Study on the Quality Improving Approaches of Professional Postgraduate Dissertations for Local Engineering Universities

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Abstract

Postgraduate dissertations are crucial in developing graduate-level talents in China and serve as a significant indicator of postgraduate academic proficiency. Consequently, enhancing the quality of postgraduate dissertations is a critical task in the cultivation of postgraduate education at present. Aiming to improve the quality of postgraduate dissertations in local engineering universities, this study analyzes the problems of postgraduate dissertations in terms of topic selection, literature analysis, writing format, and research content. Therefore, the five aspects of improvement approaches were proposed, namely, optimizing the training scheme, enhancing the postgraduates' professionalism, strengthening the supervisors' team establishment, reinforcing the process evaluation and supervision, and improving the quality of postgraduates' dissertations. Through the improvements of the above aspects, the quality of postgraduate dissertations in local engineering universities can be improved, which is of great practical significance in improving postgraduate education and cultivating high-level talents.

Keywords

Local engineering universities, Professional postgraduate, Dissertation quality, Improving approachs.

1. Introduction

Due to the rapid development of the Chinese economy and society, the need for highly educated talents is increasing significantly. As a group of high-educated individuals, postgraduates are the important driving force for national economic development and scientific innovation. The "National Graduate Enrollment Survey Report 2023" indicates that the number of Chinese postgraduates will exceed 4.74 million in 2023, an increase of 170,000 over last year. For current educational development, the primary objective is to enhance the quality of graduate education. Dissertations serve as critical foundations for degree attainment, which reflect the academic and scientific research levels of postgraduates and the training quality of universities. Therefore, exploring the approaches to improve the quality of professional postgraduate dissertations is an important task for advancing graduate education in China and local sustainable development.

With the increasing demand for high-level talents, the teaching quality and scale of universities have developed rapidly in recent years, especially local engineering universities. The development of local universities has facilitated technological innovation, industrial upgrading, and economic advancement. Therefore, it is imperative that postgraduates possess exceptional academic and scientific research. Thus, the dissertation as evidence for reflecting their learning achievements. However, scarce educational resources and funds of the local engineering

universities may restrict the quality of the dissertation, which does not meet the training and graduation requirements. Therefore, improving the quality of education and dissertation is the key issue of postgraduate education. For this reason, this work summarizes and analyzes the existing problems of postgraduate dissertation, and proposes the specific approaches for improving the quality of professional postgraduate dissertations in local engineering universities.

2. Analysis of Existing Problems and The Causes

Due to the recent increase in postgraduate enrollments, the supervision and management of postgraduate education is being neglected, resulting in the deterioration of dissertation quality, and even some seriously unqualified dissertations, delaying graduation. Through an extensive follow-up survey, the current problems of postgraduate dissertations in engineering universities can be summarized as follows.

2.1. Improper topic selection

The selection of a dissertation topic guides postgraduate research and is a crucial factor in the completion of the dissertation. However, it is common for topic selection to be restricted to theoretical research, particularly for engineering postgraduates. This lack of innovation in topic selection results in a failure to direct practical applications. The overly broad scope of topic selection often results in insufficient research efforts, making it challenging to offer practical guidance. In certain instances, dissertations deviate significantly from reality, making it difficult for postgraduates to achieve their academic objectives. The root causes of inappropriate topic selection are, in general, the problems of insufficient innovation, detachment from reality and broad topics.

2.2. Insufficient literature analysis

Literature review encompasses prior research findings, ongoing research advancements and current research trends, which is an important basis for the selection of dissertation topics, and also determines the innovation and engineering value of the dissertation content. Currently, during literature analysis by engineering postgraduates in local engineering universities, there is a common lack of deep understanding, and it is difficult to accurately grasp the important research contributions of the literature, which leads to some of the dissertations in the literature review analysis is not in-depth and comprehensive enough, and it only briefly states the viewpoints of the literature or the specific content. Furthermore, outdated literature should be avoided as it fails to keep up with the rapid advancements in scientific research technology, and therefore cannot reflect the current advanced technology and issues, and can only provide limited help to the research of the dissertation. In addition, postgraduates also lack objective reviews after literature analysis, which impedes their ability to make further breakthroughs and innovations based on previous research work.

2.3. Irregularities in the writing format

Postgraduate dissertations adhere to strict standards of formatting, including sections for abstracts, covers, figures, tables, texts, references, and acknowledgements. However, some dissertations have problems with irregular formatting, such as line spacing, fonts, headings, the format of charts and graphs, and so on. The standardization of a dissertation reflects the diligent approach of postgraduates towards their studies. An excellent dissertation must conform to specified writing guidelines and be well-written in terms of clarity and coherence. However, some dissertations even present misspelled words, inappropriate punctuation, poor grammar, inaccurate translation, inaccurate citation of references, etc. The aforementioned issues demonstrate that postgraduates treat their dissertations with an uncritical attitude and pay

little attention to them, all of which are the results of a subjective manifestation of postgraduates' own uncritical attitude towards academic matter.

2.4. Ambiguity in research content

The substance of dissertations demands greater rigor in research methodology, logical reasoning, and theoretical analysis, which are fundamental to assessing the dissertation's quality. However, issues such as inadequate theoretical research depth, absence of innovation, insufficient arguments, and lack of notable breakthroughs are the major manifestations of the poor quality of dissertations. Engineering dissertations necessitate the in-depth analysis of numerous experiments, data, charts, and graphs. As a result, it is imperative to develop clear research objectives and formulate specific research content. Some students may lack proficiency in using relevant software and numerical methods for thorough analysis of research results. Therefore, it may be difficult to reveal the experimental laws through graphs, and even cause the research results to deviate from expectations, which will affect the final quality of the dissertation.

3. The Quality Improving Approaches

The postgraduate dissertation serves as a fundamental basis for obtaining degree qualifications and acts as a reflection of the academic training level of academic institutions and universities. Therefore, how to improve postgraduate education and enhance the quality of postgraduate dissertations is an important task. To avoid substandard academic dissertations, it is essential to improve the supervision and process evaluation, strengthen students' own attention, and improve the establishment of the supervisors' team, which requires cooperation with local engineering universities, departments, teachers, and postgraduates. For this reason, the specific suggestions for professional postgraduate dissertations are proposed as follows.

3.1. Optimizing the training scheme

The training scheme serves as the basic of postgraduate education, which determines the goals and directions of talent training, and clarifies the process and relations of postgraduate education. The formulation of the training scheme for postgraduates should be guided by reality, adapted to the needs of social development, and maintain the connection between theory and practice. Improving training methods and means and optimizing the curriculum system for routine educations should be developed from the students' development and the practical engineering problems. In accordance with discipline requirements and training objectives, the coordination of courses, including theoretical, practical, and professional experiments, should be ensured. Additionally, it should pay attention to interdisciplinary learning and cultivate the innovation of postgraduates. Simultaneously, courses in literature searching are available to enhance students' literature research and consultation skills. Consequently, the writing abilities of postgraduates can be strengthened. Furthermore, academic exchange programs are essential in promoting postgraduates' participation in large-scale academic competitions, stimulating their enthusiasm for research, and cultivating their professional capabilities.

3.2. Enhancing the postgraduates professionalism

Once the research direction has been defined, postgraduates should devote a considerable amount of time and effort to conducting scientific work. During their leisure, they must peruse relevant literature pertaining to their respective topics to comprehend the subject matter, gain insight into the research progress of related fields and an understanding of the achievements of others. On this basis, it is necessary to learn from the research methods of others and combine our own research content to design and perform related physical experiments.

Furthermore, effective communication with their supervisor is necessary while conducting scientific research, to create a good academic atmosphere, but also to give impetus to scientific research work, and to lay the foundation for their own dissertations.

3.3. Strengthening the supervisors' team establishment

During postgraduate training, the supervisor plays an essential role in determining the quality of the dissertation. As the guide and first reader of the dissertation, the supervisor should carefully evaluate its quality. Additionally, the supervisor's scientific research ability, academic direction, scientific attitude and professional level directly or indirectly affect the cultivation of the student's ability. Therefore, the training institutions should strictly select the appointment tasks and guidance work of the supervisors, and improve the research conditions and working environment for the supervisors to enable the cultivation quality of postgraduates. Furthermore, it should establish an incentive mechanism to mobilise the enthusiasm of the supervisors, and comprehensively consider the professional level, research ability and ethical standards of the supervisors. In this way, a team of high-level and high-quality supervisors can be constructed for postgraduate training.

3.4. Reinforcing the process evaluation and supervision

The research and writing of the dissertation is a long process that involves several links, e.g. topic selection, dissertation proposal, mid-term examination, dissertation review, dissertation defence. Of these, the topic selection must align with the professional orientation and emphasise the area of research interest. The dissertation proposal represents a thorough evaluation of the importance, progress, methodologies, and originality of the dissertation. The mid-term review is performed to review the experimental data and progress of the research, and to identify and resolve problems in a timely manner. In addition, the defense can provide opinions and suggestions to further improve the quality of the dissertation. Consequently, improving the process evaluation and supervision management of training universities is of great significance for improving the quality of academic dissertations.

3.5. Improving the writing ability

The content of the dissertation should be rigorous and objective. Firstly, the dissertation should clarify its research significance by accurately identifying the scientific issues behind the engineering problems, and also clarify the theoretical significance or engineering value of the research content. During the literature analysis, it is necessary to judge the value of the literature and think whether it is valuable for the dissertation. In terms of the research content, it should be complete and reasonable, which requires the use of appropriate argumentation, the arguments should be supported by sufficient evidence, and the reasoning process should be reasonable to avoid logical errors and loopholes. In relation to research conclusions, it is crucial to explicate the specific results achieved by the thesis and their practical value in engineering applications. Therefore, during the writing of the dissertation, postgraduates should be clear about the relationship between the above parts and maintain clear logical ideas to complete the content of each chapter, so as to ensure the quality level of the dissertation.

4. Discussion

In summary, this study analysed the root causes affecting the quality of doctoral dissertations in local engineering universities, the existing problems of which can be summarized as follows:

Firstly, the topics of the dissertations are often overly broad, with scientific issues that lack focus and shallow research content that does not provide effective guidance for engineering practice. Secondly, in terms of literature analysis, the available research is inadequate in presenting noteworthy perspectives for this dissertation. In terms of the written content, it is

imperative to adhere to the standards of academic writing and ensure proper formatting in accordance with the guidelines for publishing scientific articles. Furthermore, regarding the research content, the ideas presented lack innovation, and there is a noticeable difficulty in using relevant professional knowledge and experimental data to provide a scientific explanation for the obtained results. Consequently, the quality of the dissertation has been adversely affected.

In view of the above problems, the quality of dissertations in local engineering universities can be improved through the following approaches. Firstly, optimize the training scheme of universities, refine the curriculum system, upgrade the teaching methods and means, and keep theories in touch with practice. Secondly, it is important to enhance the quality of scientific research among postgraduates, and require them to devote most of their time to scientific research and the process of writing their dissertations, so as to comprehensively improve their professional abilities and scientific research level. To establish a high-level supervisor team, it is necessary to refine the perfect supervisor selection system and incentive methods, which can promote effective communication and interaction between supervisors and postgraduates, and guide the comprehensive development of postgraduates' abilities. Besides, the process evaluation and supervision should be strengthened, and the specific work of topic selection, dissertation proposal, mid-term examination, dissertation review and dissertation defence should be strictly implemented.

Based on the analysis presented, five aspects of improvement, namely, optimizing the training scheme, enhancing the postgraduates professionalism, strengthening the supervisors' team establishment, reinforcing the process evaluation and supervision, and improving the writing ability, can ensure the effective improvement of the quality of postgraduate dissertations in local engineering universities. The specific details of the proposed improvement approaches are shown in Figure 1.
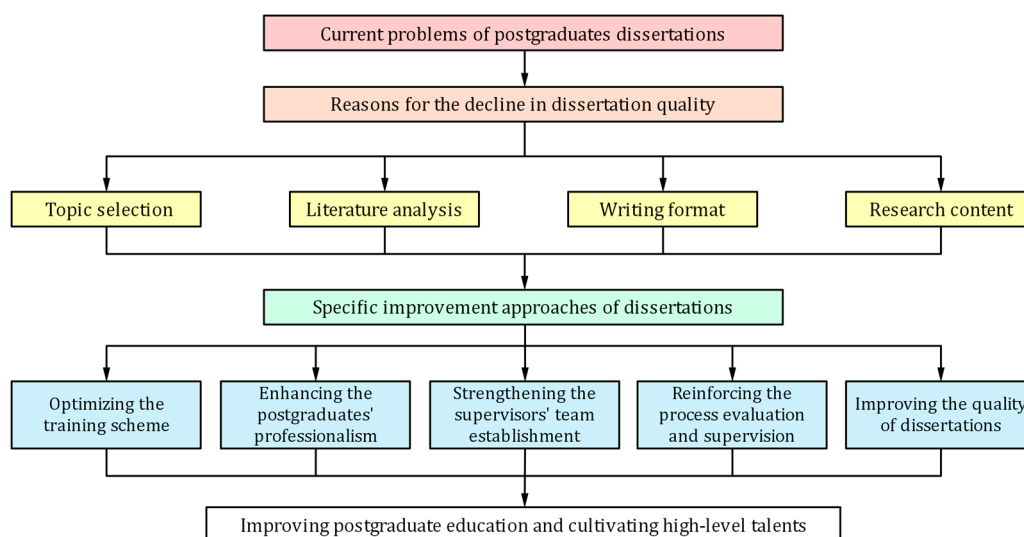

Figure 1. The quality improving approaches of professional postgraduate dissertations

5. Conclusion

A high quality dissertation serves as a crucial basis for applying for a Master's degree. At present, the phenomenon of poor quality and low level of dissertations is common in all local engineering colleges and universities. In light of the aforementioned problems, this study analyzes the main reasons affecting the quality of postgraduate dissertation from the aspects of the topic selection, literature analysis, writing format, research content, etc., and puts forward the specific approaches in five aspects, that is, optimizing the training scheme,

enhancing the postgraduates professionalism, strengthening the supervisors' team establishment, reinforcing the process evaluation and supervision, and improving the writing ability. The quality of postgraduate training and dissertations in local engineering universities will be improved.

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