An Empirical Study on the Influencing Factors of Professional Degree Graduate Students' Vocational Competence

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Abstract. The vocational ability of graduate students is related to the future development of the industry, and is one of the key objectives of graduate training. The article researches the professional degree graduate students and empirically studies the influencing factors of graduate students' vocational ability by means of questionnaires. The results show that course teaching, tutor guidance, professional practice and in-school success have significant influence on professional degree graduate students' vocational ability, among which tutor guidance and in-school achievement have extremely significant influence and are the key influencing factors to enhance graduate students' vocational ability, and thus put forward constructive suggestions and recommendations for professional degree graduate students' cultivation.

Keywords: Graduate Students · Career Competence · Empirical Research

1 Problem Formulation

Professional degree graduate education mainly focuses on the needs of specific occupational fields in society and cultivates high-level innovative and complex talents with strong professional ability and professionalism, who can creatively engage in practical work. The postgraduate education of professional degree has the distinctive characteristics of industry-education integration cultivation, and has the characteristics of high unity of professionalism and academicity. With the development of economy, there is an increasing demand for talents with strong vocational ability in society. Therefore, exploring the influencing factors of professional degree graduate students' vocational ability and how to cultivate the vocational ability of professional degree graduate students is a major issue in graduate education. The purpose of this study is to reveal the influencing factors and the mechanism of the role of professional degree graduate students' professional competence, and then put forward reasonable suggestions.

2 Literature Review and Research Hypothesis

Professional competence is a special competence corresponding to general competence, which is formed by the development and integration of general competence. Most of the existing researches analyze the influencing factors of professional competence

of postgraduates from the perspectives of curriculum teaching, supervisor guidance, professional practice and in-school achievements [1].

Course teaching is to cultivate graduate students' ability to apply knowledge on the basis of consolidating and deepening basic theories and professional knowledge, which can be divided into two aspects: course offering and instructor's instruction. Thus [2], hypothesis H1 is proposed: course teaching is related to professional competence of professional degree graduate students.

The participation of graduate students in the research projects of instructors can train their own research ability and cooperation spirit, which is an important way to cultivate graduate students [3]. Thus, hypothesis H2 is proposed: mentoring is related to the professional competence of professional degree graduate students.

Professional practice is an important teaching link in the cultivation process of professional degree graduate students, and it is the best path to cultivate graduate students with knowledge, ability and literacy [4]. Thus, hypothesis H3 is proposed: professional practice is related to professional ability of professional degree graduate students.

The competition plays a positive role in the application of professional knowledge, the improvement of professional skills and the enhancement of comprehensive ability of postgraduates, and the competition can well help postgraduates think about and determine the future employment direction, thus, hypothesis H4 is proposed: there is a correlation between the achievements in study and the vocational ability of postgraduates with professional degrees.

3   Research Design

3.1   Research Methodology

Based on the existing literature and combined with the postgraduate cultivation program of a university in southwest China, this study initially designed five primary dimensions of cultivation program, evaluation system, tutor guidance, professional practice and professional competence and 12 secondary dimensions to investigate the current situation of professional competence cultivation of professional master's degree students. In order to make the questionnaire dimensions more in line with the characteristics of the research subjects, the study developed an interview outline and selected six experts for interviews, collated and adopted relevant opinions, and formed a prototype framework of the current situation index system of professional competence cultivation.

3.2   Design of Research Tools

The study compiled its own "Questionnaire on the Current Situation and Influencing Factors of Professional Degree Postgraduates' Professional Competence" with 23 questions: course teaching includes 2 dimensions of course offering and teacher teaching, with 4 questions in total. Mentoring includes 3 dimensions of mentoring system, practical guidance and project support, with 4 questions. Professional practice includes 2 dimensions of on-campus practical training and off-campus practical training, with a total of 4 topics. The academic achievements include 2 dimensions of competition awards and

dissertation, with 3 topics. Vocational ability includes vocational knowledge, vocational skills, vocational potential and situational comprehensive ability, with a total of 8 questions. The questions are scored by a five-point Likert scale, with "not at all" to "fully" scored as 1 to 5.

4 Empirical Results and Analysis

4.1 Descriptive Statistics of Professional Degree Students' Vocational Ability

In this study, the professional competence of professional degree students includes professional knowledge, professional skills, professional potential and situational comprehensive competence [5]. The results show that the overall mean value of professional competence of professional degree graduate students is 3.79, the mean value of vocational knowledge is 3.66, the mean value of vocational skills is 3.75, the mean value of vocational potential is 3.90, and the mean value of situational comprehensive competence is 3.85. It can be seen that the professional competence of professional degree graduate students is in the middle to upper status, and there is still some room for improvement (Table 1).

4.2 Analysis of the Differences in the Vocational Ability of Professional Degree Students with Different Background Characteristics

Differences in professional ability of graduate students of different genders. The independent sample t-test was used to examine the differences in professional competence of graduate students of different genders. As shown in Table 2, there is no significant difference between the scores of postgraduates of different genders in the overall level and dimensions of professional competence ($p > 0.05$).

  Differences in professional competence of professional degree students in different disciplinary categories. In this study, the majors were divided into two major discipline categories: humanities and social sciences, and science and technology. The results of the t-test (see Table 3) showed that, on the whole, postgraduates in science and technology were more motivated than those in humanities and social sciences ($t = -2.698, p < 0.05$); in terms of each dimension, postgraduates in science and technology scored significantly higher than those in humanities and social sciences in terms of vocational knowledge (t

Table 1. Descriptive statistics of professional degree graduate students' vocational ability

Variables	M ± SD
Career Knowledge	3.66 ± 0.43
Career Skills	3.75 ± 0.39
Career Potential	3.90 ± 0.35
Contextual integration ability	3.85 ± 0.38
Career Competence	3.79 ± 0.34

Table 2. Analysis of the differences in vocational competence of graduate students with professional degrees by gender (M ± SD)

Variables	male	Female	t-value
Career Knowledge	3.75 ± 0.85	3.61 ± 0.73	1.423
Career Skills	3.76 ± 0.78	3.74 ± 0.66	0.222
Career Potential	3.96 ± 0.75	3.87 ± 0.56	0.975
Contextual integration ability	3.89 ± 0.79	3.83 ± 0.65	0.579
Career Competence	3.84 ± 0.74	0.857	0.857

$= -2.095$, $p < 0.05$). ($t = -2.095$, $p < 0.05$); in terms of vocational skills, vocational potential and situational comprehensive ability, there is no significant difference in the vocational ability of professional degree students in different discipline categories ($p > 0.05$).

Analysis of the difference between whether to cross-examine on the professional ability of professional degree graduate students. The independent sample t-test was used to examine the analysis of the difference between whether or not to cross-examine on the vocational ability of professional degree graduate students. As can be seen from Table 4, in the overall level of vocational ability, there is no significant difference between whether or not to cross-examine on the vocational ability of graduate students ($p > 0.05$), but in the two dimensions of vocational knowledge and vocational skills, the vocational ability of non-cross-examine graduate students is significantly higher than the vocational frontal ability of cross-examine graduate students ($t = -2.051$, $t = -2.082$, $p < 0.05$, $p < 0.05$).

Table 3. Analysis of the differences in vocational abilities of professional degree graduate students in different discipline categories (M ± SD)

Variables	Humanities and Social Sciences	Science and Engineering	t-value
Career Knowledge	3.56 ± 0.74	3.79 ± 0.79	−2.698*
Career Skills	3.70 ± 0.65	3.82 ± 0.75	−1.627
Career Potential	3.85 ± 0.56	3.96 ± 0.70	−1.561
Contextual integration ability	3.81 ± 0.70	3.91 ± 0.67	−1.383
Career Competence	3.73 ± 0.57	3.87 ± 0.66	−2.095*

Note: * denotes $p < 0.05$; ** denotes $p < 0.01$; *** denotes $p < 0.001$ (same below)

Table 4. Analysis of the difference between whether to cross-examine or not on the vocational competence of professional degree graduate students (M ± SD)

Variables	cross-examination	Non-interdisciplinary	t-value
Career Knowledge	3.55 ± 0.73	3.73 ± 0.78	-2.051^*
Career Skills	3.65 ± 0.63	3.82 ± 0.74	-2.082^*
Career Potential	3.84 ± 0.58	3.93 ± 0.65	-1.295
Contextual integration ability	3.82 ± 0.65	3.87 ± 0.71	-0.619
Career Competence	3.72 ± 0.56	3.84 ± 0.64	-1.739

4.3 Multiple Regression Analysis of Factors Influencing Professional Competence of Professional Degree Graduate Students

In order to investigate the factors influencing the professional competence of professional degree graduate students, this study conducted multiple linear regression with professional competence as the dependent variable and curriculum teaching, supervisor guidance, professional practice, and in-school achievements as the independent variables. The covariance test shows that the VIF values of the independent variables in this study are all less than 2, which indicates that there is no covariance problem among the independent variables and can be included in the multiple regression model for analysis, the following empirical model is constructed by using multiple linear regression in this paper.

CK/CS/CP/CIA $= \beta 0 + \beta 1$ course teaching $+ \beta 2$ mentor guidance $+ \beta 3$ professional practice $+ \beta 4$ results in study $+ \mu$.

In this equation, $\beta 0$ is a constant term and μ is a random perturbation term. cK is career knowledge, CS is career skills, CP is career potential, and CIA is contextual general ability. The results were analyzed using SPSS 25.0, as shown in Table 5.

As can be seen from Table 5, the F-statistics of the model setting test were 35.570, 28.111, 24.112, 30.664, and $p < 0.05$ level, and the model passed the hypothesis test, In addition, the adjusted coefficients of determination R2 are 0.032, 0.254, 0.225 and 0.271, and the corresponding Durbin-Watson values are within the range of 1.5–2.5, indicating that there is no obvious autocorrelation among the influencing factors. The regression equation is as follows:

CK $= 1.002 + 0.114$CT $+ 0.342$MG $+ 0.140$PP $+ 0.203$AA

CS $= 1.632 + 0.074$CT $+ 0.250$MG $+ 0.198$PP $+ 0.218$AA

CP $= 1.993 + 0.085$CT $+ 0.258$MG $+ 0.084$PP $+ 0.270$AA

CIA $= 1.591 + 0.093$CT $+ 0.297$MG $+ 0.140$PP $+ 0.234$AA

Curriculum instruction has a significant positive effect on vocational knowledge. According to the data results in Table 5 (t $= 2.20$, $p < 0.05$), that is, course instruction can better develop students' vocational knowledge.

Mentoring has a significant positive effect on vocational knowledge, vocational skills, vocational potential, and contextual integrative ability. In postgraduate study, tutors play

Table 5. Multiple regression results of influencing professional degree graduate students' professional competence

Indicators	CK		CS		CP		CIA	
	T	Sig.	T	Sig.	T	Sig.	T	Sig.
CT	2.200	0.029	1.369	0.172	1.545	0.123	1.760	0.079
MG	6.500	0.000	4.594	0.000	4.661	0.000	5.533	0.000
PP	2.612	0.009	3.572	0.000	1.494	0.136	2.548	0.011
AA	4.023	0.000	4.161	0.000	5.066	0.000	4.532	0.000
Constant term	4.070	0.000	7.033	0.000	9.484	0.000	7.033	0.000
R^2	0.032		0.254		0.225		0.271	
Linear relationship test	F = 35.570; sig. = 0.000		F = 28.111; sig. = 0.000		F = 24.112; sig. = 0.000		F = 30.644; sig. = 0.000	
Durbin-Watson	1.964		1.937		2.006		2.095	

CT = Course Teaching, MG = Mentor Guidance, PP = Professional Practice, AA = Academic Achievements.

a strong role, and their in-depth guidance to students can make students' vocational ability develop comprehensively.

Professional practice has a significant positive effect on vocational knowledge, vocational skills, and contextual integrative ability. In the process of professional practice, knowledge is constructed independently or cooperatively through observation, practice, operation, visit, rehearsal and inquiry, i.e. professional practice courses can promote the development of students' vocational ability.

In-school outcomes have a significant positive impact on vocational knowledge, vocational skills, vocational potential and contextual integrative ability. Various competitions are important forms for students to improve their professional skills in school, and schools can increase the publicity and improve the competition incentive system to actively motivate students to participate in such competitions.

5   Conclusions and Suggestions

The cultivation of vocational ability of professional degree graduate students is closely related to course teaching, tutor guidance, professional practice and academic achievements, and the vocational ability can be improved in the following aspects: strictly selecting the faculty team and increasing the ratio of "double teachers"; enhancing the vocational ability of students with the guidance of vocational needs; encouraging students to participate in tutor projects and mobilizing students' enthusiasm; and strengthening the construction of practice bases. Encourage students to participate in mentorship programs and mobilize students' enthusiasm; strengthen the construction of practice bases.

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