

Research on Student Department Work Innovation Mechanism Based on Hypercycle Theory

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Abstract

This paper gets rid of the thinking pattern of “linear command” department management, and discusses the new mode of innovating department work fundamentally from the perspective of mutual benefit and symbiosis of multi-level management of student department. By comprehensively applying the supercycle theory, self-organization theory and symbiosis theory, taking the student work of the School of Economics, Management and Law of the University of South China as an example, this paper analyzes the unreasonable phenomena existing in the current student work, analyzes the influencing variables and formation mechanism of the department work efficiency, and analyzes the interaction among counselors, ministers, vice ministers and secretaries. Therefore, the supercycle symbiosis system of “counselor-minister-Deputy minister-secretary” and its operating mechanism are constructed. The fundamental way to improve the efficiency of students’ work is not within the department, but to form a super cycle of students and teachers of multiple grades into a mutually beneficial symbiosis system and change the situation of independence of the four, so as to promote the efficient operation of students’ work.

Keywords

Hypercycle Theory, Symbiosis Theory, Self-Organization Theory, Department of Efficiency

1. Introduction

Innovation has always been the main melody of social development. With the rapid development of information technology and the continuous reform of higher

education in the new era, students' work must keep pace with The Times and innovate actively. At present, the talent cultivation of colleges and universities has changed from knowledge imparting and skill training to all-round development, so the personalized needs and differentiated development of students are becoming more and more important. In this case, the responsibility of college students' work is not only limited to campus management and service, but also includes guiding students' study, life and thought, cultivating students' comprehensive quality and social responsibility. At present, college student work still faces many challenges and problems, such as the lack of student autonomy, the restriction of traditional ideas, the rise of new media and so on. The innovation of college students' work in the new era is not a single and one-sided innovation in one aspect, but a comprehensive innovation in decision-making mechanism, management organization mechanism, evaluation mechanism, supervision mechanism and so on. This paper aims to analyze the current situation and problems of college students' work in the new period, and put forward corresponding solutions, so as to better meet the needs and development of college students. Based on the comprehensive management theory, pyramid theory, symbiosis theory and super cycle theory, this paper takes the student work of the School of Economic Management and Law of South China University as an example. To build a leading supercycle symbiosis system of "counsellor-minister-vice-minister-secretary" in domestic universities with South China characteristics, in this system, the interaction of four departments is analyzed from the perspective of supercycle.

2. Research Review

The current work development of student departments in colleges and universities does not match their responsibilities. How to do the work of Student Department well and how to play its due role in cultivating freshmen has become an important subject in the academic circle. The organizational structure of student affairs administration departments in China is usually an entity with specific business scope (organization construction, student growth and talent service, student comprehensive evaluation and consultation, scientific and technological innovation, social practice, etc.) and certain resources (social resources, funds, sites, etc.). In order to achieve the strategic goal of cultivating talents, the functions and responsibilities of student education, service and management are performed through internal division of labor and coordination mechanisms. The innovation of college student department is an important aspect of college student work, related to the efficiency and quality of college personnel training, is also an important reflection of the management level of colleges and universities. Some scholars put forward that the work of university student affairs department is an important guarantee to promote the reform, construction and development of the university, and an indispensable link in the chain of training innovative talents. Strengthening the work of college students is an important task

of the connotation development and quality construction of the university. Therefore, it is very necessary to innovate college student department management, improve department work efficiency and cultivate new talents.

At present, the related research of Chinese university students' department management mainly focuses on path exploration, management strategy, management mode, experience learning, countermeasures and case analysis, and so on. The policy related research is also mostly specific subjects (Beasley, 1990; Zobel & Hamilton, 2002; Walter et al., 2013). Yang (2015) believes that in order to improve the management responsibility system of students' work objectives, colleges and universities should improve the assessment system of objectives. Give full play to the role of performance evaluation in student management as target orientation, fault punishment and exemplary incentive (Song & Sheng, 2018). Zhang (2011) believes that the problems and misunderstandings of university management are mainly reflected in the fuzziness of management concepts. Zhang (2019) proposed that the fundamental way to improve teaching quality is to form a super cycle system of mutual benefit and symbiosis among teaching. Liu (2021) believes that modern apprenticeship is an important part of the vocational education reform system and an effective way to promote school-enterprise cooperation and the integration of industry and education. Zhang (2013) believes that through reviewing the development process of the student management system in colleges and universities, its value orientation, system construction and management mode all show distinct development characteristics. There are few systematic policy studies related to the work management of university student affairs Department, such as undergraduate education management policy, informatization construction of university student affairs Department and development of university student affairs Department. Most of them are interpretation of specific policy texts and subjective evaluation and analysis of key time nodes (Wu, 2020; Thuseethan, 2015; Zuo & Duan, 2021). Some scholars have some similarities or convergence on the organizational structure and functions of student departments in universities, but there are also some differences. Based on the principle of doing the same or similar work, a comparative analysis of "function" is carried out. For example, Zhang (2021) believes that college student organizations are a stage for students to fully exercise themselves, cultivate their abilities and display their talents. College student organization, as the hub connecting school authorities and students, is a college organization guided by teachers and with students as the main body. Wei (2020) believes that for a long time, student organizations in colleges and universities have been influenced by the traditional ideas and the "administration" of the internal management system of colleges and universities, resulting in the tendency of administration. The perspectives of academic research on the development of the management mode of student affairs department in universities show the characteristics of diversification. According to the time clue, it can be divided into four stages: starting, forming, tortuous, reforming and perfecting. This pa-

per summarizes and reviews the college student management system in a certain period from the perspective of multiple disciplines. Based on the analysis of the above scholars, we believe that there are few researches on the methods and modes of student department work management in colleges and universities, which has certain research value. Based on the super-cycle perspective, this study will build a college student department working system in which superior and subordinate cooperate with each other, communicate smoothly and coexist harmoniously.

3. Hypercyclic Symbiosis System

3.1. Theoretical Basis

The reaction cycle is a relatively hierarchical circulatory system consisting of physical, chemical and relatively simple biochemical reactions. This cycle is driven by an external catalyst, similar to the metabolism of living systems. Catalytic cycle refers to the technology of increasing the conversion rate of reactants and increasing the yield of products by recycling reactants in chemical reactions. Is a higher cycle than the reaction cycle, similar to the self-replication of living systems. References to terms of catalytic cycling, such as error refers to the error between the previously calculated concentration of the reactant in the recirculation flow and the actual concentration of the reactant, and conversion refers to the percentage of the reactant converted to the desired product. Supercycle refers to the technology that increases the flow rate of reaction materials and the reflux of some products in the process of chemical reaction to realize the utilization rate of reactants and the purity of products. It is a circulatory system formed by the combination of multiple catalytic cycles, which is similar to the variability of life system. Supercycle term references, such as excess rate refers to the ratio of the recirculating flow in the supercycle to the flow of the original reactant into the reactor, and reflux ratio refers to the ratio of the reflux flow to the original feed flow. See **Figure 1**.

Among them, S is the reaction substrate and E is the reaction enzyme. In the reaction cycle, P is the product of the reaction. Catalyst E and S interact to form intermediate complex E_S , which is gradually transformed into E_P , which finally releases product P and enzyme E , and then E will participate in the next cycle. In the supercycle, $I_1 \dots I_n$ represents catalytic cycle, $E_1 \dots E_n$ stands for catalyst.

The work of student department in colleges and universities in this paper mainly refers to the general term that public universities guide, organize, coordinate and control students' learning and activities from enrollment to graduation through specific management methods such as students' comprehensive development, students' comprehensive assessment, and student series of activities.

Based on the super cycle theory, the explanatory framework of "macro-hierarchical structure-middle-level path reaction cycle mechanism-micro subject and participant" is designed. Starting from the macroscopic factors of the hierarchical structure of student departments in colleges and universities, we explore and

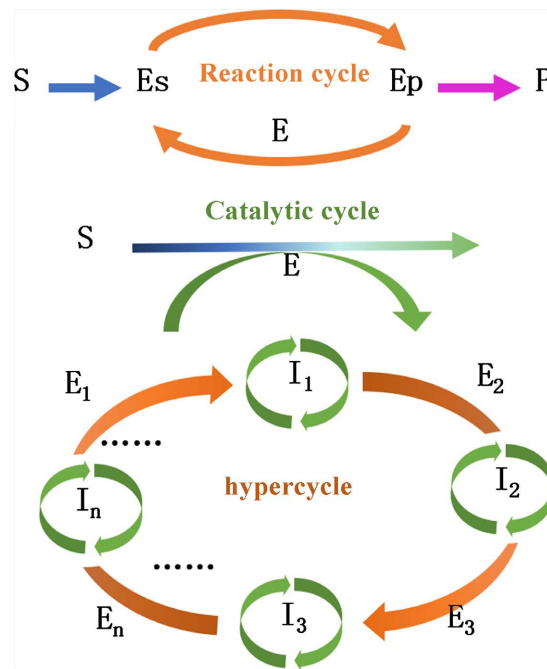


Figure 1. Supercycle diagram.

find out how they affect the formation mechanism and work efficiency of the work management system of student departments in colleges and universities. Second, path dependence. Based on the meso-level path response mechanism, this paper analyzes how the work efficiency of university student departments is subject to learning effect and coordination effect. Third, dynamic mechanism. Based on the perspective of micro participants, this paper analyzes how the main participants are driven by internal and external factors in the development process of university student department work, such as material inheritance after the change of leadership, participants' work experience learning, etc.

3.2. Analysis of Variables

Symbiosis theory was proposed by American biologist Lynn Margulis (1938-2011) and others on the basis of the "Gaia hypothesis" (Lovelock & Margulis, 1974). It's about the natural connections between creatures of different species. Based on the symbiotic theory, we continue to take the work of the Student Affairs Department of the School of Economics, Management and Law of South China University as an example. With limited working experience and ability, young teachers mostly rely on DIY learning and can't handle the work of student department well. The student management work of counselors is already very busy, and they can only work part-time in the student affairs Department in spare time and energy, which will inevitably affect the work efficiency.

This paper uses symbiosis theory to explain the variable subject of college students. In the group of college students, the definition of variables in the subject of variables means that the status and role of an individual in the group will be affected by various internal and external environment variables, and at the

same time, it will become the object of influence of itself and other variable subjects. These variables include but are not limited to personal experience, personality, social background, social circle, academic performance and other factors. For example, a college student's academic performance may affect his status and role in the student body. If his grades are good, he may become a role model for his classmates and be seen as the top student in the group; If his grades are not good, then he may be labeled as a "poor student" and his status and role will suffer. In addition, the relationship with other variable subjects will also affect the status and role of individuals in the group. If he hangs out with well-connected classmates, he may become the social butterfly of the group. Therefore, in the group of college students, the definition of variables in the subject of variables needs to take into account the mutual influence and interaction between individuals and groups. Only by fully understanding and considering the symbiotic relationship between individuals and groups can we better promote the common development and prosperity of college students. Through the phenomenon of biological symbiosis, we can realize that symbiosis is an interdependent, harmonious and unified destiny relationship between teachers, teachers and students. Symbiotic environment is a complex system, including not only the university environment where the symbiotic system is located, but also the internal environment of teachers, teachers, students and so on. Therefore, the analysis of symbiotic environment requires a comprehensive analysis of multiple factors. At the same time, the symbiotic pattern is not invariable, it will also change with the changes of symbiotic unit nature and symbiotic environment.

At present, the number of student cadres is increasing year by year, but colleges and universities do not pay enough attention to the construction of student departments. This goes against the harmonious and stable state of symbiosis theory, which will lead to a problem: the work efficiency of the student department is not high, the enthusiasm of the student secretary is not high, and the communication between the student minister and the upper and lower secretaries is not smooth.

3.3. Mechanism of Working

We use the self-organization theory to explain the reaction cycle mechanism of our innovation. Self-organization theory is a system theory established and developed in the late 1960s, mainly a new development of L. Von Bertalanffy's system theory (Von Bertalanffy, 1951). Its research object is mainly the formation and development mechanism of complex self-organizing system (living system, social system), that is, how the system automatically moves from disorder to order and from low order to high order under certain conditions. The self-organization characteristics of the main body of the work operation of university student departments show that a system must have four conditions to become a self-organization system: openness, far from balance, nonlinear action and fluctuation.

In Section 3.2, I put forward the variable analysis of the work subject of university student departments. However, based on the actual situation of the Student Department Working Committee of the School of Economics, Management and Law of the University of South China, I believe that the operation process of student departments in universities mainly involves four types of subjects, namely counselors, ministers, vice ministers and secretaries. Among the four levels of subjects, there is a certain relationship in the four levels of “counselor-minister-deputy minister-secretary”, namely, the research on the inheritance mechanism of the four levels of work experience. Its reaction cycle is a nested cycle composed of four levels: counselor’s reaction cycle, minister’s reaction cycle, deputy minister’s reaction cycle and secretary’s reaction cycle, as shown in **Figure 2**.

3.4. Path Dependence Analysis

Path dependence mainly refers to the technological evolution and institutional change in human society. Because of inertia, when entering a certain path (whether good or bad), it will have a certain dependence on this path. Due to the existence of learning effect, coordination effect and other realistic constraints, the work of the student department will continue to self-reinforce along the established direction in this process.

Learning effect is an economic term. Learning curve is usually used to represent the relationship between output and the number of input factors. This curve is very important for organizations and individuals trying to enter new areas, because high production costs at the beginning of the organization may lead to diseconomies of scale.

In this case, each agent working in the student sector of the University of South China can improve efficiency by accumulating experience in production, design and management, thus generating benefits for the student sector work organization. In the long run, the learning effect can provide profit opportunities

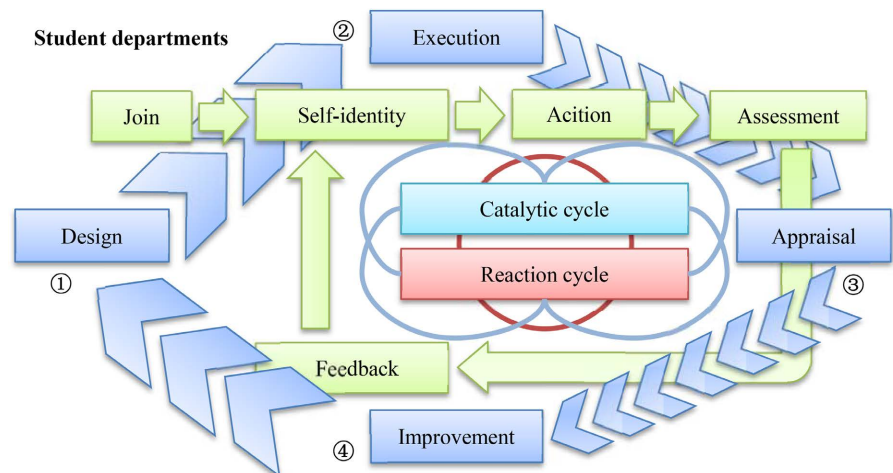


Figure 2. Response cycle of work operation of student departments in colleges and universities.

for individuals or organizations, but it can also bring negative effects. Specifically, the organization has the attribute of strengthening or solidifying the conventional behavior pattern, and the individuals in the organization will have cognitive inertia or action inertia when they follow this pattern. For example, in work, many student leaders and officers lack innovation and follow the old conventions and lack of innovation. When the environment changes, they are used to using and developing the known knowledge and experience to complete similar organizational activities in the face of problems, that is, they tend to adopt developmental learning rather than exploratory learning. However, this cognitive mode of learning may cause the organization to fall into the trap of familiarity, maturity and similarity, and thus lead to the reduction of work efficiency.

The coordination effect usually has the function of maintaining and strengthening the old system. This is because the creation of a formal rule is often accompanied by a series of informal rules to innovate, continue, maintain or end it.

For the work management of our university student departments, in order to adapt to the new needs of the change of the working environment, reflect the new changes in university education and management and timely serve the college students, the relevant student departments need to keep pace with The Times, cooperate with each other, constantly according to the practical needs, bring forth the new from the old, innovate the working mechanism, strengthen the contact and coordination of various departments. To supplement, revise and perfect the old management system, the process itself makes the old management mode to strengthen and improve.

4. The Case

4.1. Introduction

The university of South China, as a demonstration university in Hunan Province, has a certain representative in the construction of student department work in the country. Based on the work of the University of South China student department, this study can take the University of South China as a pilot, with points and areas, to promote the work of the University of South China student department, improve the efficiency of student department organization decision-making.

During the three years of work in the student department of the School of Economics, Management and Law of the University of South China, the author found that there are the following obvious problems in his work: First, the student materials are incomplete, which will be lost after every change of term. After many years of change, the student materials basically lack verifiability and integrity. Second, the work efficiency of the student department is low, and the connection between different departments is not close, and the coordination ability is poor. Thirdly, the work experience of the student department lacks a reliable inheritance mechanism, and the talent training mechanism is chaotic,

which often leads to no one taking over the department. The talent factor ultimately affects the overall work efficiency of the student department.

The paper discussed the University of South China Economics Management and Law School student department work as an example. This paper analyzes and discusses the construction of the supercycle symbiosis system in the student department of the University of South China.

4.2. System Operation

In view of the above problems, taking the university of South China as an example, it is imperative to build a work symbiosis system of university student departments based on super cycle. In this system, based on the author's work practice, the author takes the following measures to solve the above problems:

First, the continuation and arrangement of materials. Materials are arranged and filed during winter and summer vacations in every semester. Timely arrangement is conducive to ensuring the integrity of materials. Before the transition, organize the materials and give them to the next successor.

Second, improve communication and collaboration between departments. For the series of education month activities, such as speech activities and education evening parties, the communication between departments was strengthened, and a good coordination mechanism was established through secondary communication with each department and reasonable division of labor of activity work.

Third, efforts should be made to select and train talents. When recruiting student deputy minister, student department secretary and other personnel, emphasis should be placed on ability and time to select talents who can continue to develop. In the selection of officers, we should also abide by the principle of selecting more talents, improve the training of officers, and get familiar with the work of the student department earlier. In terms of talent training, the author adopts the "B-station we-media video" teaching method, which uses the online method to promote more learning and development, improve the popularity, and enhance the ability of repeatable teaching.

4.3. Analysis Results

The construction of a supercycle symbiotic system in the work department of college students can bring positive effects in the following aspects:

1) Enhance the cohesion and cooperative spirit of members within the department. The super-cycle symbiotic system requires the members of the department to cooperate, depend on each other, care for and support each other, so it can promote the unity and cooperation of the members of the department and enhance the cohesion of the department.

2) Promote contact and interaction between the department and the outside world. In the symbiotic system, in addition to communicating with internal members, department members also need to establish close contact and interaction with the outside world, including cooperation with students, other depart-

ments and social organizations, as well as communication with school leaders and colleges. This can better serve the students and provide the department with more opportunities and resources.

3) Enhance the innovation and development capacity of the sector. Hypercyclic symbiosis system encourages independent innovation and continuous evolution of department members to adapt to the changes of external environment and the needs of internal member development. In this way, the members of the department can constantly improve their own abilities and realm, and then promote the development and growth of the department.

4) Optimize resource allocation and management. The symbiotic system can optimize the allocation and management of resources within the department, realize the value of resources to the greatest extent and reduce the waste and reuse of resources through reasonable resource integration and utilization.

It should be noted that, before building a hypercyclic symbiosis system, it is necessary to fully investigate and analyze, understand the actual situation and demand of the department and external environment, as well as the ability and willingness of members, and work out specific implementation plans and measures. In addition, the implementation of the programme needs to be continuously monitored and evaluated to ensure that implementation results are achieved and sustained.

Under the implementation of the above measures, the current work efficiency is developing in a good direction. In the future, the author will continue to work hard to improve the efficiency of the student department.

5. Conclusion

5.1. Multi-Agent Participation and Innovative Working Mode of Student Department

Encouraging multiple agents to participate in the innovation of college student management model. The good operation of the university student management system cannot be separated from the input and participation of multiple agents. In this regard, the main body of college student work is college leaders, counselors, student ministers and secretaries.

First of all, it is necessary to build a goal centered on the interests of multiple agents, clarify the interest demands of each agent, and optimize the combination of work efficiency of all parties through the game and dialogue of relevant agents.

Secondly, it advocates the idea of multiple agents participating in governance, that is, the management agents of university student departments are independent and equal, and they can participate in the process of university student management directly or indirectly. As one of the core agents, student minister, deputy minister and secretary should not only clarify and affirm the status and value of their participation in governance in future development. But in practice to implement their work responsibilities and obligations.

Finally, it is clear that the counselor teachers always play the role of auxiliary

agents. Under the current background of administrative streamlining and delegating power, the counselor teachers should give full play to the effect of autonomy, reform the hierarchical management mode and learn from advanced management experience, so as to innovate and integrate it with the university student management system. At the same time, university leaders should take the lead in establishing a good cooperation and communication platform between counselors, teachers and students, so as to ensure that the university student departments can effectively maximize the efficiency of all parties in the operation process.

5.2. Promote the Breakthrough of Management System Based on Dependent Reform

Based on the dependent reform, the university student department work management system breakthroughs. In order to break through or eliminate the path dependence in the reform of the work management system of student departments in colleges and universities, two ways can be adopted according to the specific circumstances of the environment, scale, performance and complexity required by the system operation, namely, the dependent reform with mild and asymptotic subelation characteristics and the radical and alternative breakthrough reform.

Based on the above explanation and analysis, I believe that the college student management system is more suitable for the former, namely the moderate and asymptotic sublation of dependent reform. The adoption of this reform method can not only maintain and strengthen the system self-strengthening mechanism under the coordination effect, learning effect and adaptive anticipation effect, but also adjust and improve the original work of university student departments under the background of external environment changes, the arrival of “new window of opportunity” and the occurrence of key reform events.

In this regard, we should dialectically look at the relationship between path dependence and path breakthrough, which one is better and which one is worse needs to be tested in practice in the continuous system reform. Therefore, the key to the reform of the work management system and mode of university student departments is to seek a balance between them continuously.

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Conflicts of Interest

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

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