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Research on Strategies for Improving the Scientific Research Ability of Master's Students-Taking Public Management as an Example

Rongrong Wang

School of Finance and public management, Anhui University of Finance and Economics, China

Abstract

Postgraduate education is an important link for the country to cultivate high-level innovative talents, and the research ability of postgraduates has become the primary goal of improving the quality of postgraduate training in my country. Based on the data of 214 questionnaires, the study explores the influencing factors of graduate students' scientific research ability with the help of SPSS24.0 and AMOS 24.0 based on structural equation model. The study found that: learning engagement, academic quality, mentor guidance, teacher-student relationship,curriculum teaching,school support and scientific research resources all have a significant impact on the research ability of postgraduates. Based on this, put forward countermeasures and suggestions to stimulate the academic interest of postgraduates and consciously abide by academic norms; strengthen the guidance of tutors and build a harmonious teacher-student relationship; optimize the curriculum teaching system and improve teaching methods; increase school support and improve scientific research resources, with a view to improving The scientific research ability of postgraduates provides useful inspiration and reference.

Keywords

Research Ability; Public Administration Major; Influencing Factors; Structural Equation Modeling.

1. Introduction

Graduate education bears the significant mission of nurturing high-level talents and fostering innovation and creativity, serving as a crucial cornerstone for national development and societal progress.[1] The Article 5 of the "Regulations of the People's Republic of China on Academic Degrees" stipulates that applicants for a master's degree should possess the capability to engage in scientific research or independently undertake specialized technical work, and make creative contributions in the field of science or specialized technology. Moreover, the "National Medium- and Long-Term Education Reform and Development Plan (2010-2020)" explicitly emphasizes the need to "enhance the research level of graduate students" and "fully leverage the role of graduate students in scientific research," making the enhancement of graduate students' research abilities one of the goals of higher education institutions in cultivating high-level talents. The field of public administration symbolizes the direction of future political development, making the cultivation of highly qualified public administration talents even more urgent.

Research ability is an essential capability for engaging in scientific research, and graduate education can be considered as the pinnacle of talent cultivation, serving as a cornerstone of China's future innovation system. As the scale of graduate education continues to expand, the cultivation of research abilities has become increasingly pressing. Since 1996, the scale of graduate education has been on the rise, and the growth trend has been particularly rapid in

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the past five years. According to the "2020 National Education Development Statistics Report" released by the Ministry of Education in August 2021, China admitted 1.1066 million graduate students in 2020 (of which 0.9905 million were master's students), an increase of 20.74% compared to 2019, with a total of 3.1396 million graduate students in school, up 9.63% from the previous year. As the scale of graduate enrollment and education expands, the issue of graduate education quality has also attracted significant attention from academia. A survey conducted by the "China Education and Human Resources Development Report" project team revealed that nearly 60% of master's supervisors believe that the quality of graduate students is declining. Given the current challenge of "quantity over quality" in graduate education, the task of enhancing graduate students' research abilities has become a critical aspect of China's graduate education [2].

2. Literature Review

Research ability is a crucial criterion for assessing the academic level of graduate students and serves as a significant indicator of the quality of academic-oriented graduate education (Hu Junhua & Zheng Ruiqiang, 2020; Zhu Fuzhen, 2018) [3]. It represents an imperative of the era for graduate education (Many, 2021) [4], demanding research subjects to pursue innovation and accomplish research commitments (Xie Benyuan, 2021) [5]. The goal of its cultivation is to facilitate the development of research thinking and independent research capabilities among graduate students (Zhao Mengcheng, 2018) [6]. The book "Disciplinary Differences in Norwegian Graduate Education" uses Norway's graduate education as an example to highlight the differences in research abilities among disciplines (Jens-Christian Smeby, 2000) [7]. Some scholars contend that the research ability of students in science and engineering fields is generally stronger than that of students in humanities and social sciences (Jens-Christian Smeby, 2000) [7] [8].

The master's education in public administration was established in response to the requirements of socio-economic development and the professionalization trend in the public sector. Its primary objective is to cultivate high-level specialized talents in public administration who are guided by Marxist administrative theory and can adapt to the needs of national and local economic and social development (Zhao Mengcheng, 2018) [9]. In 2007, Tsinghua University conducted a large-scale survey nationwide under the commission of the State Council's Academic Degrees Committee. The results showed that, overall, mentors and graduate education administrators evaluated the innovation ability of master's students as average, with 53% of mentors rating their innovation ability as "average" or "poor" (Xu Duo, 2021) [10]. Some scholars have conducted in-depth analyses of aspects such as the quality of master's academic papers and the specific manifestations of research abilities, ultimately discovering that the research and innovation abilities of Chinese university graduate students are relatively weak, their ability to identify and solve problems is lacking, their divergent thinking and logical reasoning abilities are insufficient, and their abilities in literature search and data processing need improvement (Duan Li, 2003; Qiu Xia, Gao Gangyi, 2008) [11][12]. Additionally, apart from external low evaluations of research abilities, graduate students tend to rate their research abilities lower, with only 11.2% of them considering their research abilities as strong, while 22% view their abilities as low or unclear. In terms of publishing academic papers during their postgraduate studies, only 28% of students published papers in the first year, and only 29% managed to publish in core journals (Luo Guangbo & Xing Yan, 2011) [13].

Numerous experts and scholars in the field of higher education research have systematically studied and analyzed the comprehensive research development level of graduate students in Chinese universities. Their research conclusions are generally consistent, indicating that the

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comprehensive research abilities of graduate students in ordinary Chinese universities still need improvement, particularly in areas such as lack of innovative consciousness, limited opportunities for participation in innovative research, and few impactful innovative achievements.

Scholars both domestically and abroad have conducted in-depth research on the influencing factors of research ability, and these factors can be broadly categorized into four main types: individual student factors (Liu Bohan, Zhao Pu, Shi Zhidan, 2019) [14], mentor factors (Cheng Huadong, Cao Yuanyuan, 2019) [15], curriculum and teaching (Gao Fangyi, 2012) [16], as well as institutional management and support factors (Cao Huimin, 2021) [17]. The influencing factors of research ability can be summarized as follows:

Firstly, individual student factors. Factors such as gender, academic literacy, and field of study all have an impact on the research output of graduate students (Milburn, 2003) [18]. Empirical research findings suggest that in research-oriented universities, a student's academic engagement, as a process variable, has a more significant impact on their academic achievements compared to input factors like institutional environment and family background [19]. Therefore, the following hypotheses are proposed:

H1: Academic engagement has a significant impact on the research ability of graduate students.

H2: Academic quality has a significant impact on the research ability of graduate students.

Secondly, mentor factors. During the process of graduate student training, mentor guidance is the most direct and crucial environmental factor influencing the enhancement of research abilities (Liu Xianwei, Yuan Wenjing, 2022) [19]. A mentor's research foundation and experience greatly influence the cultivation of graduate students' research abilities, particularly in aspects such as paper composition, publication, research training, and academic competence (Xu Xiangyun, Yang Xiaoru, 2021) [20]. Furthermore, establishing a harmonious teacher-student relationship and improving graduate education quality are key topics in the study of teacher-student relationships in Chinese graduate education (Wu Yuele, Han Xia, 2020) [21]. In the field of education, the fundamental and enduring social relationship in graduate education is the mentor-student relationship. This relationship goes beyond "teaching" and "learning" as it involves collaboration, where the mentor's primary role is to guide and assist students, fostering their habits of independent thinking, judgment, and innovative learning (Lanser, E.G, 2000) [22]. Therefore, the following hypotheses are put forward:

H3: Mentor guidance significantly influences the research ability of graduate students.

H4: The teacher-student relationship significantly influences the research ability of graduate students.

Thirdly, curriculum and teaching. One of the key reasons why the quality of graduate education courses has not been effectively improved is that the design of these courses does not encourage the formation of personalized knowledge structures among students. The limited coverage of course content and the reliance on traditional teaching methods are hindrances to the development of research abilities (Wang Xiuzhen, Fu Detuan, 2005) [23]. At present, lecture-style teaching remains the dominant mode of instruction in graduate classrooms, often focusing on imparting ready-made theories while neglecting open discussions. This lack of emphasis on stimulating independent and critical thinking hampers the cultivation of students' innovative abilities (Lanser, E.G, 2000) [24]. Therefore, the following hypothesis is proposed:

H5: Curriculum and teaching significantly influence the research ability of graduate students.

Fourthly, institutional support. School-related factors encompass research resources such as library materials, research facilities, course offerings, lectures, and research scholarships. Among these, scholars' research resources and research funding directly impact the quality and effectiveness of graduate research (Cao Huimin, 2021) [25]. Single Yeliang (2017) found

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through empirical research that school factors have a positive influence on research ability (Single Yeliang, 2017) [26]. Therefore, the following hypotheses are suggested:

H6: Institutional support significantly influences the research ability of graduate students.

H7: Research resources significantly influence the research ability of graduate students.

3. Research Design

3.1. Data Source

The research data were primarily collected through the platform "Wenjuanxing" (Questionnaire Star). The survey targeted master's students from Xiamen University, South China University of Technology, Southeast University, Shanghai University, China University of Mining and Technology, Guangxi University, and Anhui University of Finance and Economics. A total of 230 questionnaires were distributed, and after excluding invalid responses, 214 valid questionnaires were obtained, resulting in an effective response rate of 93%. Among the valid samples of master's students surveyed in this study, there were 90 male respondents, accounting for 42.06%, and 124 female respondents, accounting for 57.94%. In terms of age distribution, 140 respondents were below 25 years old, 68 were between 25 and 30 years old, and 6 were above 30 years old, representing proportions of 65.42%, 31.78%, and 2.8% respectively.

3.2. Questionnaire Design

The questionnaire was divided into three sections. The first section collected basic personal information of the master's students, including gender, age, marital status, family background, and school type. The second section focused on the current state of the master's students' research abilities. The third section included a scale to assess the influencing factors of the master's students' research abilities.

3.3. Variable Selection and Reliability and Validity Testing

The independent variables in the study included academic engagement, academic quality, mentor guidance, teacher-student relationship, curriculum and teaching, institutional support, and research resources. The core dependent variable was the research ability of the master's students. The research referred to the scale developed by Tao Jingguo [27]. Reliability analysis was conducted using SPSS 24.0 to test the validity of the scale. Cronbach's Alpha was employed to examine the reliability of the variables. The results indicated that the overall Cronbach's Alpha value of the questionnaire was 0.838, exceeding 0.6, which demonstrates strong consistency and stability of the scale, and good latent variable reliability. Additionally, the Cronbach's Alpha values for each primary indicator were 0.799, 0.830, 0.772, 0.854, 0.892, 0.763, and 0.792, all exceeding 0.6, indicating a high level of reliability for the questionnaire.

4. Empirical Results

4.1. Exploratory Factor Analysis

An analysis was conducted to assess the validity of the research survey questionnaire. The results revealed that the overall Kaiser-Meyer-Olkin (KMO) value of the questionnaire was 0.941, exceeding 0.6. The Bartlett's Test of Sphericity yielded an approximate chi-square value of 2980.702, and the p-value for the sphericity test of variables was less than 0.01, indicating suitability for exploratory factor analysis.

Based on the rotated factor loading matrix, items with factor loadings below 0.5 were either modified or removed. This process yielded 7 factors, with item associations corresponding to the influencing factors of research ability. After applying weighted processing to the 7 factors,

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the explained variance rates were as follows: 0.174, 0.119, 0.138, 0.132, 0.199, 0.118, and 0.122. The cumulative contribution rate of variance was 76.241%, which exceeds 60%, indicating a satisfactory outcome for the exploratory analysis.

The post-rotation matrix in the exploratory factor analysis tabulates the summarized relationships between the factor loading coefficients and item factors for each factor, as shown in Table 1. All factor loading coefficients in the table are greater than 0.5, indicating a relatively close relationship between the items and factors. Based on relevant literature, the factors were labeled as academic engagement, academic quality, mentor guidance, teacher-student relationship, curriculum and teaching, institutional support, and research resources.

By incorporating the weighted coefficients of the 7 factors (weighted processing's explained variance rates), the dependent variable Y in the model represents graduate students' research ability. After obtaining the weighted score coefficients for each factor, a composite score expression can be derived as follows:

Y (Composite Score) = 17.4% × Factor 1 + 11.9% × Factor 2 + 13.8% × Factor 3 + 13.2% × Factor 4 + 19.9% × Factor 5 + 11.8% × Factor 6 + 12.2% × Factor 7

Table 1. Exploratory factor analysis of rotated component matrices

Question items	component						
	1	2	3	4	5	6	7
1, Regularly read high-level domestic and international journals	0.194	0.701	0.196	0.265	0.119	0.124	0.153
2, Has a strong interest in learning the major they are studying	0.160	0.801	0.117	0.087	0.239	0.065	0.108
3, Will strive to solve difficulties encountered in scientific research	0.193	0.729	0.279	0.039	0.052	0.241	0.146
4, Being able to consciously comply with academic standards during the writing process of the paper	0.171	0.431	0.234	0.140	0.119	0.693	0.179
5, Familiar with the format requirements of various academic papers	0.141	0.575	-0.038	0.323	0.198	0.520	0.129
6, I am well aware of the consequences of violating academic ethics	0.260	0.115	0.174	0.138	0.162	0.791	0.188
7, Every semester, the supervisor will organize at least one group meeting	0.112	0.237	0.750	0.139	0.107	0.240	0.206
8, Mentors often share cutting-edge information on domestic and international disciplines	0.261	0.208	0.750	0.100	0.167	0.098	0.222
9, Participated in mentor projects frequently	0.330	0.088	0.547	0.420	0.297	-0.010	-0.053
10, My supervisor values my academic ideas very much	0.276	0.215	0.444	0.575	0.093	0.265	0.219
11, My mentor is very concerned about my personal life	0.220	0.152	0.064	0.808	0.135	0.152	0.240
12, Teachers and students can collaborate to write and publish high-quality papers	0.316	0.249	0.336	0.633	0.249	0.150	0.117
13, I am able to receive sufficient guidance in teaching activities	0.627	0.344	0.244	0.268	0.178	0.118	0.181
14, The course design of this major is very reasonable	0.786	0.230	0.234	0.199	0.104	0.078	0.062
15, The talent cultivation mode of the major studied is relatively complete	0.784	0.132	0.152	0.152	0.258	0.213	0.130
16, Subject teachers can recommend professional books and elective courses	0.661	0.082	0.097	0.172	0.178	0.319	0.356
17, Subject teachers can recommend professional books and elective courses	0.530	0.196	0.151	0.246	0.201	0.098	0.483
18, The school requires at least one paper to be published	0.200	0.191	0.182	0.236	0.076	0.261	0.734
19, Schools can conduct various academic competitions and lectures	0.253	0.249	0.218	0.08	0.388	0.169	0.637
20, The school can provide sufficient research funding	0.118	0.099	0.232	0.227	0.599	0.043	0.466
21, The school has a strong research atmosphere	0.241	0.216	0.207	0.243	0.724	0.242	0.085
22, The school library can provide the latest cutting-edge hotspots	0.426	0.298	0.091	0.047	0.669	0.149	0.189

4.2. Correlation Analysis

The Pearson correlation test in SPSS 24.0 was used to examine the correlation between latent variables, and there was a significant correlation between each latent variable (P=0.000<0.05).

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According to the table below, the Pearson correlation coefficients are all greater than 0, and there is a positive correlation between each variable (Pearson correlation coefficient>0.6, there is a strong correlation; Pearson correlation coefficient>0.4, there is a strong correlation; Pearson correlation coefficient<0.4, there is a weak correlation). The analysis results show that in the correlation analysis of seven independent variables, there is a significant positive correlation between research ability and academic investment, academic quality, mentor guidance, teacher-student relationship, curriculum teaching, school support, and research resources.

Table 2. Correlation analysis of latent variables

	Scientific research ability	Academic investment	Academic quality	Mentor guidance	teacher-student relationship	Course teaching	School support	scientific research resources
Scientific research ability	1							
Academic investment	0.688**	1						
Academic quality	0.753**	0.675**	1					
Mentor guidance	0.783**	0.563**	0.517**	1				
teacher-student relationship	0.813**	0.566**	0.614**	0.679**	1			
Course teaching	0.863**	0.583**	0.619**	0.637**	0.702**	1		
School support	0.768**	0.538**	0.608**	0.559**	0.599**	0.653**	1	
scientific research resources	0.910**	0.563**	0.578**	0.603**	0.623**	0.698**	0.662**	1

4.3. Confirmatory Factor Analysis

The study conducted a model fit test for the overall model using Amos 24.0. The specific results are presented in Table 3. The fit indices are as follows: the Chi-square to degrees of freedom ratio is 1.855, which is less than 3; the values of GFI (Goodness of Fit Index) and AGFI (Adjusted Goodness of Fit Index) are 0.951 and 0.935 respectively, both exceeding the ideal level of 0.9; the values of RMR (Root Mean Square Residual) and RMSEA (Root Mean Square Error of Approximation) are 0.021 and 0.063 respectively, both meeting the fit criteria. The incremental fit indices are as follows: IFI (Incremental Fit Index), TLI (Tucker-Lewis Index), and CFI (Comparative Fit Index) are 0.945, 0.931, and 0.944 respectively (all greater than 0.9), indicating an ideal level of fit.

Table 3. Model fitness test

	X2/d	RMSEA	IFI	TLI	CFI
Measured value	1.855	0.063	0.945	0.931	0.944
Adaptation value	<3	<0.08	≥0.9	≥0.9	≥0.9

4.4. Regression Analysis

The study employed multiple linear regression analysis to investigate the influence of the seven factors on research ability. The specific analysis results are as follows: As indicated in Table 4, the adjusted R-squared value of the model is 0.997, indicating that academic engagement, academic quality, mentor guidance, teacher-student relationship, curriculum and teaching, institutional support, and research resources collectively explain 99.7% of the variance in

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research ability. In other words, 99.7% of the variance in research ability within the sample can be attributed to these seven factors, highlighting a favorable model fit.

Simultaneously, the Durbin-Watson statistic is 1.919, close to 2, indicating the absence of autocorrelation. Moreover, the model's p-value is 0.000, less than 0.01. The model has passed the F-test (ANOVA test), suggesting that all seven factors indeed have a significant impact on research ability. The results of the multiple linear regression analysis reveal that:

Table 4. Model Summaryb

Model	R	R^2	adjust R^2	Error in standard estimation	Durbin-Watson	Sig.
1	0.998[a]	0.997	0.997	0.02218	1.919	0.000[b]

Table 5. Regression analysis coefficienta

Model		Non standardized coefficient		standard coefficient	t	Sig.	B of 95.0%		Collinearity statistic	
		B	standard error	Trial version			lower limit	upper limit	tolerance	VIF
1	(constant)	-1.927	0.014		-133.29	0	-1.955	-1.898		
	Academic investment	0.003	0.003	0.007	1.269	0.206	-0.002	0.008	0.448	2.232
	Academic quality	0.068	0.003	0.152	24.890	0	0.063	0.073	0.415	2.410
	Mentor guidance	0.070	0.002	0.171	28.978	0	0.066	0.075	0.446	2.243
	teacher-student relationship	0.055	0.003	0.142	22.137	0	0.050	0.060	0.373	2.678
	Course teaching	0.096	0.003	0.207	31.193	0	0.090	0.102	0.350	2.856
	School support	0.027	0.002	0.068	11.456	0	0.023	0.032	0.444	2.250
	scientific research resources	0.198	0.003	0.440	70.858	0	0.193	0.204	0.401	2.496
	Academic investment	0.004	0.002	0.009	1.9070	0.058	0	0.008	0.757	1.320

a. dependent variable: Scientific research ability

4.5. Differential Analysis

This study conducted further analysis on the differences in research ability based on gender. According to the results of the independent samples t-test shown in Table 6-1, the Sig (P-value) is 0.532, which is greater than 0.05. Therefore, the final t-value and P-value of the independent samples t-test are considered in line with the t-value and P-value corresponding to the assumption of equal variances. Specifically, the t-value for research ability is 1.965, and the P-value is 0.051, indicating a significant difference in research ability among students of different genders. As presented in Table 6-2, the mean research ability score for males is 0.0605, which is higher than the mean for females. Consequently, the conclusion is drawn that males exhibit higher research ability compared to females.

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Table 6-1. Independent Sample Testing of Gender Differences in Scientific Research Ability

		Levene of Variance Equation		T of Mean equation						
		F	Sig.	t	df	Sig.	Mean value Difference	standard error value	95% of Difference	
									lower limit	upper limit
Scientific research ability	Assuming equal variance	0.392	0.532	1.965	212	0.051	0.10447	0.05315	-0.00031	0.20925
	Assuming unequal variances			1.946	184.558	0.053	0.10447	0.05370	-0.00146	0.21041

Table 6-2. Gender difference group statistics

	sex	N	mean value	standard deviation	Standard error of mean
Scientific research ability	male	90	0.0605	0.39789	0.04194
	female	124	-0.0439	0.37335	0.03353

5. Research Conclusions and Recommendations

5.1. Research Conclusion

On the basis of existing theoretical literature and questionnaire surveys, this article conducts principal component analysis using SPSS24.0 software to explore seven factors that affect research ability, namely academic investment, academic quality, mentor guidance, teacher-student relationship, school support, and research resources. Subsequently, Amos24.0 software was used to conduct confirmatory analysis on the extracted factors. Empirical research concluded that: firstly, students' academic investment and academic quality have a significant positive impact on the research ability of master's students. The higher the level of academic investment and academic quality, the stronger the research ability of master's students. According to the survey results, only 5.61% of students devote more than 8 hours of time to scientific research every day. Only 28.5% of the total choose the option "fully compliant" in the question "frequently reading high-level domestic and international journals". It can be seen that the current low level of graduate research ability is closely related to a lack of learning interest and insufficient academic investment time; Secondly, mentor guidance and teacher-student relationship have a significant positive impact on the research ability of master's degree students; Thirdly, curriculum teaching has a significant positive impact on the research ability of master's students; Fourthly, school support has a significant positive impact on the research ability of master's students; Fifth, the research environment has a significant positive impact on the research ability of master's students.

5.2. Recommendations for Enhancing Research Ability of Master's Students

5.2.1. Ignite Academic Interest and Adhere to Academic Norms

Higher education master's students should cultivate academic interests and increase their academic engagement. The survey data reveals that only 23.36% of students are motivated by a "passion for research," and merely 14.49% have a strong interest in their field of study. Academic interest is a key foundation for enhancing research ability. Only by fostering a genuine curiosity for their field can students sustain the dedication required for rigorous research, problem-solving, and scholarly pursuits. Furthermore, students should consciously

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adhere to academic norms. The survey indicates that the average scores for statements like "adhering to academic norms during paper writing," "familiarity with various academic paper formatting requirements," and "knowledge of consequences for violating academic ethics" are 3.9, 3.67, and 4.14, respectively. This suggests that most students are aware of and committed to upholding academic ethics. When writing academic papers, master's students should approach scholarly activities with integrity, strictly observe academic ethical standards, and avoid plagiarism while integrating academic pursuits with ethical behavior.

5.2.2. Strengthen Mentor Guidance and Foster Harmonious Teacher-student Relationships

The study underscores the significant positive impact of mentor guidance and teacher-student relationships on research ability. Research by American scholar Benita J. Barnes on the characteristics of successful mentoring relationships similarly supports this conclusion. Successful mentors establish a partnership with their students and demonstrate a caring ethic towards their well-being. Therefore, mentors should focus on enhancing their interaction with students in both general coursework and gradually extending into research areas. Mentors should strengthen their role in nurturing research skills, encourage student involvement in research projects, and promote academic exchanges. Additionally, mentors should prioritize emotional interactions with their students. An essential approach is adopting a "student-centered" philosophy, where student growth becomes the mentor's central concern. This involves tailoring teaching and guidance to individual student personalities, addressing academic needs while also attending to their psychological well-being. By fostering a positive and harmonious mentor-student relationship, mentors can create an environment conducive to growth. As aspiring researchers, students should take the initiative to communicate actively with their mentors, increase interaction frequency, and abandon a passive "wait, rely, demand" mindset.

5.2.3. Optimizing Curriculum Teaching System, Improving Teaching Methods

The optimization of curriculum teaching should prioritize the cultivation of research and innovation capabilities in graduate students. Innovative curriculum reforms should be guided by innovative educational concepts, shifting from a focus on textbooks to a focus on building competencies, and effectively managing the relationship between knowledge and abilities. Firstly, greater emphasis should be placed on graduate-level curriculum teaching. Graduate curriculum teaching is a vital pathway to fostering research capabilities among students. Currently, the phenomenon of universities prioritizing research over teaching is widespread, leading to the marginalization of graduate curriculum teaching. Therefore, universities should strengthen the concept of graduate education that balances teaching and research, and pay closer attention to graduate curriculum teaching. Secondly, teaching methods should be improved, shifting from traditional lecture-based approaches to inquiry-based methods. Inquiry-based teaching involves organizing and implementing teaching through posing questions. Students actively engage in inquiry, experience problem-solving, and transition from the unknown to the known or from unfamiliarity to mastery. This method is beneficial for igniting and developing students' inquiry-based learning abilities. Inquiry-based teaching is a distinctive feature of graduate education, involving organizing teaching processes through approaches similar to scientific research, guiding students to engage in active learning, and strongly fostering research and innovation capabilities. Lastly, when devising teaching plans, mentors and teaching teams should consider interdisciplinary and cutting-edge elements, drawing from research methodology training in graduate education and increasing the proportion of courses focused on research methods within the curriculum system.

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5.2.4. Enhancing Institutional Support for Graduate Students, Improving Research Resources

Further enhancement of institutional support for graduate students is needed to boost research capabilities. Firstly, increased investment in research funding for graduate students is crucial. Boosting financial allocations for cultivation, planning graduate scholarships, assistantship grants, and aligning governmental funding for graduate education, research project sponsorship, and mentor-led research projects forms a collaborative research funding policy system. Continuous efforts should be made to enhance financial support for graduate students, alleviating concerns and enabling them to dedicate themselves to research activities. Secondly, fostering a robust academic atmosphere and conducting innovative research activities is essential. Organizing research activities, academic forums, subject-based competitions, and encouraging students to submit to academic journals will motivate students to engage in academic training actively. Rewards should be given to students who achieve high-level research results, stimulating their enthusiasm and initiative for academic participation. Lastly, academic resources within the institution are fundamental for effective learning among master's students. These resources encompass more than just library materials and extend to database access and teaching equipment. As such, institutions need to ensure a breadth and depth of academic resources, providing a wide range of support for the effective learning of master's students.

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