



Research on the Evaluation System of Graduation Theses in Applied Undergraduate Universities

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Abstract. The evaluation of graduation thesis, as an important component of educational quality, has become increasingly prominent. Based on the analysis of the current situation and existing problems of graduation theses in applied undergraduate universities, this article focuses on the research of the graduation thesis evaluation system, designs the objectives, evaluation subjects, and evaluation index system of the graduation thesis evaluation system, and provides a certain reference for continuous improvement and enhancement of the quality of graduation theses in applied undergraduate universities.

Keywords: Applied Undergraduate Universities; Dissertation; Evaluation System; Evaluating Indicator

1 Introduction

At present, with the rapid development of knowledge economy and information technology, graduation thesis is not only a concentrated reflection of students' academic level, but also an important display of their comprehensive quality and ability [1-3]. Applied undergraduate colleges are facing severe challenges from society regarding the quality of talent cultivation. How to promote students' comprehensive development through an effective evaluation system is a core issue that educators urgently need to address [4-6]. The reform of higher education in our country continues to deepen, and the Ministry of Education and various levels of education administrative departments have successively issued a series of policies, clearly stating the need to improve the quality of undergraduate education [7-10]. In the "Undergraduate Graduation Thesis (Design) Sampling Method (Trial)" issued by the Ministry of Education in 2020, it is proposed to conduct quality sampling on undergraduate graduation theses every year. The sampling results will serve as an important reference for the evaluation of undergraduate education and teaching, the construction of first-class undergraduate majors, and the investment of professional construction funds in the allocation of educational resources. Various provincial and municipal education departments have also issued detailed rules for sampling implementation. Currently, the annual graduation thesis sampling work is steadily and orderly advancing. It is partic-

ularly important to establish a comprehensive, systematic, and effective evaluation system in order to improve the quality of graduation theses. The system should cover multiple levels and involve diverse evaluations from different subjects, emphasizing both academic achievements and the cultivation of practical application abilities [11–15].

2 Current situation and existing problems

According to the sampling results of the Ministry of Education in the past two years, the overall quality of applied undergraduate thesis (design) has improved compared to before, but there are also many problems, mainly manifested in the following five aspects.

Firstly, there are issues with writing standards and expression in academic papers. Poor language expression, including non-standard sentence expression and obvious traces of assembly. Format errors, including non-standard reference format, spelling errors, punctuation marks, page errors, blurry images, garbled characters, missing or obscured text, etc.

Secondly, there are issues with research methods and data analysis. The research methods are relatively single, for example, some papers lack survey data collection and analysis sections, and the survey subjects do not have clear sample introductions, which affects the scientific and rationality of the conclusions. There are insufficient innovative points in the paper, such as lack of originality in topic selection and research methods. The use of data and cited literature is somewhat outdated, and research analysis should be conducted using data and materials from the past three years.

Thirdly, there are issues with the depth of theoretical application and analysis [16]. The theoretical definition and application are inaccurate, including weak theoretical foundations, insufficient authority and discussion of conceptual definitions, confusion of concepts, etc. The research depth is insufficient, including a lack of substantive research and in-depth analysis, improper referencing of some references, weak purposefulness in survey design, and low integration between questionnaire design and topic selection. The analysis is not comprehensive enough, including insufficient application of knowledge in this major and related fields, insufficient analysis of the current situation, and insufficient depth of overall analysis.

Fourthly, there is a problem of matching the structure and content of the paper. The chapter structure is chaotic, including unclear logic, disorganized structure, and mismatched table of contents and content. The literature review is weak, including weak content in the literature review section, insufficient relevance to the research topic, and lack of organization. There are few references, especially in English and specialized literature, and some graduation theses (designs) have insufficient workload.

Fifth, there are issues with writing conclusions. The conclusion deviates from the topic and expresses personal feelings more in the conclusion section, rather than an objective summary based on research findings, which weakens the academic and rigorous nature of the paper. Lack of summary and outlook, conclusions biased to-

wards personal feelings, insufficient summary of the main findings of the research and their contribution to knowledge in the field, reduced the forward-looking and research value of the paper.

3 Construction of evaluation system

3.1 Objective Design of Graduation Thesis Evaluation System

One is to ensure academic quality. Ensure that the graduation thesis meets certain standards in academic research, and enhance students' academic literacy through rigorous evaluation mechanisms.

The second is to enhance innovation capability. Encourage students to innovate in topic selection, research methods, and other aspects to enhance their independent thinking and problem-solving abilities.

The third is to enhance practical application ability. By emphasizing the practical aspect, students can effectively apply their learned knowledge to practical work, cultivate their practical and innovative abilities, and enhance their employment competitiveness.

The fourth is to provide feedback and improvement basis. Through systematic evaluation, schools can obtain feedback from students during the graduation thesis process, thereby providing reference for educational and teaching reform.

3.2 The main body of the graduation thesis evaluation system

This study establishes a diversified graduation thesis evaluation system, which includes schools, supervisors, peer review supervisors within the profession, external peer review experts, and corporate mentors. Each subject plays a unique and important role in the evaluation process, forming a comprehensive, objective, and fair evaluation system.

The first subject is the school. As the main management body of educational quality, schools are responsible for the construction of the overall framework and the formulation of standards. Schools should not only provide necessary resources and support for students, but also ensure the transparency and fairness of the evaluation system. By establishing clear evaluation criteria and guidelines, schools can guide teachers and students to work together to improve the quality of graduation theses.

The second subject is the supervising teacher. The supervisor is the main supporter and evaluator in the process of writing students' graduation thesis [17-20]. Responsible for providing personalized guidance to students, helping them clarify research directions, develop paper frameworks, and write content. Teacher feedback and suggestions have a direct impact on students' academic development. An excellent mentor should not only possess solid professional knowledge, but also have good communication skills and keen insight, be able to effectively identify students' strengths and weaknesses, and provide timely improvement suggestions.

The third subject is the peer review guidance teacher within the profession. The role of peer review and guidance teachers within the profession cannot be ignored.

Being able to provide different perspectives and insights for students' papers in peer review. Mutual evaluation can enhance the spirit of cooperation between mentors and between teachers and students, promote academic exchange, and thus create a good academic atmosphere.

The fourth subject is external peer review experts. Introducing external peer review experts can improve the fairness and professionalism of evaluations. These experts usually come from research institutions or higher education institutions in related fields, and they possess higher authority in professional knowledge and research experience. Through independent review of student papers, experts can provide objective evaluations to ensure that students' academic achievements meet industry standards and social needs.

The fifth subject is enterprise mentors [21]. The participation of enterprise mentors reflects the practical orientation of the evaluation system. In the cultivation of applied talents, the demand of enterprises directly affects the employment and development of graduates. Therefore, the evaluation of enterprise representatives can not only provide market feedback for students, but also help schools adjust courses and projects to better meet industry needs. Enterprise mentors can evaluate the feasibility and innovation of students' papers in practical applications from a practical perspective, ensuring that students have practical operational skills. In summary, the main body of the evaluation system for graduation thesis has constructed a multi-level and multi-dimensional evaluation network, enabling each participant to play a role in their professional field and jointly promote the improvement of the quality of graduation thesis. Through this diversified evaluation model, it can ensure that students' graduation theses not only have academic value, but also practical application value, laying a solid foundation for their future development.

3.3 Index Design for Graduation Thesis Evaluation System

To better reflect the actual quality of graduation thesis, as shown in Table 1, a graduation thesis evaluation index system is established to cultivate students' innovation and practical abilities, improve their comprehensive quality, and ensure the quality and standardization of the thesis as the evaluation objectives.

There are many graduation requirements and indicators supported by the graduation thesis. Combining the talent training plan for mechanical and electrical majors and the evaluation elements of Guangdong Province's undergraduate thesis sampling, the evaluation indicators for engineering majors' graduation theses have been improved. Four first level indicators have been designed, including the evaluation of the proposal group, the evaluation of the supervising teacher, the evaluation of the senior teacher, and the evaluation of the defense group.

At present, the evaluation of graduation thesis grades mainly includes three parts: guidance grade, cross review grade, and defense grade. It does not include the opening and defense grade, and is mainly based on outcome evaluation. The thesis proposal covers the basis for topic selection, design or research content, expected goals and key problems to be solved, research plan, progress of design or research plan, expected results and features or innovations, main references, etc. It can reflect stu-

dents' understanding of their own topic, literature search and review ability, and overall planning ability for project design. Incorporating the quality of the thesis proposal into the grading system, adding process evaluation indicators, and strictly monitoring students' thesis proposal and defense can help increase students' and supervisors' attention to thesis proposal and defense, laying the foundation for subsequent thesis work and improving the quality of the thesis.

Table 1. Evaluation Index System for Graduation Thesis of Engineering Majors.

First level indicators	Secondary level indicators	Third level indicators
Evaluation of the proposal group	Selected topic	Professionalism: Meets the requirements for talent cultivation in this field.
	Journals re-viewed	Comprehensiveness and depth: covering classic literature and the latest research results; Accurately evaluate the advantages and disadvantages of previous research to provide theoretical support for this study; Accurately grasp the research status and development trends in the research field.
		Sufficiency and accuracy of cited literature: Adequate and accurate citation of literature can reflect the depth and breadth of research.
	Research content and plan	Scientificity and feasibility: Whether the research method meets the research objectives and can solve the research problem; Is the research method operable and reproducible; Can research data be effectively collected and analyzed.
		Clarity and organization: The research plan should be well-organized, logically rigorous, and have clear steps that reflect the overall framework and implementation steps of the research.
	Paper framework	Is the framework of the paper reasonable and clear? and is it logical?
	Self statement and performance in defense	Clarity of logical thinking; Fluency of language expression; Time management ability; Adequate level of preparation.
Mentor evaluation	Content	The rationality of the topic selection.
		Content integrity.
		Discuss scientificity.
		Accuracy of data and materials.
		The results are novel and practical.
	Academic standards	The format conforms to the specifications, and the layout and printing meet the requirements.
	Attitude	Whether the process material documents meet the requirements.
		Whether to complete the paper seriously and on time; Whether to rectify according to the guidance.
Review	Selected topic	Consistency with the training objectives and graduation requirements of this major.

group evaluation		Has certain theoretical significance or practical application value.
		Having a certain level of innovative consciousness and moderate difficulty in selecting topics.
	Logical construction	The core modules of the paper are complete, the structure of each chapter is complete and reasonable, the hierarchy is clear, the details are appropriate, and the key points are highlighted.
		The content of the paper is consistent with the theme, the content is sufficient, the research plan is feasible, the argumentation is sufficient, and the conclusion is credible.
		The argument is clearly expressed, the concept is accurate, the language is rigorous, and the organization is clear.
	Professional competence	Ability to search and organize literature.
		Understanding and analytical skills of the current research status in this major and related fields.
		The ability to master and apply basic theories and specialized knowledge.
		The ability to comprehensively apply professional knowledge to analyze and solve problems.
	Academic standards	The paper format meets the requirements, with standardized and accurate icon annotations, formula symbols, abbreviations, etc.
		The use of Chinese and foreign words is accurate, the grammar is standardized, and the language is fluent.
		The writing process of the paper conforms to standards, the relevant process materials are complete, and the number of words and references in the paper meet the requirements.
Evaluation of the defense group	Paper quality	Rigorous structure and strong logic.
		The written expression is accurate and fluent.
		The content is complete, the organization is clear, and the key points are highlighted.
		The format, graphics, and tables comply with the specifications.
		If it is a graduation project or work, consideration should be given to the reasonable feasibility and standardization of its design scheme, as well as the integrity and operation of the physical work.
	Thesis self description	Clear concept and clear thinking.
		Express accurately, highlight key points, and provide appropriate details.
		The reporting time meets the requirements.
		The PPT is beautiful and elegant.
	Defense performance	Quick thinking, fluent language, accurate answers to questions, and professional depth.
		Elegant demeanor and good mental outlook.

4 Conclusions

On the basis of elaborating on the current situation and existing problems of graduation theses, this article focuses on the research of the evaluation system for graduation theses in applied undergraduate universities. Aiming at the problems existing in the graduation thesis of engineering majors, the objectives, diversified subjects, and four first level evaluation indicators of the graduation thesis evaluation system have been designed to construct a comprehensive, systematic, and effective evaluation system. This system involves diverse evaluations from different entities, including schools, mentors, peer review mentors within the profession, external peer review experts, and

corporate mentors. It values both academic achievements and the cultivation of practical application abilities. At the same time, the system is designed with four first level indicators: opening group evaluation, guiding teacher evaluation, reviewing teacher evaluation, and defense group evaluation. Incorporating the quality of the thesis proposal into the grading system, adding process evaluation indicators, and strictly monitoring students' thesis proposal and defense can help increase students' and supervisors' attention to thesis proposal and defense, laying the foundation for subsequent thesis work and improving the quality of the thesis.

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References

1. Wang Guojuan. Research on the Quality and Improvement Strategies of Graduation Thesis (Design) in Applied Undergraduate Colleges [J]. Heilongjiang Science, 2024, 15 (17): 158-160.
2. Wu Enhui, Xu Zhong, Li Jun, et al. Analysis of Quality Assurance and Improvement Measures for Undergraduate Thesis Process of Engineering Majors in Local Applied Undergraduate Universities [J]. Journal of Higher Education, 2024, 10 (27): 78-83.
3. Song Qiong, Wang Chunyan. Exploration of Teaching Reform in Graduation Thesis (Design) of Chemical Engineering Majors under the Background of New Engineering [J]. Science and Education Guide, 2024, (23): 61-63.
4. Chen Xijian. Exploration of Quality Management and Evaluation of Undergraduate Thesis (Design) in Applied Universities [J]. Journal of Zhaoqing University, 2024, 45 (04): 110-117.
5. Fu Saifen. Research on Quality Monitoring and Evaluation System of Bachelor's Thesis in Private Universities [J]. Science and Education Guide, 2024, (05): 20-23.
6. Liu Bo, Wu Tao, Ji Li Na. Construction of Management Mode and Operating Mechanism for Undergraduate Graduation Thesis (Design) Based on OBE Concept [J]. Education Observation, 2023, 12 (16): 13-16+103.
7. Wu Haibo, Chen Shiju. Research on Quality Evaluation Standards for Undergraduate Thesis [J]. Journal of Shaoxing University of Arts and Sciences, 2023, 43 (04): 105-112+121.
8. Zheng Yingjie. Research on Improving the Quality Evaluation Mechanism of Intellectual Property Undergraduate Thesis Based on National Standards [J]. Science and Education Guide, 2022, (34): 57-59.
9. Tian Bing, Zuo Shanshan, Zhao Junmei, et al. Construction of Formative Evaluation System for Graduation Design (Thesis) under the Background of Engineering Education Certification [J]. Science and Technology Vision, 2022, (18): 112-114.

10. Wu Hao, Wang Mingxia, Li Dandan. Construction and Effect Evaluation of Quality Assurance System for College Science Graduation Theses [J]. Education and Teaching Forum, 2021, (11): 41-44.
11. Wu Jun, Qin Fuli. Exploration of Improving the Quality of Graduation Design (Thesis) under the Background of Engineering Education Professional Certification [J]. Textile and Clothing Education, 2020, 35 (06): 539-543.
12. Huang Zhiming, Fan Yitian. Research on Quality Evaluation of Application oriented Undergraduate Thesis Guidance [J]. Modern Business and Industry, 2020, 41 (18): 198-199.
13. Hua Yupeng, Meng Genqige. Analysis of the Current Situation and Countermeasures of the Quality of Applied Undergraduate Thesis (Design) [J]. Innovation and Entrepreneurship Theory Research and Practice, 2020,3 (10): 143-144.
14. Zeng Zhen. Research and Practice of Graduation Design (Thesis) Management System in Local Universities: A Case Study of Sichuan University of Light Chemical Technology [J]. Science and Education Guide, 2023, (29): 18-20.
15. Luo Taotao, Bi Jing, Xie Song. Undergraduate thesis (design) on the construction and practice of quality assurance system based on PDCA cycle management [J]. Science and Education Guide, 2023, (25): 40-42.
16. Wang Caidong, Liu Sumeng, Sun Yusheng. Reform and Practice of Improving the Quality of Undergraduate Graduation Design (Thesis) [J]. Journal of Higher Education, 2023, 9 (21): 124-127.
17. Liu Xinting. Design and Implementation of Graduation Thesis Management System [J]. Information and Computer (Theoretical Edition), 2023, 35 (13): 74-76+80.
18. Gao Chuanping, Fang Dong, Sun Hua. Exploration of Improving the Quality of Undergraduate Graduation Thesis (Design) - Application and Innovation of Undergraduate Mentor System [J]. Journal of Higher Education, 2023, 9 (19): 165-168.
19. Hao Junhong, Li Laishi, You Junhua, et al. Practical exploration of strictly controlling the quality of graduation design (thesis) in the context of the new era [J]. Journal of Liaoning Open University, 2023, (02): 87-90.
20. Liu Bo, Wu Tao, Ji Li Na. Construction of Management Mode and Operating Mechanism for Undergraduate Graduation Thesis (Design) Based on OBE Concept [J]. Education Observation, 2023, 12 (16): 13-16+103.
21. Yuan Qingzhi. Reform of Management Methods for Undergraduate Thesis (Design) under the Background of First Class Undergraduate Construction [J]. Xueyuan, 2024, 17 (08): 59-61.

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