

Investigation on the Cultivation of Postgraduates' Innovative Ability by Academic Lectures

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Abstract

Purpose: Scientific research innovation ability is the core of postgraduates' scientific research ability, and academic lectures in colleges and universities are an important approach to cultivating postgraduates' academic innovation awareness and ability. In this paper, it aims to understand the impact of academic lectures on the cultivation of postgraduates' innovative ability from their perspective, and to provide important theoretical guidance and reference for enriching the cultivation methods of postgraduates' innovative ability. **Method:** The postgraduates of the Youjiang Medical University For Nationalities were taken as the research objects in this paper. This survey includes the specific impact and difference of academic lectures on postgraduates' scientific research ability, as well as the motivation, enthusiasm and initiative of postgraduates attending academic lectures. **Result:** It is found that the academic lectures have a great impact on the academic spirit guidance, and play a certain role in promoting the cultivation of postgraduates' abilities in various aspects. However, now some postgraduates have utilitarian motivations without positivity and have the incorrect attitude without subjective initiative for attending academic lectures, which affects the cultivation of their innovative ability in lectures. **Conclusion:** Colleges and universities should focus on developing postgraduates' scientific research awareness and thinking and guide them to attend academic lectures, so that they can actively and willingly participate in academic lectures with conscious cultivation and improvement of their innovative ability. Postgraduates should have the correct attitude and pay attention to the educational importance of academic lectures.

Keywords

Academic Lecture, Postgraduate Education, Innovation, Postgraduate

1. Introduction

Nowadays, building an independent innovation country and cultivating innovative talents have become the needs of the times. Cultivating high-level postgraduates with innovative spirit and practical ability is an important step in building an innovative country and an important part of realizing the Chinese dream. The cultivation of innovative spirit and ability depends on the environment of innovative education, and academic lectures, as an excellent carrier of the academic environment, can create a good academic atmosphere and contribute to the academic development of postgraduates (Wei, Wang, & Yang, 2006; Xu, 2017). In particular, it can play a significant role in cultivating their scientific research methods and abilities, academic ideas as well as innovative abilities. Academic lectures arose in medieval universities, as the carrier of human civilization and academic idea dissemination, standing in the world as “spiritual castles”. With the development of modern universities, the culture inherited by academic lectures is becoming more diversified, and the academic ideas are becoming increasingly abundant (Tian, 2019). Now academic lectures have become an important way to improve postgraduates’ scientific and technological innovation capability and cultivate top-notch technical talents in domestic colleges and universities, playing an irreplaceable role in cultivating the innovative awareness and abilities of postgraduates (Kong, Liu, & Chen, 2021). It can provide postgraduates with academic resources outside the classroom, cultivate their critical thinking, and also broaden their scientific horizons and collaborative innovation capacity as well. It is helpful to expand the knowledge structure of postgraduates, stimulate their enthusiasm for learning, thus promoting the cultivation of their innovative ability (Chen, Wang, & Wang, 2020).

Taking Youjiang Medical University for Nationalities as an example, this research investigates the evaluation of academic lectures by postgraduates in the university, and explores the impact of academic lectures held by the university on the cultivation of postgraduates’ scientific research innovation ability, providing reference for colleges and universities to improve postgraduates’ innovative ability through academic lectures.

2. Research Objects and Methods

2.1. Research Objects

Taking the postgraduates in the Graduate School of Youjiang Medical University For Nationalities as the research objects, 35 students were sampled and 32 valid questionnaires were collected, with an effective rate of 91.43%. Among them, 18 boys (56.25%) and 14 girls (43.75%) were surveyed. In terms of grade distribution, the first grade of graduate students accounts for 34.38%, the second grade

accounts for 43.75%, and the third grade accounts for 21.88%.

2.2. Research Contents

The content of this questionnaire includes the following aspects: The first aspect was the impact of academic lectures on the academic training of postgraduates. We investigated in detail the impact of academic lectures on postgraduates' academic criticism spirit, academic freedom spirit, academic research spirit, academic innovation spirit and academic progress spirit. The second aspect was the specific impact of academic lectures on the cultivation of postgraduates' abilities, which includes scientific research thinking ability, project design ability, innovation ability, knowledge mastery ability, critical thinking ability, and self-learning ability. The third aspect was the attitude of postgraduates towards academic lectures, including the motivation, enthusiasm, and seriousness of participating in academic lectures. There was also a further analysis of whether the attitude of postgraduates to participate in academic lectures has an impact on the cultivation of postgraduates' innovative ability.

2.3. Research Methods and Statistical Methods

There were 24 questions in the questionnaire. The paper version of the unified self-made questionnaires was used for anonymous sampling survey. If the respondents had any questions that they didn't understand, we would explain them. The answers to the questions in the questionnaire were given by the postgraduates. The SPSS.21 statistical software was used for data processing. The enumeration data were described by frequency, and one-way analysis of variance and rank sum test was used for comparison between groups. $P < 0.05$ is of statistical significance.

3. Analysis of Survey Results

3.1. Impact Analysis of Academic Lectures on Postgraduate Training

In order to understand the impact and degree of academic lectures on the academic development of postgraduate scientific research, the survey found that 46.88% of postgraduates believe that academic lectures have deep impact on their academic development, and 34.38% believe that they have a great impact. The higher the scores of postgraduates, the greater the impact of academic lectures, "deep impact = 5", "great impact = 4", "general impact = 3", "little impact = 2" and "no impact = 1", with a statistical score of 4.16. To further investigate the impact of academic lectures on postgraduates in specific aspects, see **Table 1** for details. First, the average score of the overall impact on postgraduates' academic spirit guidance is 3.11. Specifically, the academic criticism is 3.06 points, academic freedom 2.28, academic research 3.09, academic innovation 3.63 and academic progress 3.47. Among them, academic freedom has the least impact on postgraduates from academic lectures. The overall average score of the impact of

Table 1. Impact degree score of academic lectures on postgraduate academic training.

Training content	Impact degree					Score
	Major	Great	General	Minor	No	
Overall academic development	15 (46.88%)	11 (34.38%)	3 (9.38%)	2 (6.25%)	1 (3.13%)	4.16
Academic criticism	5 (15.63%)	9 (28.13%)	5 (15.63%)	9 (28.13%)	4 (12.50%)	3.06
Academic freedom	3 (9.38%)	3 (9.38%)	6 (18.75%)	8 (25.00%)	12 (37.50%)	2.28
Academic research	6 (18.75%)	6 (18.75%)	7 (21.88%)	11 (34.38%)	2 (6.25%)	3.09
Academic innovation	9 (28.13%)	8 (25.00%)	11 (34.38%)	2 (6.25%)	2 (6.25%)	3.63
Academic progress	10 (31.25%)	7 (21.88%)	6 (18.75%)	6 (18.75%)	3 (9.38%)	3.47

academic lectures on postgraduate ability training is 3.60, specifically, 4.06 for scientific research thinking ability, 3.72 for project design ability, 3.84 for innovative ability, 3.31 for ability in acquisition of knowledge, 3.84 for critical thinking ability and 2.84 for self-learning ability, as shown in **Table 2** for details.

3.2. Attitude towards Attending Academic Lectures

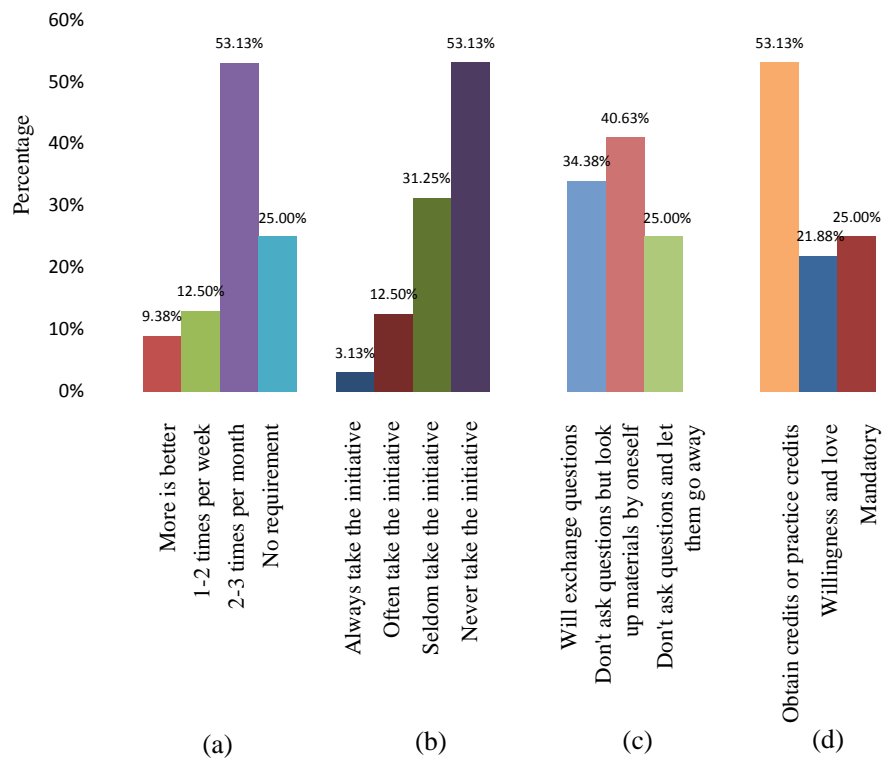
In order to know more about postgraduates' learning needs for academic lectures, this research investigates the frequency of lectures organized by the university to meet their own academic learning development needs. 53.13% of them hope to attend 2-3 times per month, and even 9.38% of them hope to participate in as many lectures as possible without affecting their own learning tasks (**Figure 1(a)**). When asked whether they would take the initiative to learn about the speaker and content before attending the lecture, 53.13% of them never took the initiative to learn about (**Figure 1(b)**). When asked how to deal with doubts in academic lectures, 34.38% of them would ask questions in the exchanges or communicate privately to solve puzzles, while 40.63% of them chose not to ask questions but look up materials by oneself, and 25.00% chose not to ask questions instead of letting them go away (**Figure 1(c)**). In addition, the motivation of postgraduates to attend academic lectures was also investigated. 53.13% of them responded that the main reason for their participation was to obtain credits, performance or practice credits, 25.00% responded that they were mandatory, and only 21.88% responded that they attended out of willingness and love (**Figure 1(d)**). When asked if they would record during the lecture, only 34.38% of them did. In addition, we also investigated whether they would carry out timely summarization or continue to understand the relevant knowledge after the lecture, and only 31.25% would continue to focus on.

3.3. Impact Analysis of Attitude on the Cultivation of Postgraduates' Innovation in Academic Lectures

It is found that the reasons why postgraduates participate in academic lectures have significant differences in the impact of academic lectures on cultivating

Table 2. Impact degree of academic lectures on postgraduate ability training.

Content	Impact degree					Score
	Major	Great	General	Minor	No	
Scientific research thinking ability	16 (50.00%)	7 (21.88%)	5 (15.63%)	3 (9.38%)	1 (3.13%)	4.06
Project design ability	10 (31.25%)	9 (28.13%)	9 (28.13%)	2 (6.25%)	2 (6.25%)	3.72
Innovation	12 (37.50%)	10 (31.25%)	5 (15.63%)	3 (9.38%)	2 (6.25%)	3.84
Acquisition of knowledge	8 (25.00%)	7 (21.88%)	8 (25.00%)	5 (15.63%)	4 (12.50%)	3.31
Critical thinking	11 (34.38%)	9 (28.13%)	8 (25.00%)	4 (12.50%)	0 (0.00%)	3.84
Self-learning	5 (15.63%)	5 (15.63%)	8 (25.00%)	8 (25.00%)	6 (18.75%)	2.84
Overall ability impact			-			3.60

**Figure 1.** Survey on the attitude of attending academic lectures.

postgraduates' innovation ($F = 8.331$, $P = 0.001$), as shown in **Table 3**. Postgraduates who attend academic lectures out of interest and love will have a higher impact on cultivating their innovation after listening to lectures than those who are forced to attend lectures. This paper investigates whether postgraduates taking notes in the process of attending academic lectures will affect the cultivation of their innovation. The results show that postgraduates who take notes believe that academic lectures will have a greater impact on the cultivation of their innovation ($P = 0.001$), as shown in **Table 4**. In addition, it is also found that the attitude of postgraduates to deal with doubts in the process of academic lectures will significantly affect the cultivation of their innovation, as shown in **Table 5**.

Table 3. Variance analysis of the impact degree of the reasons for attending academic lectures on the cultivation of postgraduates' innovation.

Reasons	N	F	P	PostHoc
(1) Interest and love	7			
(2) Obtain credits or practice credits	17	8.331	0.001	(1) > (3)
(3) Mandatory	8			

Table 4. Variance analysis of the impact degree of taking notes in academic lectures on the cultivation of postgraduates' innovation.

Taking notes or not	N	H	P
(1) Yes	11	38.500	0.001
(2) No	21		

Table 5. Variance analysis of the impact degree of treatment measures of doubts in academic lectures on the cultivation of postgraduates' innovation.

Treatment measure	N	F	P	PostHoc
(1) Ask questions in the exchanges	8			
(2) Don't ask questions but look up materials by oneself	13	17.697	<0.001	(2) > (1) (3) > (1)
(3) Don't ask questions and let them go away	11			

Among them, postgraduates who would like to ask questions in the exchanges or look up materials by themselves to solve doubts when they encounter problems in academic lectures, have a significantly higher impact on their innovation in academic lectures than postgraduates who do not ask questions or solve doubts by themselves.

4. Discussion

The cultivation of postgraduates' innovation includes many aspects, such as their scientific thinking, innovative methods and practical ability, and academic lectures now are an effective educational method for cultivating postgraduates' innovation. However, it is a long and arduous process to cultivate their innovation in the form of academic lectures, which requires constantly summing up experience, finding deficiencies and improving themselves.

4.1. Impact of Academic Lectures on Postgraduate Education

The survey shows that, academic lectures in colleges and universities have a deep impact on the overall academic development of postgraduates, and also have a great impact on their academic spirit guidance. Specifically, academic lectures have a great impact on academic innovation and academic progress by reasons of creating a strong academic atmosphere, improving postgraduates' scientific research enthusiasm, inspiring the innovation of their thinking and encouraging

them for further exploration. However, academic lectures have little impact on postgraduates' academic freedom mainly because of their weak scientific research foundation and limited thinking. And most of them can only choose their supervisor's research direction as their graduation topics, meanwhile, current lectures provide few opportunities and time for free exchange. Lectures can also promote the cultivation of postgraduates' abilities in various aspects, specifically, scientific research thinking, project design, innovation and critical thinking are greatly affected by academic lectures, but self-learning is less affected because it can be easily affected by subjective factors and needs long-term habitual exercise to improve.

4.2. Postgraduates' Motivation and Attitude to Attend Academic Lectures

Postgraduates have requirements to some extent for the frequency of academic lectures held in the universities. However, it is found that postgraduates lack initiative in attending lectures. More than half of postgraduates never take the initiative to know about who and what will address in lectures in advance. They don't have a proper attitude when they attend academic lectures, most of them don't have the habit of taking notes, and some of them will neither exchange doubts nor seek answers independently when encountering doubts and turn a deaf ear. This attitude will make the postgraduates less engaged and difficult to broaden their thinking, and decline their learning effect. Attending lectures may have some impact on postgraduates, but the effect is short-lived. Attending lectures may inspire thinking at that time, but it is difficult to digest the explicit knowledge into the personal knowledge system if postgraduates do not take notes for useful information, especially they do not explore in depth to improve themselves and promote their own projects after lectures, which is not conducive to the academic development of postgraduates. In addition, the motivation of postgraduates to participate in academic lectures is poor and impure, some of them for utilitarian purposes to obtain credits and practice credits, and some are mandatory to attend. Insufficient positive motivation not only affects the effect of listening to lectures, but also wastes lecture resources.

By analyzing the impact of postgraduates' motivation to attend lectures on the cultivation of their innovation, the results show that postgraduates who attend academic lectures out of interest and love gain more than those who are forced to attend, and they believe that lectures can promote the cultivation of their innovation. For postgraduates who take notes and actively solve their doubts during the lecture, academic lectures are more effective in cultivating their innovation. It shows that the impact degree of academic lectures on the cultivation of postgraduates' innovation depends not only on the external driving factors, but also on their internal driving forces. Postgraduates' motivation, enthusiasm and attitude will directly affect the effect of receiving and digesting knowledge in lectures.

5. Suggestions

5.1. Attach Importance to the Functions of Academic Lectures

Some postgraduates don't attach importance to academic lectures, which makes communication and transmission difficult. The communication and transmission together with the collision of thinking are precisely the important ways to transform, share and update implicit knowledge. Therefore, in the postgraduate education, it is necessary for us to pay full attention to the educational function of academic lectures, enrich and improve academic lectures, carry out academic exchange activities regularly, invite experts to give academic lectures or support students to attend academic conferences (Sun, 2019), and create a scientific research atmosphere, stimulating their critical thinking and improving their innovative awareness and ability, only in this way can they produce more valuable scientific research results.

5.2. Realize the Freedom to Attend Lectures

In essence, colleges and universities should promote the quality of academic lectures, improve their management system, enrich promotion channels and forms, attract postgraduates' attention, and positively guide them to take active part in. Students should not be forced by attendance system to participate in (Heng, Feng, & Wang, 2018). Innovative education for postgraduates should recognize the important role of postgraduates' subjective initiative in scientific research, respect their individual will and realize the academic freedom of attending lectures.

5.3. Proper Attitude for Attending Lectures

In order to ensure the cultivation quality of their innovation, postgraduates should always keep thirsty for knowledge and take every lecture actively and seriously, which can improve the quality and effect of attending lectures. We should strengthen the subject consciousness of postgraduates, so that they can avoid rigid thinking and passive knowledge receiving when attending lectures. Postgraduates should take the initiative to think and realize two-way communication. Innovation should be away from blind obedience. Postgraduates must learn to question and cannot blindly echo the views of experts and scholars. When listening to academic lectures, postgraduates should dare to ask questions and solve doubts in time, dare to question and think, and dare to ask questions in front of well-known experts and scholars, which can broaden their thinking and enrich their knowledge structure invisibly (Ren, 2018).

6. Conclusion

In summary, our research indicated that academic lectures have a significant impact on academic training of postgraduates and will motivate them to pursue scientific research. Specifically, academic lectures can guide and improve postgraduates' scientific research thinking ability, project design ability, innovation

ability and critical thinking ability to varying degrees. In addition, the attitude of postgraduates towards attending academic lectures greatly affects the effect of academic lectures on cultivating their innovative ability. Therefore, both universities and postgraduates need to pay attention to the educational function of academic lectures. On the one hand, colleges and universities should create a good academic atmosphere and positively guide and encourage students to participate in academic lectures. Colleges and universities can also develop new lecture platforms to stimulate the enthusiasm of postgraduates to participate according to the needs of graduate students' scientific research projects (Zhang, Wang, Wang et al., 2019). On the other hand, postgraduates themselves also need to have correct attitudes and recognize the value of academic lectures and the guiding role of academic lectures in their scientific research careers.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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