help maintain efficient work (Awad, et. al., 2012). Interpersonal communication run through all aspects of people's study and life, and good communication skills can create a good working environment (Liu, et. al., 2020). The more harmonious interpersonal communication, the more mutual trust and mutual understanding, the more can create a harmonious atmosphere of work and life.

Class operation and working environment show a high correlation, the stronger the class operation ability, the better the working environment. The construction of school learning environment is crucial for both teachers and students, and teacher's class operation effectiveness have a positive impact on school climate (Akman, 2020). From the perspective of class management, Jiang (2017) pointed out that creating a learning environment supporting multi-cultural background for students, establishing a positive teacher-student relationship, emphasizing cooperative learning, and stimulating students' independent learning ability. Class management include a variety of skills and techniques that teachers can use to create an efficient learning environment that improves overall teaching effectiveness. A positive and orderly class operation help to create a good learning environment, improve the satisfaction of teachers and students, and promote the optimization of the entire school work environment.

There is a close correlation between the more solid teacher's curriculum knowledge and the better their school environment. Shulman introduces the term "pedagogical content knowledge," triggering a wave of research on teacher's knowledge of their subjects and the importance of this knowledge to successful teaching. The curriculum must reflect the most important knowledge, skills, and attributes that the school wants the student to acquire, as these will be evaluated for teaching effectiveness (Stanovich, 2003). Teacher expertise and teacher curriculum knowledge are both essential for good science teaching and student understanding. Teachers have a strong knowledge base and cultural quality in the subject field. Teachers have a strong sense of self-identity and can conduct in-depth subject discussions with students. This deep interaction between teachers and students help to establish a positive learning environment and promote the school development.

The data show that teaching skills have a positive predictive effect on the working environment of higher vocational teachers, which reflects the significant correlation between each other. Teaching skills, as an important component of teacher's quality, are not only affected by internal factors such as teacher's professional ethics, attitudes, professional knowledge and values, but also by external factors such as school environment and campus culture (Su, et. al., 2019). A teacher's ability to organize the classroom and manage student behavior is the key to achieving positive education. A teacher with teaching skills figure out how students think about a subject and how students may acquire new knowledge. Strong teaching skills often mean more effective teaching methods and strategies that help increase student engagement and concentration, creating a more dynamic and positive learning environment. It means that the better the teacher's role perception, the better the teacher's working environment. The clearer the teacher's understanding of their roles, the more helpful it is for teachers to clarify their teaching responsibilities and the expectations of the school, to better set teaching goals, to adopt appropriate teaching methods and strategies, to establish a positive relationship between teachers and students, and to cooperate with colleagues and leaders, thus creating a more orderly and stable working environment.

The table 6 shows the relationship between support and the working environment. The calculated r-value indicates a strong direct correlation, and the resulting p-value is less than the alpha level. This means that there is a significant relationship and means that the better the support, the better the environment for teachers to work in.

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Table 6
Relationship Retween Support and Working Environment

Relationship Between Support and W	orking Environmer	nt	
Research and Teaching Conditions	r-value	p-value	Interpretation
Resource Adequacy	.860**	0.000	Highly Significant
Student Support	.789**	0.000	Highly Significant
Affiliation	.823**	0.000	Highly Significant
Professional Interest	.843**	0.000	Highly Significant
Participatory Decision Making	.850**	0.000	Highly Significant
Work Pressure	.351**	0.000	Highly Significant
Soft Environment			
Resource Adequacy	.857**	0.000	Highly Significant
Student Support	.846**	0.000	Highly Significant
Affiliation	.856**	0.000	Highly Significant
Professional Interest	.865**	0.000	Highly Significant
Participatory Decision Making	.845**	0.000	Highly Significant
Work Pressure	.377**	0.000	Highly Significant
Leadership Style			
Resource Adequacy	.880**	0.000	Highly Significant
Student Support	.813**	0.000	Highly Significant
Affiliation	.849**	0.000	Highly Significant
Professional Interest	.863**	0.000	Highly Significant
Participatory Decision Making	.869**	0.000	Highly Significant
Work Pressure	.360**	0.000	Highly Significant
Management System			
Resource Adequacy	.893**	0.000	Highly Significant
Student Support	.858**	0.000	Highly Significant
Affiliation	.864**	0.000	Highly Significant
Professional Interest	.879**	0.000	Highly Significant
Participatory Decision Making	.895**	0.000	Highly Significant
Work Pressure	.374**	0.000	Highly Significant
Career Development			
Resource Adequacy	.892**	0.000	Highly Significant
Student Support	.840**	0.000	Highly Significant
Affiliation	.875**	0.000	Highly Significant
Professional Interest	.886**	0.000	Highly Significant
Participatory Decision Making	.903**	0.000	Highly Significant
Work Pressure	.354**	0.000	Highly Significant
Organizational Identity			
Resource Adequacy	.878**	0.000	Highly Significant
Student Support	.846**	0.000	Highly Significant
Affiliation	.873**	0.000	Highly Significant
Professional Interest	.889**	0.000	Highly Significant
Participatory Decision Making	.851**	0.000	Highly Significant
Work Pressure	.394**	0.000	Highly Significant

Legend: Significant at p-value < 0.01

Table 6 describes the different dimensions of teacher support and the working environment of higher vocational teachers in China. The r-values and p-values shown in the table indicates that research in teacher support is significantly correlated with teaching conditions, soft environment, leadership style, management system, career development, organizational identity and teaching skills and all dimensions of the working environment of higher vocational teachers.

As can be seen from the data in the table 6, there is a significant correlation between research and teaching conditions and the working environment of teachers. Research and teaching conditions include modern teaching equipment, sufficient educational resources, and abundant training and learning opportunities, which are important guarantees for the smooth development of teacher's work. Toropova et al. (2021) showed a substantial relationship between teaching working conditions and teacher satisfaction. In particular, teacher's workload, teacher's cooperation and teacher's views on student discipline were the most closely related factors to teacher's job satisfaction. According to the research of Cai (2014), teaching conditions had a very significant positive correlation with the influence of job satisfaction on teachers. Good research and teaching conditions not only improve teacher's teaching effect, but also have a positive impact on teacher's job satisfaction and career development. These factors

further create a good working environment.

Soft environment has a significant predictive effect on the working environment of teachers. Soft environment includes cooperation among colleagues and support from leaders, etc. Chen(2023) believed that strengthening cooperation among colleagues, learning from each other, and building bridges between teachers and students could build a harmonious campus cultural environment. Zhang (2021) stressed the importance of improving infrastructure construction, optimizing institutional systems, and creating a development environment in which leaders attached importance, colleagues cooperate, and teachers and students learn from each other.

According to the data, there is a significant positive correlation between the leadership style and the working environment of teachers, and a large number of research results shows that the leadership style of direct supervisors is closely related to the job satisfaction of employees. School leaders can create a working environment that affect the behavioral tendency, motivation and emotion of teachers (Tan, 2015), and the leadership working style will lead to the formation of work pressure of teachers. It is suggested to adopt a leadership style conducive to promoting teacher's behavior, improve teacher's identification with leaders, and provide support for teachers to create a good working environment for teachers (Chen, 2022). Teachers who have good working relationships with their leaders enjoyed a more relaxed and supportive working environment.

There is also a significant correlation between the school management system and the working environment of teachers. The management system referred to various rules and regulations of the school, which are an important part of cultural construction and an important guarantee for the school to restrict and motivate teachers and students, standardize their daily behaviors, and maintain normal education and teaching order. A key factor affecting teacher's career choice is school management (Masoom,2021). Only by creating a working environment with harmonious relationship, relaxed environment and unity and forging ahead, teachers will work more actively and creatively, thus improving the overall work efficiency of the school (Lu, 2013).

There is also a significant positive correlation between teacher career development and working environment, indicating that the better the teacher career development is, the better the working environment is. A good working environment means leadership support, cooperation among colleagues, reasonable workload, more development opportunities, etc., which helps teachers to better realize their potential and promote their career development. This is consistent with the research of Kraft, et. al., (2014) that teachers who work in a more supportive professional environment are better able to improve their work efficiency.

Teacher organizational identity is closely related to the working environment. Gao, et. al., (2022) believed that improving teacher's perception of fairness and building a management environment of "symbiosis and common prosperity" could enhance teacher's organizational identity and enhance teacher's work involvement. Zhang, et. al., (2023) believed that building a good organizational environment and perfecting teacher incentive mechanism could enhance teacher's organizational identity and professional identity, thus improving teacher's work performance and statically optimizing teacher's team.

4. Conclusions and recommendations

Through the discussion and research of the above data, the following conclusions are drawn: Majority of the respondents have sound perception of their role as teachers, which play a positive role in the professional development of teachers. Most vocational teacher's perception of support level is consistent in six aspects: organizational identity, leadership style, soft environment, research and teaching conditions, management system and career development, indicating that teacher's support plays an important role in teacher professional development. Respondents agree on the importance of a teacher's working environment in terms of resource adequacy, student support, affiliation, professional interest, participatory decision-making, and job stress. The working environment affects the job involvement of higher vocational teachers. A good working environment plays an important role in the construction of high-quality teachers and promotes the professional development of teachers. There are significant correlations between teacher's role perception and support, between teacher's role

perception and working environment, and between teacher's support and working environment. Based on the results of the research, a professional development plan for teachers in higher vocational colleges is drawn up to improve teachers' teaching ability, enhance their career satisfaction and promote the high-quality development of education.

Schools may implement a system to support teachers' professional development, improve research and teaching conditions, encourage teachers to participate in academic activities such as training and seminars, promote exchanges and sharing among teachers, create a positive cultural atmosphere, and improve teachers' organizational identity and professional happiness. Teachers may maintain a passion for learning, participate in professional development activities, constantly deepen their subject knowledge, keep abreast of the latest teaching methods and techniques, actively accept feedback from colleagues and students, and regularly assess their teaching level, professional skills and educational philosophy. Students actively participate in classroom interaction, teaching evaluation, provide objective feedback, and understand and support teachers' professional development. The proposed teacher professional development program may be evaluated and analyzed after implementation to evaluate their effectiveness and make necessary adjustments. Further research may further expand the sample size to obtain a more comprehensive overview and add qualitative research methods such as interviews, observations, and case studies to the current descriptive quantitative methods.

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