

# Exploration of Teaching Practice of Undergraduate Dissertation in Engineering Management Specialty

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**Abstract.** Undergraduate dissertation is an important part of practical teaching and an important content to realize the goal of cultivating engineering management students. In practical teaching, in order to solve the problems in the stage of selecting dissertation topic, the dissertation proposed and the writing stage, the countermeasures would be explored from three aspects as follows. Firstly, the measures of strengthening communication and 'preheating', the integration of hot spot of the Times, pointing to the direction of future development of students are put forward at the stage of selecting dissertation topic. Then, the measures of broaden the ways of looking up literature, strengthening the reading quality of English literature, training the ability of summing up and analyzing the literature are found to solve the difficulties at the stage of dissertation proposal. Thirdly, the methods of asking format specification, applying technical terms to normatively and emphasizing the originality are analyzed to solve the problems at the stage of writing dissertation. Only through the strict control in the whole process, could the quality of the undergraduate dissertation be controlled and, the goal of cultivating engineering management talents be finally realized.

**Keywords:** Teaching practice; undergraduate dissertation; Engineering Management Specialty.

## 1. Introduction

Engineering management is a new and comprehensive interdisciplinary specialty, which has been set up since 1998 through the integration of building management and other related majors.

the students of engineering management specialty trained shall be suited to the needs of socialist modernization. the target of the cultivating the students becoming talents with the all-round development of morality, wisdom, physical integrity, beauty, and technical knowledge in civil engineering or other engineering fields, as well as the basic knowledge of management, economy and law related to engineering management, high professional quality and ability, professional ethics, innovative spirit and international vision, ability of engaging in civil engineering or other engineering field of engineering management of senior professionals.

Undergraduate dissertation is an important part of practical teaching and an important content to realize the goal of cultivating engineering management students, which is the last link for students and asks them to apply the knowledge learned to analyze and solve problems in practice. Therefore, undergraduate dissertation is the key to realize the target of cultivation. in teaching practice, it is important for teachers to help students to overcome the difficulties.

## 2. Analysis on the Present Situation and Problems of Undergraduate Dissertation in Teaching Practice

### 2.1 The Stage of Selecting the Dissertation Topic

The selection of undergraduate thesis usually begins at the end of the 7th semester. The guide teachers formulate the thesis topic and publish on the net. The students choose the research direction to determine the topic and the guidance teacher. Finally, with the guidance teacher agrees to confirm, the process of 'bidirectional selection' has been completed.

In the course of practical teaching, we find that during this semester, some students are busy in looking for a job under the pressure of employment, while others are busy in preparing for the postgraduate entrance examination. As a result, many students choose the topics of undergraduate dissertation hastily on the basis of their preferences because of having no time to consider the topics

seriously. which could cause students to be blind to the topic of the thesis, and to be not able to improve their ability to test themselves through the exercise of graduation design and just to accomplish a passive task that the teacher taught [1].

## **2.2 The Stage of the Graduation Dissertation Proposal**

The literature of undergraduate thesis generally includes references in Chinese and English. The teacher usually provides the relevant references which should be look up before the writing of the thesis, including both the basic theoretical knowledge and the frontier and hot spot of engineering development at the beginning of the stage of the graduation dissertation proposal. However, many undergraduate students believe that their learning tasks are limited to listening carefully and finishing their homework. The habit of consulting literature, thinking independently, asking questions, completing course papers and graduation papers has not really been established.

Students' ability of reading English literature is not enough. Although the level of reading and writing of undergraduate students should meet the national CET-4 standard, the students still have considerable difficulties in consulting and reading English references. Due to the lack of professional vocabulary accumulation, the English expression of professional vocabulary cannot be well matched, which greatly affects the searching speed and understanding depth of students.

The slack attitude and delays are also be found in translation when students look up the literature. Undergraduate students should read and index at least three English articles according to university regulations. They do not read this kind of literature carefully and fully in the early stage, but often add this part of the literature hastily in the final stage of the paper completion. There is also a requirement for an English document to be translated into Chinese. Similarly, students are often sloppy in their planning time and are forced to re-translate until at the deadline. The student's behavior of putting the cart before the horse seriously affects the quality of the dissertation, which not only affects them understanding and grasping of the related contents in the field of construction engineering deeply, but also reduces them writing the superficial and one-sided literature review.

It is not enough for students to sum up, classify and summarize the literature. The writing of literature review at home and abroad is not a list of the authors' views simply, but a kind of classification and review in order to stand on the shoulders of the predecessors to see the world. Due to the short time available at the beginning stage, insufficient preparation and poor self-discipline, students often appear lack of analysis and summary of the author's views in the literature, and simply list them one by one, which would not achieve the purpose of combing the literature.

## **2.3 The Stage of Writing the Graduation Dissertation**

### **2.3.1 The Normalization Deficiency**

The normative deficiency of the thesis is manifested in two aspects, one is the standard format and the other is the application of specialized terminology.

On the one hand, nonstandard format is a common problem in the writing of papers. Because of the lack of understanding, the students often feel that is enough to complete the dissertations, and the requirements of the paper format of the university are not paid enough attention to from the opening stage. In addition, the subjective and objective factors, such as short writing time and insufficient preparing time, cause the students to express abstracts, titles, texts, especially references anticly and unscrupulously. At last, they spend a lot of time revising the format without having time to improve the quality of their papers.

On the other hand, the application of specialized terminology is another common problem. The use of professional terms by students is not standardized. Engineering management is a cross-disciplinary subject. The basic courses include not only the technical basis of science and engineering, but also management and economics. In the course of learning a considerable number of technical courses, students and teachers are more focused on the use of numerical calculation or engineering drawings to express what they have learned. The training of text expression especially accumulating of technical terms is not enough.

### **2.3.2 The Originality Deficiency**

Originality is not enough. After the early literature collection and summary, many students cannot analyze the questions deeply raised in the writing stage, and express their own unique views. In order to complete the basic logic of problem solving, students plagiarize other people's articles, which results in borrowing are inconsistent with the subject and illogical.

## **3. Exploring New Ideas in Undergraduate Dissertation Teaching Practice**

### **3.1 The Stage of Selecting the Dissertation Topic**

#### **3.1.1 Strengthening Communication and 'Preheating'**

In the process of teaching specialized courses, teachers should communicate with students in various ways so that they can understand the direction of teaching and scientific research of professional teachers in advance, by which students can have a preliminary plan for the direction of graduation papers in light of their own circumstances. In subsequent learning and practical activities, students could adjust to their own interests and career planning. With long and sufficient self-discovery and many contacts with teachers, students can gradually form a clear blueprint for future development, and choose the right direction of choosing the topic of graduation design thesis.

Therefore, students should be informed graduation design arrangements in advance of the final semester. Teachers should actively introduce the latest research results in the studying of professional courses, cultivate students' interest in scientific research, let students regularly think about graduation papers, which would make the selection of topics in the future be targeted [2]. In order to achieve satisfactory results in graduation design, the university should let the students understand the graduation design in freshman year, and gradually develop their relevant ability [3].

The topic of undergraduate dissertation should be guided by the interest of students, and the teacher must check strictly. Topics can be drawn up according to the summary of undergraduate learning tasks, or related to the content of postgraduate studies, and can also be combined with the actual production of enterprises [4].

#### **3.1.2 Integrating Hot Spot of the Times**

With the arrival of the information age, the traditional social production and social life have brought great changes. Network has been integrated into all aspects of people's lives. Under this background, the influence of informatization on construction engineering field is no exception. From hand drawing paper to computer drawing using CAD software, it is no doubt that it is a great progress in engineering field. The use of 3D model technology namely BIM to manage the whole life cycle of construction project is another innovation in the field of engineering in the information age of the 21st century. Therefore, the undergraduates of engineering management should be provided with the basic platform of information. Under the guidance of this educational concept, the students of our university begin to take part in various BIM competitions to exercise their ability to better adapt to their professional development. According to the requirements of the competition, the teacher can draw up the topics of construction project management applying BIM technology during all life cycle stages, and form the students into a team to participate in the competition, which is not only helpful to the cultivation of the students' sense of team cooperation and leadership and management ability, but also helpful to open students' horizons and enhance their ability to adapt to society.

#### **3.1.3 Pointing to the Direction of Future Development of Students**

The teacher may draw up the title of the paper according to the students' future development. There are two different development directions for undergraduate graduates, one is to take part in practical work directly, and the other is to continue to study for a master degree.

Teachers should strengthen their practicability for undergraduates who are about to be employed. In order to promote the students to realize the transition from school to enterprise better and faster, teachers should go into the enterprises themselves, put forward problems, analyze problems, combine the training objectives and direction of engineering management, and form our professional

undergraduate graduates of the undergraduate dissertation topics from the first line of production practice. At the same time, the engineering management centralized practice sites could be established with the help of the universities proposing, the colleges organizing, the government relevant departments vigorously supporting and the social enterprises and institutions coordinating. To begin with practice would be helpful for students to fully understand production practice, in which students would be trained step by step.

Teachers should determine the topic of the dissertation by combining their longitudinal and horizontal research projects for the students who are about to study for a master degree. The topics developed in this way can help this kind of students pursue further studies to get into a 'preheating state' of the relevant field in advance, which is a good combination of their special interests and their professional abilities improving.

### **3.2 The Stage of the Dissertation Proposal**

#### **3.2.1 Broaden the Ways of Looking up Literature**

Students should look up not less than twenty references at the stage of the dissertation proposal, which could generally be available through the library or the Internet. Different types of literature, can be accessed through different data platforms. Students are not only taught to collect the information by using the free information resources provided by the university library, but also taught to collect the paper periodicals in the library directly. We teachers should also tell them that the various information resources could be provided by the university. Thus, students can consult the Chinese literature through knowledge Service platform CNKI, VIP, Wanfang Data Wafang data and so on. The foreign literature can be consulted by CA, EI, CSA and SDOL. especially for engineering management students, the professional database can be obtained through EBSCO, Wiley, Springer Link and so on.

According to the actual situation of the students, the course of "Information Retrieval and Utilization" (Information Retrieval) has been taught in the fifth semester of our university. Through learning of the main retrieval tools at home and abroad and the use of databases, the students are trained to make comprehensive use of various information resources and write research papers to prepare for future study and research.

#### **3.2.2 Strengthening the Reading of English Literature**

Teachers can solve the problems of reference and reading of undergraduate students from the following two aspects. First of all, teachers must stress to students the importance of reading English literature so that they are fully prepared in time and psychology. We teachers should urge them to read the English documents in the report, and to learn reading the English documents through the school library and the Internet. In particular, the translation of the required English documents should be asked to completed according to the plan. Secondly, teachers should pay attention to guide students to accumulate English expressions of professional terms. The accumulation of professional vocabulary cannot be completed overnight. After the basic English training in the lower grade, our university also set up the engineering management major English for engineering project management. Teachers should also strengthen the construction of bilingual courses while teaching professional courses, which will help to strengthen the accumulation and application of vocabulary in engineering management major. Language is a key to see the world. Only with this key can students freely consult new papers taught abroad, grasp the most advanced trends, which would be a solid foundation for the subsequent writing of papers.

#### **3.2.3 Training the Method of Summing up and Analyzing the Literature**

The literature review at home and abroad is an important part of preparation for dissertation proposal. Students must be reminded to pay attention to it. First of all, we should check the extend of students finish the collection of documents in the specified time. Then on the basis of this, we should ask the students to analyze and summarize the author's views and research methods from the references. Thirdly, students should be learned to find out the main research viewpoints, methods and contents of the related fields at present, what problems to be solved, where their research content

would be cut into, and which research methods could be used to achieve the research objectives. Thus, the purpose of standing on the shoulders of the predecessors to see the world could be achieved.

### **3.3 The Stage of Writing Dissertation**

#### **3.3.1 Format Specification Should be Asked**

As the final summative assignment of the students, the standard format is the premise and foundation of the quality assurance. The undergraduate dissertation of engineering management undergraduates generally includes the following parts: cover; abstract; catalogue; text; reference; thanks etc. And dissertation must be completed and bound in the correct order above.

First of all, it is necessary to pay special attention to the writing problem of the Chinese and English abstracts which are more difficult for the student to write. Before the beginning of the section, the teacher should know that the students should read the relevant regulations carefully so as to make the students clear that the part is the brief statement of the paper, at the same time the main contents, the purpose, methods, results and conclusions of the research of the study should be set forth. When the English abstract is translated, it should be consistent with the Chinese abstract. In the process of translation, the students should be reminded to carefully check the sentence by word. In order to clearly express the author undefined intention, it is not necessary to completely correspond to a word. In particular, for the students who are directly using the online translation software to complete the part, they must be ordered to be re-amended.

Secondly, the problem of the nonstandard format of the reference document should be solved carefully. According to the different types of references, the book, academic journals, academic conferences, academic papers, newspaper abstracts and online documents should be expressed in a standardized way according to their respective ways. Special attention should be asked to paid to the ellipsis of multiple authors and the different font format in Chinese between English.

For the lack of knowledge, most students think that is enough as the system research has been completed well. As to the form in which the paper is expressed, it is not very important. In fact, the purpose of the all kinds of papers written in the field of practice and research is to be shared and communicated. Therefore, there must be specific specifications when they are expressed. The universities have standardization about format specification, although the detailed requirements are different. And the original intention is consistent, which is that through rigorous expression training, undergraduates could be cultivated forming the practical and practical work style and be familiar with the professional expression method.

#### **3.3.2 Technical Terms Should be Applied Normatively**

Engineering management is an interdisciplinary subject, and many students have weak writing ability and insufficient accumulation of terms. When writing a paper, they not only express themselves as 'cooking dumplings in a teapot', but also fail to correctly understand and use the relevant terms of their major. So that the expression of the paper is not scientific.

Therefore, it is necessary for teachers to strengthen the training of students in language expression on the basis of standard format. Teachers can cultivate students' ability to consult and organize documents in the stage of course study and design, and strengthen the cultivation of the correct use of professional vocabulary and correct logical expression when writing professional course design reports or papers. The writing of undergraduate dissertation should not only depend on the two or three months of the eighth semester, but should be extended to the lower grade to ensure the quality of the whole writing.

Many important professional terms could be taught and asked to be applied frequently. Many of the technical terms which have fixed abbreviations and meanings. For example, in the field of construction cost, 'BQ' is the abbreviation 'Bill of Quantities' in construction cost, which means a kind of bidding mode. If students ignore the accumulation of professional terms, they will be helpless in the face of various technical terms and their abbreviations. During the teaching period, teachers could emphasize the important and key professional terms usually, and ask the student to apply them in class, in homework and in course paper, which could make students feel familiar with them.



### 3.3.3 Originality Should be Emphasized

The undergraduate dissertation of the bachelor degree requires originality to a considerable extent. The original is the process of solving the problem of individuation with the theory of universality after combing the previous ideas and combining the results of the actual post-independence thinking of the thesis. The students forming their own views must be asked on the basis of reading a large amount of information. A good paper should be in a clear and unique argument, with a strong argument and a better ability to analyze problems and solve problems. This is the training goal of writing the paper. It is necessary for the teachers to instruct the students to set up the overall framework of the paper from the dissertation proposal, to determine its own technical route, to develop a logical thinking to solve the problem, and to set up its own special style.

In order to emphasize originality and avoid the phenomenon of plagiarism in the process of students writing, the university specially set up the mechanism of 'checking repetition', which means the dissertation must be passed the examination of 'repetition rate' firstly. Only when the 'repetition rate' of the thesis meets the requirements, could the student take part in the thesis oral defense. Thus, with controlling the repetition rate of papers, students could be cultivated the ability of independent thinking and form the habit of analyzing problems in the unique way gradually under the pressure of 'repetition rate'.

## 4. Summary

Undergraduate dissertation is an important part in undergraduate teaching. Through the strict control of this teaching link, the teachers would help the students to solve the main problems at the different stages in the whole process of dissertation written so as to control the quality of the undergraduate dissertation. Only in this way, could the goal of cultivating engineering management talents be finally realized.

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