

Original Paper

Research on Classification Construction of Degree Programs Based on Life Cycle Theory

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Abstract

The development of degree programs is not achieved overnight, but also has a certain internal growth cycle and development stage. Drawing inspiration from the life cycle theory, a four-stage lifecycle theory of degree programs with incubation period, growth period, development period, and differentiation period was proposed. Then, combining eight key tasks related to degree program construction, including degree program cultivation, application, special qualification evaluation, periodic qualification evaluation, discipline evaluation, level evaluation of professional degree, quality special inspection, and dynamic adjustment, this paper shoot the arrow at the target based on the main work and tasks of degree program construction at different stages. Finally, taking Henan Polytechnic University (HPU) as an example, classified construction of degree programs was implemented, corresponding governance strategies were adopted to improve the construction level of degree programs in different states, and high-quality connotation development of degree programs was promoted.

Keywords

degree programs, lifecycle theory, governance system, classification construction, evaluation

1. Introduction

Degree programs are disciplines or professional degree categories approved by the Academic Degrees Committee of the State Council that can grant doctoral and master's degrees. They are the main carriers of implementing graduate education, divided into two levels: doctoral and master's degrees, and two types of disciplines and professional degree categories that can grant degrees. They undertake talent cultivation and high-level scientific research in the graduate stage. The first national conference on graduate education held since the establishment of the People's Republic of China in July 2020 stressed

the important role of graduate education in boosting innovation, catering for economic and social development, as well as modernizing the system and capacity for governance in China. The key point of work was proposed to cultivate moral character, serve demand, improve quality, and pursue excellence, with the focus on strengthening the construction and evaluation of degree programs (Xi Jinping, 2020).

China has implemented a degree examine and verify system, which has always regarded the construction of degree programs as a key means to ensure and improve the quality of graduate education, and has gradually established a comprehensive system for the construction and evaluation of degree programs. The main tasks involved in the construction of degree programs include degree program cultivation, degree program authorization review (referred to as application of degree program), special qualification evaluation of degree programs, periodic qualification evaluation of degree programs, discipline evaluation (similar to level evaluation of academic degree programs), level evaluation of professional degree programs, special inspection of degree program quality, and dynamic adjustment of degree programs. How to coordinate these important tasks related to the construction of degree programs, improve the level of degree program construction and the quality of graduate education, and modernize the system and capacity for degree program construction is related to the long-term development of the national degree and graduate education.

Scholars have conducted research on authorization review, evaluation, Double First Class construction, and dynamic adjustment of degree programs. Zhang Xianguo et al. (2020) conducted research on the integrated construction of disciplines, majors, and degree programs, and pointed out that the main goals of degree program construction are to cultivate talents and conduct scientific research. Chen Yan et al. (2021) conducted research on the collaborative governance of qualified evaluation and level evaluation services in the construction of degree programs, and analyzed in detail the requirements of the two types of evaluations for degree program construction, as well as the importance of considering the two types of evaluations as a whole for degree program construction. Chen Wenwen et al. (2019) analyzed and summarized the characteristics of self-evaluation of degree programs in Double First Class Universities based on the evaluation work plans of 37 Double First Class Universities, providing reference for other universities to create Double First Class. Based on the analysis of the fourth round of discipline evaluation. Liu Songdi et al. (2021) explored the practical path of building first-class disciplines in local universities. Mao Xin et al. (2019) also considered the construction of disciplines and degree programs in grassroots colleges of local universities under the background of Double First Class. Song Ting et al. (2020) analyzed the dynamic adjustment data of degree programs nationwide from 2016 to 2018 and conducted research on the mechanism of degree program diversion and exit.

However, there are currently few studies on the entire process of degree program construction and systematic analysis from an ecological perspective. Firstly, using biomimetic research methods and drawing inspiration from the life cycle of butterflies, a degree program life cycle theory was proposed, which is divided into four stages: incubation, growth, development, and differentiation, and targeted

governance strategies are proposed based on the characteristics of each stage. Then, in response to the eight key tasks related to degree program construction, a degree program construction ecological chain based on the existing evaluation system was constructed, and the concept of degree program governance system was proposed to guide universities in carrying out degree program classification construction. Finally, the above theory was validated through HPU's degree program construction practice using case study method.

2. Lifecycle Theory of Degree Programs

2.1 Lifecycle Theory

The entire process of an organism from birth, growth, aging to death is a complete life cycle. The lifecycle theory originated from biology and gradually applied to multiple fields such as organizations, products, and projects, with its connotation and extension constantly extending and expanding. Among them, the study of enterprise lifecycle theory is the most extensive. The first person to comprehensively and systematically elaborate on the theory of the enterprise lifecycle was American management scientist Edith. He believed that the lifecycle of a company includes three stages and ten periods: the growth stage, including pregnancy, infancy, toddlerhood, and adolescence; the mature stage, including prime period and stable period; the aging stage, including the aristocratic period, early bureaucratic period, bureaucratic period, and death period (Edith, 1997).

2.2 Lifecycle Theory of Degree Programs

The development of degree programs is not achieved overnight, but also has a certain internal growth cycle and development stage. Simply dividing it into initial, mid-term, and later stages cannot effectively divide different development stages. Based on the functions and characteristics of degree programs, Zhang Guodong et al. (2016) divided the life cycle of degree programs into six periods: incubation period, generation period, growth period, development period, maturity period, and transformation period. However, the division is too detailed and not conducive to guiding the construction of degree programs. Professor Xuan Yong (2009) applied the life cycle theory to study the growth laws of university disciplinary organizations earlier, proposing that the life cycle of university disciplinary organizations can be divided into four stages: generation, growth, maturity, and transformation. Each stage has its own characteristics and targeted strategies.

Based on the eight specific tasks involved in the construction of degree programs, drawing inspiration from the life cycle of butterflies which is divided into four stages: egg, larva, pupa, and adult, it is appropriate to divide the life cycle of degree programs into four development stages: incubation, growth, development, and differentiation.

Incubation period: Disciplines and majors that are in the early stages of construction have not yet obtained corresponding level of degree program authorization, and some basic conditions are not fully met. It is necessary to cultivate and strengthen the construction according to the application conditions of degree program. After a period of construction, degree program application will be carried out when

the conditions are met.

Growth period: Degree program is just authorized, and the construction process may still be unstable. It is necessary to construct continually according to the standards for three years and undergo a special qualification evaluation after three years. If the special qualification evaluation is not passed, it will be rectified within a specified period of time or the authorization will be revoked, leading to the premature death of the degree program. This not only has a fatal impact on the degree program itself, but also has a significant negative impact on the overall level of degree program construction in the university.

Development period: Degree programs that have accumulated certain construction experience through specialized qualification evaluations need to continuously strengthen their connotation construction, deepen reforms, and ensure that they can pass the six-year periodic qualification evaluation. Based on this, they will undergo benign reforms and healthy development, improve the quality of talent training, scientific research level, and social service ability, and achieve a high level of degree program governance, laying a solid foundation for the next step of quality improvement and increment.

Differentiation period: After a certain stage of development, degree programs will differentiate in two completely different directions. Some degree programs will break through the threshold of quantitative to qualitative change and advance to higher levels, such as successfully upgrading from the master's program to the doctoral program, entering a higher level of degree program life cycle, or achieving good results in the discipline evaluation and the level evaluation of professional degree programs. The construction level is in a leading position at home and abroad, entering the ranks of Double First Class disciplines. However, some degree programs may fail to pass periodic qualification evaluations or special inspections due to subjective and objective reasons such as weak self-construction or limited development space in their respective disciplines due to the progress of the times, and may be subject to rectification within a specified period of time, or even have their authorization revoked, or the university may actively make dynamic adjustments, leading to the end of the degree program's life.

3. Governance System of Degree Program

It has gradually formed a complete set of fully functional and comprehensive governance systems of degree programs, including the application of degree programs, specialized qualification evaluation of degree programs, periodic qualification evaluation of degree programs, discipline evaluation (level evaluation of academic degree programs), level evaluation of professional degree programs, specialized inspection of degree programs, and Double First Class disciplines construction.

After a period of professional construction, several stable research directions and a sufficient number of researching staff have been formed, and a strong foundation in talent cultivation and scientific research has been accumulated. The basic conditions for degree authorization review are fully met, and the corresponding level of degree programs can be applied for. If passed the authorization review, further strengthen the construction, then face to the special qualification evaluation in three years. If not passed, continue to strengthen the construction of basic conditions and strive for successful approval in the next

round of degree authorization review. This stage corresponds to the incubation period of the degree program lifecycle, and it is necessary to compare the basic conditions of degree authorization review, refine the research direction, and highlight the advantages and characteristics.

The special qualification evaluation is an assessment of the construction quality of the degree program after approval. It is a bottom line evaluation and must pass. If it does not pass, it will be rectified within a specified period of time or the authorization will be revoked. This stage is a critical period for the quality of degree program construction to gradually stabilize. Corresponding to the growth period of the degree program lifecycle, it is necessary to focus on determining the research directions, cultivating a team of mentors, strengthening the construction of basic conditions, and solidly carrying out teaching and research work.

Degree programs that have passed the specialized qualification evaluation will enter the regular construction stage, and they will participate in the periodic qualification evaluation and regular special inspections of degree programs that take place every six years. Periodic qualification evaluation focuses on evaluating the quality of construction, while special inspections focus on supervising the construction process. These two tasks still belong to the bottom line evaluation and must pass. If they do not pass, they will be rectified within a specified time limit or their authorization will be revoked. This stage is a critical period for determining the long-term goals of the degree program, corresponding to the development period of the degree program lifecycle. It is necessary to continuously stabilize the research directions, continuously improve the level of the teaching staff, and produce more representative results.

During the development period of degree programs, in the early stage of considering various factors such as the layout of degree programs and the potential for disciplinary development, the dynamic adjustment mechanism of degree programs can be used to achieve the active and orderly exit of degree programs, thus transitioning to the differentiation period of the lifecycle of degree programs.

The another and most important branch in the differentiation period of degree program lifecycle is the continuous improvement of degree program construction level and quality, achieving good results in discipline evaluation (for academic degree programs) and level evaluation of professional degree programs, and then moving towards the construction of Double First Class disciplines, or participating in other professional evaluations and international evaluations, achieving excellent results, reflecting a high-level degree program construction. Unlike qualified evaluations, level evaluations have relative independence and are generally organized and implemented by the third-party professional institutions. It usually refers to certain standards to make value judgments on the comprehensive level and strength of degree programs in the same discipline in terms of talent cultivation, academic team, scientific research, etc., and ultimately determine the relative position of each university.

After reaching a higher level of construction, lower level degree programs can further apply for higher level degree authorization review, such as upgrading from second level programs to first level programs or master's programs to doctoral programs, spiraling up and starting the higher-level lifecycle of degree

programs.

By utilizing various evaluation methods rationally, we aim to consolidate the value consensus of multiple subjects involved in various evaluations on the development of graduate education quality, so that they can integrate and collaborate with each other, jointly exert positive momentum, promote the construction and quality improvement of degree programs, and promote the modernization of the degree programs system and capacity for governance.

4. Take HPU as an Example: Implements Classified Construction of Degree Programs and Promotes High-Quality Connotation Development of Degree Programs

After more than 40 years of development, graduate education at HPU has gone through a process of development from scratch, from small to large, from single to multiple categories, and from single to multi-level. There are currently 6 doctoral programs in first level disciplines, 27 master's programs in first level disciplines, and 21 master's professional degree programs, covering 8 categories such as science, engineering, management, economics, law, literature, education, and art. According to the lifecycle theory, different governance strategies are adopted for degree programs at different stages of construction, and classified construction is implemented, effectively promoting the high-quality connotation development of degree programs.

4.1 Focusing on Advantageous Disciplines and Anchoring the Application for Doctoral Programs to a Higher Level

Doctoral programs are an important component of high-level talent cultivation system and a crucial symbol of high-quality development for a university. HPU has strengthened top-level design, planned and deployed in advance, and focused on cultivating the doctoral programs in professional degrees, basic disciplines, and interdisciplinary in response to major national strategic needs and local economic construction needs, such as the professional doctoral degree program in resources and environment, first-class doctoral degree programs in civil engineering, mathematics, and interdisciplinary doctoral degree program in remote sensing science and technology. Through convening promotion meetings for the application of doctoral programs, organizing the college to concentrate its strengths and deeply explore the application materials, conducting extensive research both inside and outside the university, HPU will strive to achieve excellent results in this year's degree authorization application review.

4.2 Carry out Construction Based on Evaluation Indicators to Enhance the Characteristics of Existing Degree Programs

The construction of degree programs is a long-term project, and qualification evaluation is not only an important guarantee measure for the national inspection of the level of degree program construction, but also a main driving force for promoting the active strengthening of degree program connotation construction. HPU currently have 19 degree programs participating in the periodic qualification evaluation from 2020 to 2025, and 18 degree programs participating in the special qualification evaluation to be carried out this year. For these degree programs that have participated in qualified

evaluations, prepare evaluation materials item by item based on the evaluation index system, conduct solid self-evaluation, continuously refine their advantages and characteristics, and achieve the goal of unique and quality. In response to the shortcomings identified in the evaluation, effective improvement measures are taken to achieve the goal of promoting construction through evaluation, promoting improvement through evaluation, and combining evaluation with construction, continuously improving the quality of degree program construction.

4.3 Conduct Investigation and Research to Maintain the Bottom Line of Quality of Newly Approved Degree Programs

HPU have 11 newly approved master's degree programs, to welcome the first batch of new students in this Autumn. In order to construct the degree programs with high standards, the graduate school conducted research in relevant colleges to understand the current construction foundation of these degree programs, such as research directions, faculty, training plan, degree standards, achievement requirements, enrollment and admission, scientific research projects, platform construction, course construction, base construction, case teaching, etc. Through analyzing the current problems and the next construction plan in-depth, some measures have been proposed such as to invest sufficient research findings, increase teacher training efforts, construct the practice bases, and stress the characteristics. This will have an important promoting effect on solving the problems, ensuring that the bottom line of the special qualification evaluation can be maintained after three years, and laying a solid foundation for high-quality development in the future.

5. Conclusion

Degree programs are not innate, and their construction process is not overnight. Therefore, the management of degree programs should follow their development laws. Drawing inspiration from the life cycle theory, a four-stage lifecycle theory of incubation period, growth period, development period, and differentiation period was proposed. Combining eight key tasks related to degree program construction, including degree program cultivation, application, special qualification evaluation, periodic qualification evaluation, discipline evaluation, level evaluation of professional degree, quality special inspection, and dynamic adjustment, this paper explores the modernization of degree program governance system and governance capacity. Finally, taking HPU as an example, a case study was conducted, and corresponding governance strategies were adopted to improve the construction level of degree programs in different states.

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