INNOVATION OF SCHOOL-ENTERPRISE COLLABORATIVE CULTIVATION MODE FOR UNIVERSITY E-COMMERCE MAJORS IN THE CONTEXT OF SYMBIOSIS THEORY

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ABSTRACT

School-enterprise collaborative training model is a system of cultivating talents through school-enterprise cooperation and combining practice. This paper explores the practical model of university collaborative innovation based on symbiosis theory, aiming at examining and analyzing the complex synergistic relationship between each inner symbiotic unit, revealing the inner practical evolution logic, and providing useful reference and inspiration for the improvement of university collaborative innovation performance. The symbiotic model of collaborative innovation between universities and enterprises interacting with each other is constructed, and innovation is carried out with market demand as the link. Based on this, e-commerce majors in colleges and universities should integrate enterprise elements, form multilateral communication mechanisms and promote the stability of symbiotic relationships. In order to verify that the symbiosis theory can innovate the school-enterprise collaborative training model, a school-enterprise cooperation internship training platform was built. 19.1% of students felt very dissatisfied and 18.9% felt very satisfied with it before the internship. The students who were very dissatisfied after the internship decreased from 19.1% to 2.1% before the internship, and 53.1% of the students completely achieved the goal, which indicates that improving the symbiotic integrated governance system of university collaborative innovation can improve the ability of university collaborative innovation comprehensively.

KEYWORDS

Collaborative innovation symbiosis model; symbiosis theory; factor integration; multilateral exchange mechanism; practical evolutionary logic

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1. INTRODUCTION

In the context of the rapid development of information technology and the increasing popularity of the Internet, the competition of enterprises is undergoing significant changes, and e-commerce is becoming an important business model for enterprises, and the demand for e-commerce talents in society is becoming more and more urgent [1-3]. E-commerce is developing rapidly, and because the cost of innovation and entrepreneurship in the e-commerce industry is low, the success rate is high, and the development space is huge, a large number of innovative and entrepreneurial talents are needed more than in other industries [4-5]. It is one of the missions of colleges and universities to cultivate high-quality skilled talents for local economic development [6-7]. The "symbiotic" talent cultivation model of university and enterprise is a new model based on the theory of the development of applied talent cultivation and the idea of national supply-side reform. The "double main body" refers to the school-enterprise sharing and building educational resources and educational environment, giving full play to the advantages of both schools and enterprises in talent training, and jointly implementing talent training programs to achieve the goal of training high-end skilled professionals, realizing the goal of "symbiosis" between schools and enterprises, and developing and growing together [8-10].

Among them, e-commerce majors have achieved remarkable results due to their high relevance and easy integration with the field of practice. The talent cultivation model of school-enterprise collaboration is a talent cultivation method that integrates school education resources and enterprise resources and has a long history [11-13]. Its purpose is to jointly cultivate innovative and entrepreneurial talents in terms of curriculum systems, practical teaching, innovation and entrepreneurship through collaborative cooperation between schools and enterprises. The school-enterprise synergy mechanism can improve the effect of innovation and entrepreneurship cultivation and clarify the goal of talent cultivation. Therefore, the synergistic development of both schools and enterprises can share the transformation results and talent dividends, and further improve the system of training innovative and entrepreneurial talents in e-commerce majors, and realize the win-win situation between them, which is a strong necessity for both schools and enterprises.

The essence of training model innovation is management process innovation. The literature [14] demonstrated an improvement based on the transformer model, which reduced the difficulty of model training and training time cost and achieved higher model recall and accuracy in text sentiment classification. E-commerce reviews are chosen as the research object and deep learning theory is applied. The experimental results show that by comparing BiLSTM, Naive Bayesian model, Serial BiLSTM_CNN model and BiLSTM with the attention mechanism model, the method improves 9.71%, 6.05%, 5.58% and 5.12% in terms of recall and approaches the peak level of F1 value of the tested model. Thus, this finding demonstrates that it can be used to improve the accuracy of text sentiment classification and effectively apply the method to text classification. The literature [15] proposed countermeasures to improve the innovation capabilities of e-commerce practitioners in rural areas. Through the research, it is

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found that the innovation ability of rural e-commerce application talents is generally low. The key point of the solution lies in how to improve the innovation level of rural e-commerce application talents. Combined with the general environment of rural e-commerce industry development, countermeasures to improve the innovation level of rural e-commerce application talents are proposed. Improve the current situation of mediocre rural e-commerce application talents and promote the innovation of rural e-commerce application talents. Fundamentally promote agricultural development and the construction of new socialist countryside. A literature research method based on fuzzy comprehensive evaluation method, systematic analysis method and a combination of questionnaire and interview is used. Data processing was performed through big data and information science methods, and simulations were conducted with a company's Internet rural talent dataset, and the results showed that with the method of this paper, the recognition rate reached 98% and the speed was significantly higher, 20% faster than others. The literature [16] studied the talent needs of ocean-going cruise lines and sought high-quality talent development strategies for ocean-going cruise lines. The results of the study showed that there are many problems in cruise talent training at different levels, categories and contents. The cultivation of customized talents includes internal cultivation, intermediary cultivation, and university education cultivation; the strategy of ocean talent cultivation needs to be carried out at the system level, process level, and environment level. The results of the study provide a theoretical basis for the cultivation of talents in marine systems. The literature [17] analyzed the quality structure of composite tourism English talents in coastal cities in the context of all-area tourism, to provide a reference for the cultivation of composite tourism English talents in coastal cities. As the main force of talent cultivation, colleges and universities should clarify the new requirements of tourism for talent, give full play to the role of intellectual support and information guidance, update the concept of talent cultivation in time, reform the mode of talent cultivation, and assume the responsibility of talent cultivation. The literature [18] shows that the construction of professional core courses is an important part of professional construction and talent training, and plays a very important role in the cultivation of students' professional knowledge, ability and quality. To explore the innovative ideas and methods of integrating "curriculum ideological and political education" into the construction of professional core courses, "curriculum ideological and political education" has been integrated and implemented in the core course of "Internet marketing" of e-commerce majors. The content of "curriculum ideological and political education". The questionnaire was designed from eight aspects: integration effect, relevance, professionalism, richness, knowledge, ability enhancement, quality enhancement and learning effect. The empirical study was conducted with relevant students to explore their satisfaction with the integration of "curriculum ideology and politics" in the Internet marketing course. The professional training model proposed in the above literature has its limitations and lacks innovation, and cannot be committed to providing network and entrepreneurial services in universities.

Therefore, based on symbiosis theory, this paper aims to construct a new framework of collaborative innovation in universities, analyze the practical model of

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collaborative innovation embedded in the symbiosis model of universities by examining the structure of symbiotic units, symbiotic relationships and symbiotic environment, and then clarify the practical evolution of "uni-beneficial symbiosis, differential mutually beneficial symbiosis and balanced mutually beneficial symbiosis". Based on this analysis, the practical evolution of "unilateral symbiosis, differential symbiosis and balanced symbiosis" is clarified. On this basis, the paths of optimizing the collaborative innovation model of colleges and universities are proposed in terms of constructing a good-order system of collaborative innovation, reshaping the organizational form of collaborative innovation and building a regional cultural platform of mutual benefit and symbiosis. Through the integration of elements between universities and enterprises, a multilateral exchange mechanism is formed. According to the relevant characteristics and special schooling ideas of e-commerce, it forms a two-way embedding of school-enterprise double-body interaction. Taking the e-commerce profession in colleges and universities as a breakthrough, we innovate talent cultivation mode to the further development of e-commerce talent cultivation in colleges and universities.

2. SYMBIOTIC MODEL OF UNIVERSITY COLLABORATIVE INNOVATION

The interaction mode among universities, enterprises and governments determines the depth and breadth of collaborative innovation, which reflects the mode and intensity of action between units internally, and also affects the interests and information relationship among symbiotic units, involving the evolution of communication mechanism of symbiotic units. The co-innovation symbiosis model of colleges and universities refers to the specific forms of generation, interaction and evolution of technology flow, capital flow, information flow and knowledge flow among colleges and universities, enterprises and governments. Through the collaborative innovation model, innovation subjects such as universities, enterprises and government agencies take market demand as the link, center on technological innovation and industrialization, and use the collaborative innovation platform as the symbiotic interface to form a symbiotic system of mutual influence, mutual evolution and mutual collaboration, and then enhance their development potential. The innovation model of university collaborative cultivation based on symbiosis theory is shown in Figure 1.

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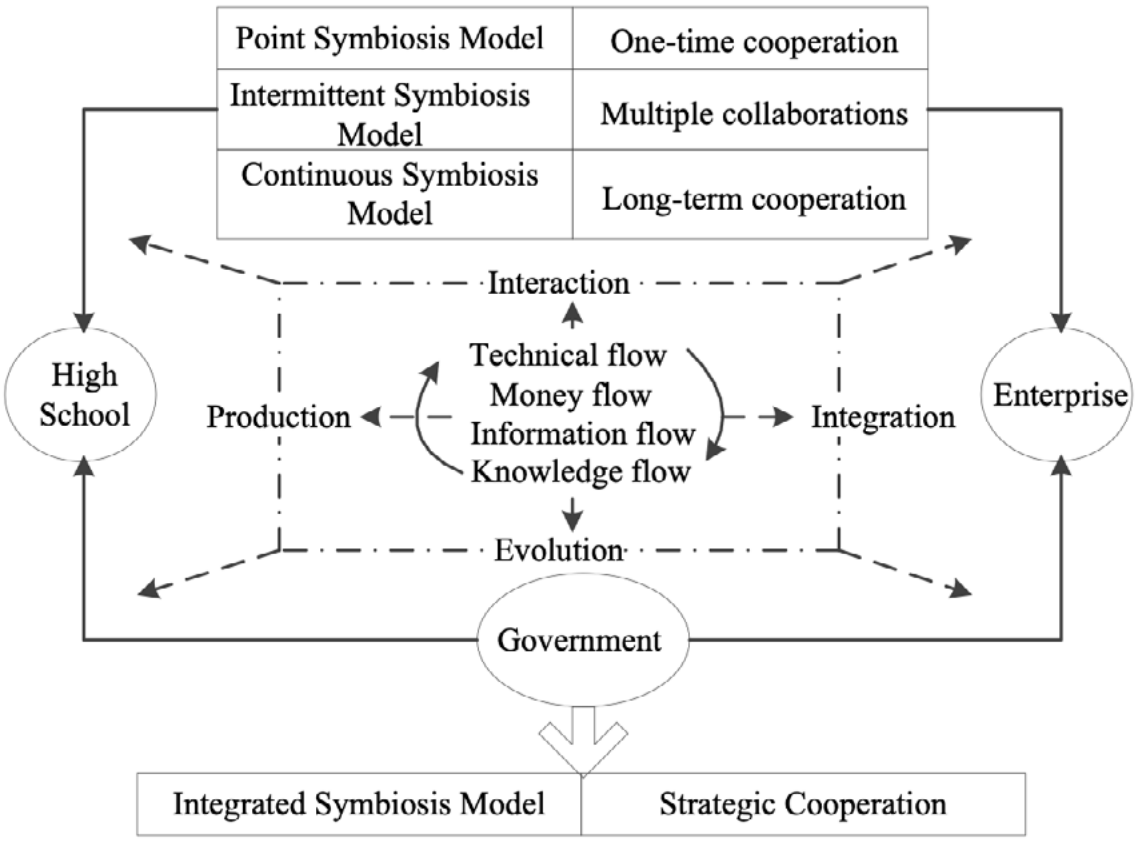

Figure 1. Synergistic innovation symbiosis model

As can be seen from Figure 1, there are four main types of symbiosis modes: point symbiosis mode, intermittent symbiosis mode, continuous symbiosis mode and integrated symbiosis mode, and there are differences in the degree of symbiosis under different symbiosis-derived modes. The point symbiosis mode often appears in the initial stage, due to the uncertainty of the market and the ambiguity of technology prospects, the cooperation between collaborative innovation subjects is random and unstable. After the formation of a symbiotic relationship, the cooperation mode tends to show one-time and transient nature because of less exchange of information and resources between unit elements. With the continuous integration of factor resources among participating subjects, to reduce information search cost and transaction costs, the cooperation among subjects gradually turns to intermittent symbiosis mode, which has relative stability and manifests as multiple cooperation. The continuous symbiosis mode is reflected in the complementarity and integration between the elements, with stability and high efficiency, which lays the foundation for long-term cooperation. In the symbiotic integration stage, the material, resource and information circulation between symbiotic units are based on the circulation within the symbiosis, and each participating part synergizes with each other and becomes an integral part of the whole symbiotic system. Multilateral exchange mechanisms are formed between universities, enterprises and governments based on the integration of elements, and the mediums complement each other, and the symbiotic relationship is stable with strong evolution and reciprocity.

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3. FRAMEWORK FOR COLLABORATIVE TRAINING OF E-COMMERCE IN UNIVERSITIES

The basic ideas of synergy theory can be summarized as the synergy effect, servo principle and self-organization. Synergy theory was first used to explain some phenomena in natural science, and then gradually extended to management science, education, economics and other fields, and now synergy theory has been widely used in many disciplines. There is no doubt that synergy theory is the development of modern system thought, and it provides new ideas for universities to explore the cultivation mode of e-commerce talents. As an emerging interdisciplinary discipline formed by the integration of many disciplines, students need to master the knowledge of information technology, business management, economy and trade, etc., and the process of capacity training involves many different subjects such as schools, enterprises and industries, etc. Meanwhile, because e-commerce is still developing rapidly, the field of e-commerce has typical innovation, entrepreneurship and uncertainty, and e-commerce talents should also have the corresponding quality. E-commerce talents should have the corresponding quality. Thus, it can be seen that the system of cultivating highly skilled talents in colleges and universities is a complex and open system. Collaborative training can be applied to guide the design of e-commerce talents and cultivate real high-skilled e-commerce talents. Based on the synergistic theory, the framework of the cultivation mode of highly skilled talents for e-commerce in colleges and universities is thought and designed in a new way.

In the framework of the new symbiotic e-commerce talent cultivation model, the traditional "symbiotic" talent cultivation model is revised and refined, trying to change the simple "symbiosis" in a crude way into the symbiotic talent cultivation goal of e-commerce majors, which is closely focused on We try to change the simple "symbiosis" in a crude way into the fine "knowledge symbiosis", "ability symbiosis" and "quality symbiosis" which are closely focused on the symbiotic talent training objectives of e-commerce majors. Through the flow of knowledge, the collision of skills and the integration of quality in different fields, it further realizes the interactive, holistic and cooperative effects among the subsystems of knowledge, ability and quality, to establish a coordinated talent cultivation system to realize the symbiotic goal.

4. ANALYSIS OF SCHOOL-ENTERPRISE COLLABORATIVE TRAINING MODEL INNOVATION

This paper forms a symbiotic system of mutual influence, mutual evolution and collaboration through the model of university collaborative innovation. Universities and enterprises interact with each other through symbiotic theory to solve the actual demand of economic and social development for talent training. Based on this, the university and enterprises collaborate and build a cooperative internship training platform. Make full use of the cooperative relationship between universities and

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enterprises, and build the internship training platform with enterprises, through which students can strengthen their understanding of the operation process of enterprises, the use of information technology in enterprises, and the organic combination of e-commerce website and back-end management information system. The introduction of the symbiosis theory approach in e-commerce majors can establish, in teaching practice and exploration, the educational concept of integrating innovation and entrepreneurship education into the whole process of talent training. Through exploration and practice, it gradually adjusts to the professional talent training goal of entrepreneurship and employment to cultivate students' innovative thinking and general education, and thus sets and optimizes personalized training programs and training goals for students. Students are the most direct participants and beneficiaries of the collaborative training model. To understand the development status of the model, we must first conduct experiments on the students' adaptability status of the training model. From the perspective of students, the main form of participation in this model is enterprise internship. Considering the difficulty of data acquisition, this study mainly focuses on the platform internship of students in school, with a total number of 62, including 17 male students, accounting for 36% of the sample size, and 45 female students, accounting for 64%.

In addition to this, a complementary group experiment was conducted with interns from some of the internship sites to further understand the specificity of the students' corporate internship status. The important results of the student's perception of the corporate internship are shown in Figure 2.

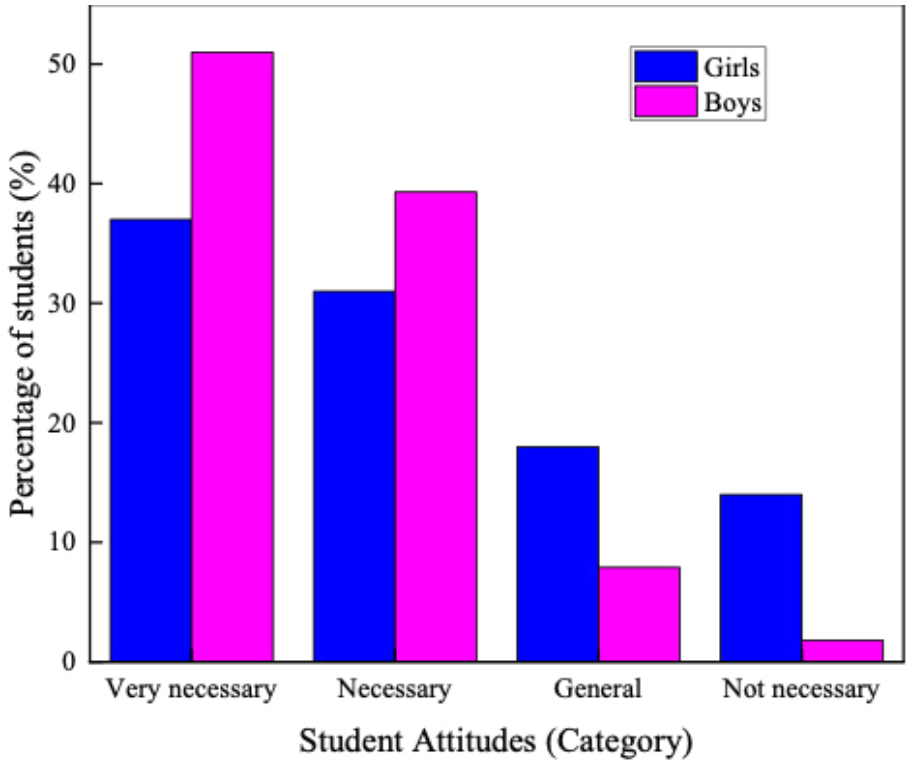

Figure 2. Students' awareness of the importance of going to companies for internships

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As can be seen from Figure 2, most e-commerce students have a positive attitude toward the role and significance of conducting enterprise internships. more than 90% of them think it is necessary to go to enterprises for a small trial after classroom study to apply what they have learned to concrete practice, among which 51% of the experimental subjects think it is necessary. According to the actual needs of both schools and enterprises, they jointly participate and carry out the work including the declaration and demonstration of specialties, the design and formulation of talent training programs, and the innovative curriculum system. The talent training program is formulated based on the development of the e-commerce industry and is oriented to the needs of e-commerce enterprises. The collaborating enterprises provide relevant practical training opportunities for schools and allow students to practice in real work scenarios. Reform the traditional curriculum system, set up courses according to e-commerce jobs, and realize "task-driven" modular teaching. Through the establishment of e-commerce innovation and entrepreneurship "fish pond" program classes, the e-commerce enterprises incubate the talents, so that the cultivated applied talents can be seamlessly connected with the employment needs of enterprises.

The practical teaching platform is mainly based on enterprises and has built an on-campus practical training base, an off-campus practical base and a platform for teachers to go to enterprises for attachment and exercise, which are dovetailed with e-commerce majors. It enables students to get in touch with the actual projects of real e-commerce enterprises during their school years and understand the job responsibilities and basic application skills requirements of relevant positions, which provides a guarantee for future employment. To further grasp students' specific perceptions of the significance of the role of collaborative training mode, this study categorized the reasons why students choose enterprise internship, and the results are shown in Table 1.

Table 1. Reasons for Choosing a corporate internship

	First Choice	Second Choice	Third Choice
Proximity	21		
The system is mature and can learn a lot	13	6	
With professional staff guidance	13	9	2
High level of identification with the company	2	7	4
Better service infrastructure	1	5	4
Easy access to supervisors	3	4	11
To obey the school's uniform arrangement	10	11	5

As can be seen from Table 1, 21 of the students chose proximity as their first choice of reason for doing an institutional internship. Proximity here is relative; on the one hand, some internship positions in the enterprise are arranged within the school,

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which saves students some time and cost for traveling to and from the internship site. On the other hand, the proximity of the core management system of the enterprise and the school facilitates the unified arrangement and management of the students by the school and the institution and also facilitates the students' access to the nuclear also management and institutional supervisors of the institution. Second, institutional advantages. Compared with other scattered internship bases, enterprises have a relatively mature standardized system for the management and training of colleges and universities. Students can have timely access to the most front-line and advanced network business innovations and understand the development of the industry, thus learning many contents that cannot be learned in the classroom or cannot be contacted and learned in depth. Third, the advantages of guidance. Internships in enterprises can get guidance and support from both enterprises and schools, which is also one of the important factors that attract students to enter the enterprise internship. The guidance advantage comes from the co-worker support of the front-line employees of the enterprise on the one hand, and the collaborative supervision of the school supervisor on the other.

A professional internship is an important part of social work personnel training. Some professional courses are oriented to work process systematization, and the collaborating enterprises provide teachers to teach on campus or bring students to the work site of the collaborating enterprises, and make efforts to strengthen the course content construction by completing 600-800 hours of professional internship teaching. The teaching contents are aligned with the needs of job clusters, and extra efforts are made to cultivate students' theoretical and practical abilities. The internship situation of students is shown in Figure 3.

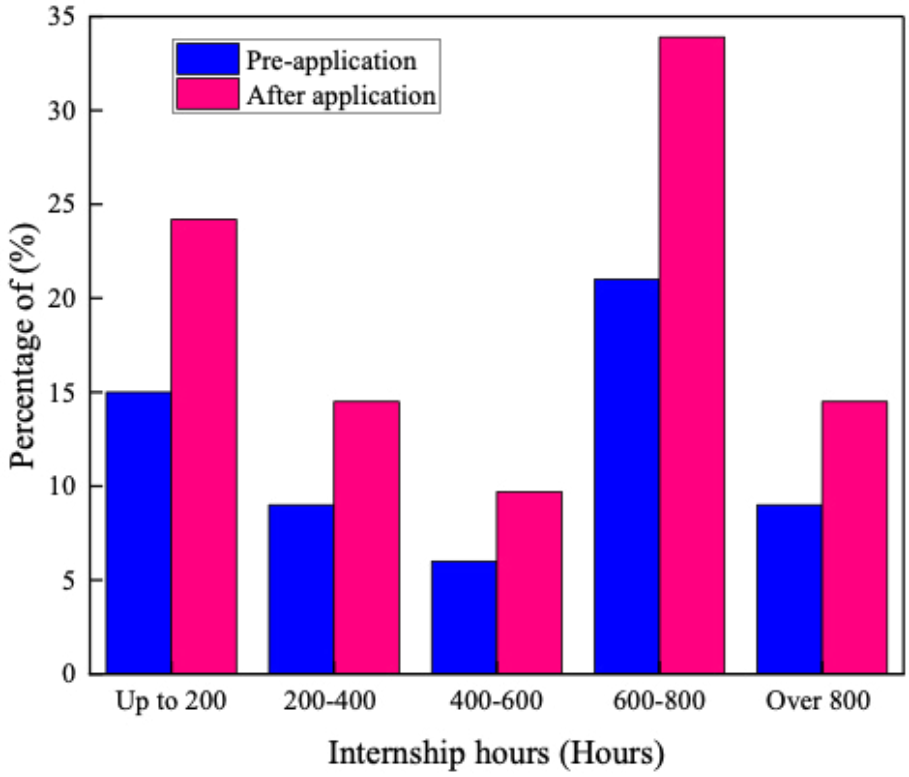

Figure 3. Total number of hours of student enterprise internship

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As can be seen from Figure 3, 33.9% of the students had a total internship of about 600-800 hours in e-commerce companies, and 14.5% had a total internship of more than 800 hours, which means that nearly half of them completed their practical training program in the internship platform. Secondly, in terms of the frequency of attendance at the internship unit, the attendance rate is at a high level. The frequency required by most internship positions after consultation and communication with the university is 3-4 times a week. Some of the internship positions are consistent with the unit staff's double-shift system, i.e., you have to go every day from Monday to Friday. Generally speaking, the durability and continuity of the internship time are closely related to the internship effect. The longer the internship time and the better the continuity, the better it is for the students to quickly adapt to the internship environment, understand and be familiar with the service objects and the service process, and ensure the effective succession and smoothness of the service activities so that the students can achieve the internship effect.

Under the premise of market orientation, we establish advanced innovation and entrepreneurship concepts and form the talent training mode of "innovation and entrepreneurship awareness + practical training + transformation of results". Universities should pay attention to developing students' continuous and active innovation and entrepreneurship spirit, inspire students' innovation and entrepreneurship consciousness through problems and tasks in classroom teaching, focus on guiding interests, mobilize students' autonomy, cultivate innovative thinking, respect students' differences, and let each student fully show his or her ability, to enhance innovation and entrepreneurship consciousness. Students should also be actively encouraged to devote themselves to practical activities of innovation and entrepreneurship, create a good atmosphere of innovation and entrepreneurship, cooperate with schools and enterprises to carry out innovation and entrepreneurship competitions, establish application-based platforms, open practice platforms to provide practical courses and projects on innovation and entrepreneurship now, help them to carry out innovative design and entrepreneurship simulations, continuously stimulate students' potential of innovation and entrepreneurship, and allow students to improve their creative and practical abilities in practical training. The overall effect before and after students' internship through the platform is shown in Figure 4.

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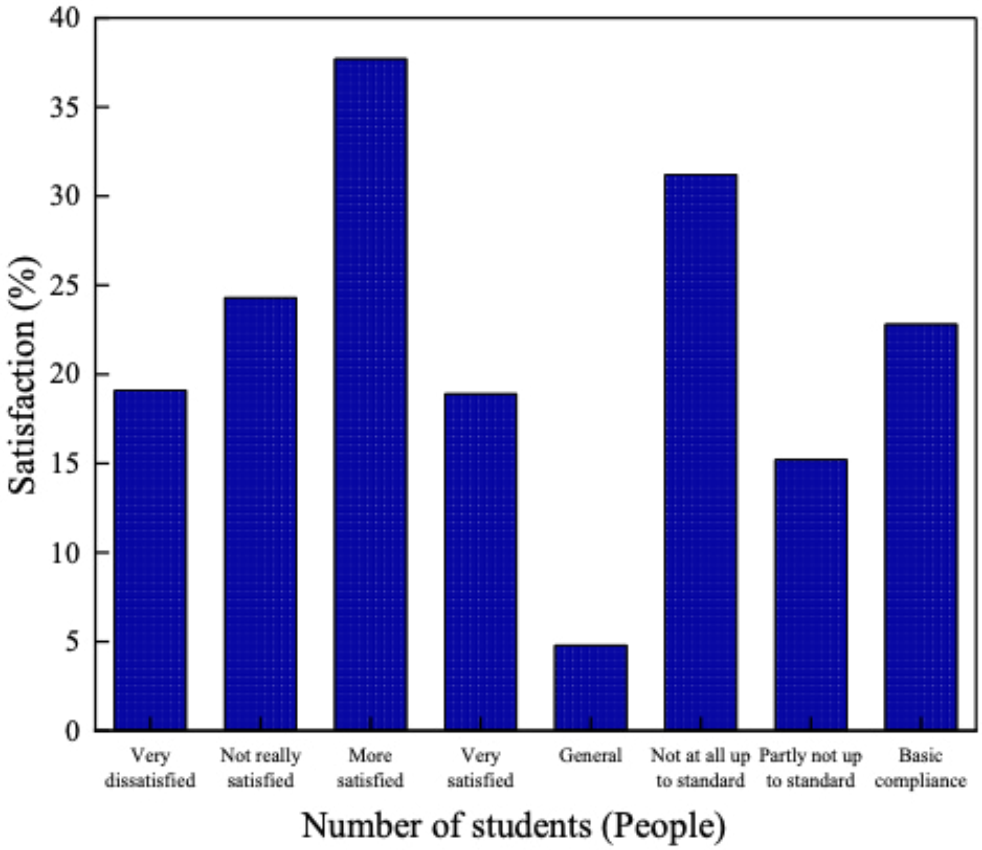
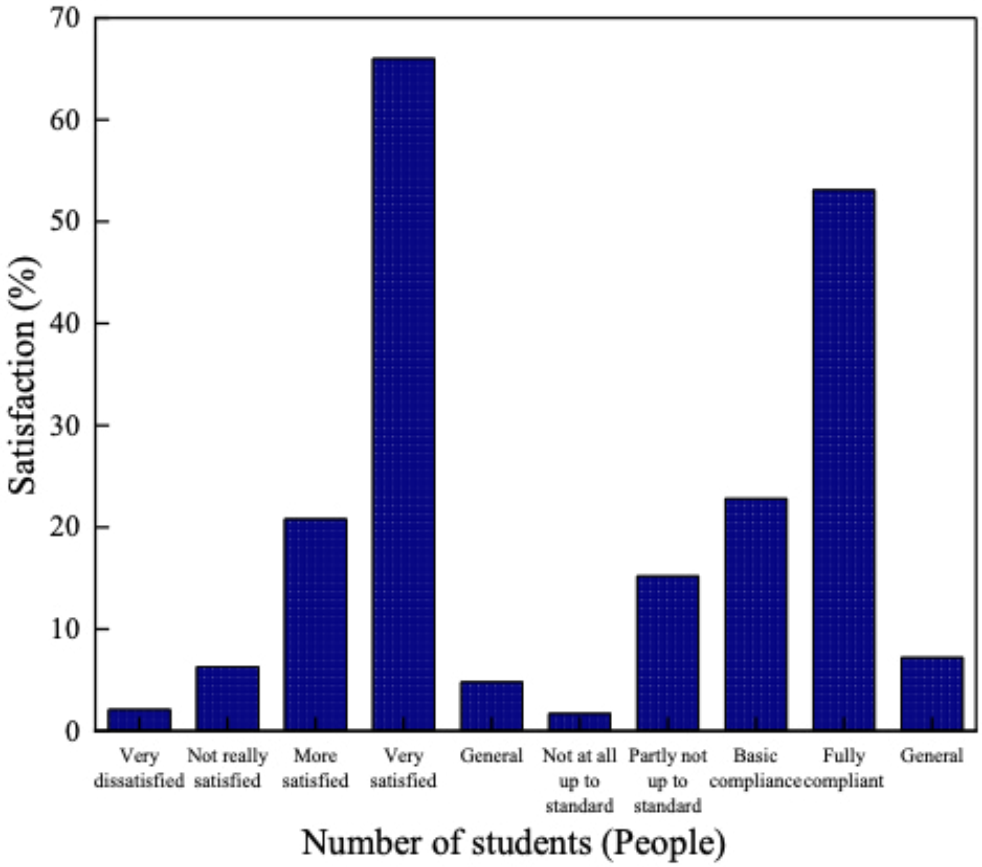


(a) Pre-placement student satisfaction and goal attainment



(b) Student satisfaction and goal attainment after the internship

Figure 4. Overall situation of students after the internship

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From Figure 4(a), it can be seen that through the platform pre-internship students' satisfaction status with the effect of their overall internship process, 19.1% were very dissatisfied, 18.9 were very satisfied, 31.2% did not meet the standard at all, and only 23.6 reached the goal completely. Further research on the achievement of students' internship goals revealed that the proportion of basic achievement was similar to the proportion of basic satisfaction, and the proportion of other corresponding options was chosen similarly. This requires students to accurately conduct self-assessments, set appropriate and feasible task and process goals, and ensure that the internship goals are compatible with their ability conditions and the real working environment during the internship process.

As can be seen from Figure 4(b), after the platform internship, students' overall indexes all rose substantially, and the number of very dissatisfied students dropped from 19.1% before the internship to 2.1%, and 66% of students felt very satisfied. 1.7% of students did not meet the target at all after the internship, and 53.1% of students achieved the target completely. The achievement of internship goals influences to some extent the satisfaction of students with their internship, and the better the achievement of goals, the higher the satisfaction. After being realized by the enterprise to ensure that students are relatively mastering the innovation and entrepreneurship process, the practical projects of the enterprise's e-commerce category can be outsourced to the excellent e-commerce student teams of the cooperating institutions, which not only cultivates the talent and courage of students' innovation and entrepreneurship, but also reduces the operation cost of the enterprise, and if the project is mature, it can be marketed to realize the transformation of innovation and entrepreneurship achievements.

5. CONCLUSION

On the one hand, it can enrich the connotation of e-commerce professional education and make the cultivation of e-commerce talents better serve the regional economic development, on the other hand, it can make the innovation and entrepreneurship education come into practice and develop in-depth. In addition, the "symbiosis theory" as a new research perspective and integration tool also further enriches the theoretical research on the integration of innovation and entrepreneurship education and professional education. It has important practical significance and theoretical research value for deepening education and teaching reform, improving the quality of e-business personnel training, and students' self-development. In this paper, through school-enterprise collaboration, we build a school-enterprise cooperation internship training platform, and the conclusions drawn after the internship are as follows:

1. 48.4% of the students' total internship in e-commerce enterprises is more than 600 hours, and the frequency of most internship positions is 3-4 times a week, accounting for 59.7% of the total. The implementation of a school-enterprise collaborative training mode is conducive to the joint development of schools

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and enterprises. Enterprises can obtain the talents they want in this talent training process, make talent reserves, shorten the talent training cycle, obtain cost-effective talent gains in the training process, and reduce operating costs.

2. Students' satisfaction with the overall effect of the internship process after the platform internship, "very satisfied" accounted for 66%, and 53.1% of students fully achieved the goal. The talent cultivation model cultivates talents according to the market needs and focuses on the simultaneous improvement of professional and vocational qualities of talents, which is good guidance for students to enter the entrepreneurial market in terms of employment and accumulation of experience.

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