

Research on the Current Situation and Innovation Driven Path of Industry Education Integration in Applied Undergraduate Universities with the Background of New Era

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Abstract

Integration of industry and education has been further upgraded and developed on the basis of school enterprise cooperation, and innovation in the integration of industry and education in undergraduate universities has become a hot topic and theme in promoting education supply side reform in the new era. This article first analyzes the current situation of industry education integration in applied undergraduate universities, and uses the innovation driven mechanism of industry education integration to explore the reasons for the problems of industry education integration in applied undergraduate universities. Then, based on the theory of supply side reform, the function of applied undergraduate universities in industry education integration is analyzed, by constructing a corpus to deeply explore the constituent elements of industry education integration in applied undergraduate universities and analyze their game models. Based on the exploration of the basic integration model, further in-depth discussion and analysis are conducted on the impact of changes in participating subjects on the game of industry education integration in applied undergraduate universities. Finally, based on the perspective of "integration theory" and the double helix innovation mechanism of the "three chains", an innovation driven integrated model of industry education integration in applied undergraduate colleges and universities is proposed.

Keywords

New era; Innovation driven path; Integration of industry and education.

1. Introduction

In the new era, China's integration of industry and education has been further upgraded and developed on the basis of school enterprise cooperation, and innovation in the integration of industry and education in undergraduate universities has become a hot topic and theme in promoting education supply side reform in the new era. For application-oriented undergraduate universities, deepening the integration of industry and education is an inevitable requirement for their "application-oriented" attributes. The integration of industry and education is a systematic project that involves the joint role of the education chain, talent chain, and industry chain. The innovation driven integration of industry and education involves the organic connection of the innovation chain in the overall integration of industry and education. It can be seen that the innovation driven integration of industry and education in application-oriented undergraduate universities in the new era is an urgent need to promote the adaptation of China's higher education talent supply side to the demand side of the new era industry. The new formats and business models reflected in the new era are also a reason and driving force for the innovation driven integration of industry and education in application-oriented undergraduate universities.

2. Literature References

2.1. Literatures

Based on the innovation driven perspective, Zhang Miao (2024) analyzes the innovative essential characteristics of the industry education integration community under the background of new quality productivity. This literature believes that the industry education integration community is a very important construction task for promoting the development of new quality productivity in China in the new era. Analyzed the differences in the development of productive forces in the integration of industry and education communities at different stages, and conducted research from the aspects of value positioning, organizational form of industry education integration, and innovation driven operation rules of industry education integration. Research has shown that in the current stage of new quality productivity, the integration of industry and education in the community actually presents a dynamic mechanism of "innovation driven" in a new quality state. This literature proposes a development model of "innovation driven" integration of industry and education based on the empowerment of new quality productivity development. Luo Daojian et al. (2024) explored the mechanism of "industry education integration" in cultivating technical and innovative skilled talents, and proposed an innovative model of "research and innovation integration" in the integration of industry and education. Starting from the value orientation of "job, course, competition and certification" mutual integration, this paper analyzes the measures taken by "universities enterprises" in teaching and other dimensions, and puts forward improvement suggestions for the evaluation standards of implementing the practice of industry education integration in cultivating innovative technical talents. Gong Chuyi and Tang Zhibin (2024) took the urban industry education alliance as the research object, analyzed the path of promoting the integration of industry and education in the field of vocational education through the urban integration model, and deeply analyzed its innovative measures in the urban industry education. The research conclusion found that the urban industry education alliance, as an innovative model of industry education integration, should integrate multiple elements and resources from the government, industry, and higher education institutions, and carry out platform based applied talent training for universities based on the urban industry education alliance. The study also pointed out that the urban industry education alliance can promote high-quality development of the local economy in the region. Ai Junyong et al. (2024) took the College of Artificial Intelligence as the research object, analyzed the current situation of promoting the construction of application-oriented universities through the integration of industry and education in the new era, and combined it with artificial intelligence to analyze the collaborative education model driven by innovation in the integration of industry and education in the new engineering field. Then, based on the results of collaborative education practice, they summarized the dual talent cultivation goals of the integration of industry and education, and concluded that the curriculum reform is driven by innovation in the integration of industry and education. Starting from the orientation of application-oriented abilities and learning outcomes, they believed that the reform of OBE course teaching and assessment methods constitutes a long-term guarantee mechanism for the innovation driven integration of industry and education in the new engineering field. Liang Xiaoming (2024) believes that the high-quality development of local industries requires the cultivation of corresponding high skilled applied talents, and the integration of industry and education is an important innovation driven collaborative education model for vocational education talent cultivation. This literature combines vocational education and local pillar industries to analyze the role of industry education integration in promoting vocational education practice teaching, the construction of "dual teacher" vocational education teacher teams, and the construction of vocational education practice bases. Li Mingliang and Fan Xinyu (2024) based on the logical idea of

vocational education empowering new quality productivity, starting from the perspective of new quality productivity as an advanced form of productivity, combined with the theoretical framework of vocational education system theory and total factor productivity, believe that vocational education is an applied education type that is most closely related to the high-quality development of local economy. Therefore, the vocational demand orientation of its development is actually to undertake the educational supply side task of cultivating high skilled and application-oriented talents for the current development of new quality productivity. This literature further analyzes the trend of developing new quality productivity and finds that the supply side reform of vocational education is an objective demand for new quality productivity. It also sorts out the use of innovation and entrepreneurship system in vocational education, and suggests that applied professional skills courses should be reformed with OBE concept in education and teaching, which can provide empowerment for the development of new quality productivity on the supply side of vocational education. The two are mutually driven and construct a collaborative chain of industry education integration, ultimately realizing the path of vocational education industry education integration to promote and empower the development of new quality productivity. Based on professional course practice, Fan Xiaobo et al. (2024) analyzed the innovation of industry education integration engineering from the perspective of curriculum reform, proposed a closed-loop engineering teaching concept of "practical first, theoretical assistance, and professional integration", and constructed a comprehensive examination mode for evaluating student training performance based on diversified, vertical, and systematic evaluation of industry education integration engineering innovation. With the help of industry education integration engineering innovation, continuous improvement of teaching effectiveness and practice is achieved, realizing the integration of theory and practice in the industry education integration closed-loop engineering. This literature also agrees that university courses should adhere to the OBE orientation in teaching philosophy, and continuously improve teaching and enhance the effectiveness of education through innovation in the integration of industry and education. Cai Lifeng and Ou Caixue (2024) analyze the development mechanism of industry education integration in the field of vocational education based on organizational ecology theory, and take practical training bases as the research object to analyze the development path of promoting industry education integration and strengthening collaborative education in vocational colleges through the construction of practical training bases. This literature summarizes the ecological attributes of vocational education industry education integration through organizational training bases based on the theoretical perspective of organizational ecology, from three characterization dimensions: symbiosis, adaptation, and integration degree. On this basis, the study combined its own practical experience to establish a standardized evaluation system for industry education integration training that includes multiple indicator dimensions. Qinwei Zhang and Chunyang Mu (2024) analyzed the current situation of talent cultivation for "new engineering" and "new design" in universities from the perspective of current technological and industrial development changes, based on the dimension of industry education integration. They summarized the pain points, namely the insufficient degree of interdisciplinary integration in universities, the lack of innovation platforms for industry university collaborative education, and the inadequate mechanism of industry education integration strategic alliances. Propose to establish an OBE curriculum system guided by the integration of industry and education, and build a joint strategic innovation platform for industry education integration to promote the establishment of a collaborative education mechanism between industry and academia. Nini Zhang's (2024) research suggests that the integration of industry and education is a fundamental task requirement for vocational education in the new era. Industry education integration is not only a national strategy to promote sustainable and high-quality development of vocational education, but also a core long-term mechanism for cultivating innovative and

applied talents in vocational education in the new era. This study further summarizes the path and mechanism of vocational colleges relying on the integration of industry and education to achieve high-quality development, and provides suggestions from the aspects of talent training standardization, curriculum development of industry education integration, and teaching reform guided by industry education integration. Qingwei Song's (2024) research suggests that the integration of industry and education is a deepening of school enterprise cooperation driven by supply side reform, and an important innovative approach to achieving high-quality development of higher education in the new era. Based on the development of information technology in the new era and combined with the analysis of the digital economy, the research believes that as a national strategy, industry education integration urgently needs to build a high-quality industrial system in the new era with the coordinated development of scientific and technological innovation and modern finance, and the combination of industry education integration and digital economy must promote the deep integration of Internet plus+big data, especially artificial intelligence and the real manufacturing economy. In this context, promoting the integration of industry and education in vocational education is the implementation of the strategy of deepening higher education reform on the supply side. Deepening the supply side reform of higher vocational education and leveraging the important role of enterprises in the integration of industry and education in universities can promote the supply side reform of applied talent cultivation in universities, as well as the comprehensive and accurate integration of local regions and industrial demand sides. Ultimately, it can achieve the cultivation of innovative talents with compound and applied characteristics, and promote the construction of a local industrial system for the coordinated development of industry and education integration. ZhenHua Shao; ZhiXiong Zhong (2024) explored the problems faced by higher education practical training courses in the post pandemic era based on the background of industry education integration, using newly established undergraduate colleges as the analysis object. This literature conducts research and actual situation analysis on newly established undergraduate colleges from the perspectives of training mode, training content, and training effectiveness. Research has found that the combination of online and offline training modes, the use of virtual simulation training platforms, and comprehensive evaluation of the training process have become key factors in ensuring training performance. Cai Qiaowei (2024) believes that with the deepening implementation of China's education integration strategy on the education supply side, the importance of sustainable financial accounting and other vocational courses in higher vocational education is becoming increasingly prominent. This literature analyzes the problems and challenges faced by current higher vocational education in the field of sustainable financial accounting, and based on the perspective of industry education integration, summarizes the reasons behind its unreasonable curriculum design and lack of professional teaching staff. In response to these issues, it is proposed to adopt an innovative education model based on the integration of industry and education, strengthen school enterprise cooperation, optimize the curriculum system guided by the integration of industry and education, strengthen practical teaching of the integration of industry and education, and promote the close integration of vocational education based on the integration platform of industry and education with the needs of social and economic development.

2.2. Reviews.

Based on the above literature, the academic community has conducted extensive research on the collaborative development of industry education integration, laying the foundation and theoretical reference for this article. However, there is currently limited research on the innovative driving path of industry education integration in applied undergraduate universities, especially the literature based on corpus empirical analysis of the innovative driving force of industry education integration in applied undergraduate universities. Therefore, this study uses corpus empirical research, which has certain innovation in research methods.

3. The Current Situation of Industry Education Integration in Applied Undergraduate Universities under the Background of the New Era

3.1. Current situation and challenges of industry education integration in application-oriented undergraduate universities

This section is a research and problem perspective on the current situation of industry education integration in applied undergraduate universities in the new era. Mainly based on the reports of China Education News Network (2022) and "New Curriculum Research" (2023) on the integration of industry and education in applied undergraduate universities, as well as the analysis of the main problems and challenges faced by current industry and education integration in Chinese higher education (2020), this article focuses on describing the current situation of industry and education integration in applied undergraduate universities in the new era, as well as the perspective of industry and education integration issues in applied undergraduate universities.

In the new era, more and more applied undergraduate universities have recognized the importance of industry education integration in the new era under the correct guidance and guidance of macro policies. Therefore, they are constantly exploring the path of "industry education integration". In this process, enterprises and higher education institutions, as the two main bodies of "industry education integration", have gone through a stage of exploration and implementation of the integration of industry and education in applied undergraduate universities, from "passive implementation" to "improvement of understanding of industry education integration", to "practical professional pilot", reaching consensus between industry and education, and formulating institutional guarantees. With the advancement of the understanding of the integration of industry and education in applied undergraduate universities in the new era and the experience of participating in the integration of industry and education, the "integration of industry and education" in applied undergraduate universities in China has achieved a dynamic evolution process from theory to practice, from passive implementation to active exploration.

China Education News Network (2022) and "New Curriculum Research" (2023) analyzed and summarized the current "pain points" of deepening the integration of industry and education in application-oriented undergraduate universities. This article combines these two reports to analyze and summarize the problems.

At present, the current situation of industry education integration in applied undergraduate universities presents a general characteristic of "point-to-point" cooperation, and the corresponding problem is that a systematic and in-depth cooperation situation of industry education integration has not yet been formed. Various games have indirectly led to some "pain points" and difficulties in the industry education integration of applied undergraduate universities, thus affecting the effective establishment of a long-term mechanism for industry education integration in applied undergraduate universities. Specifically reflected in: the inconsistent behavior logic of the implementing subjects of the integration of industry and education leads to the insufficient play of the role of multiple subjects in the integration of industry and education. As an education supply side, application-oriented undergraduate universities must take "educating people" as the basic goal of their own development and adopt corresponding development strategies. In addition, the implementation of various educational and teaching reforms in application-oriented undergraduate universities often requires a long period of time to complete effective teaching reforms due to their complexity. The cultivation mode and curriculum system of application-oriented undergraduate students require more time, and it takes several years to cultivate a group of high-quality application-oriented undergraduate graduates. In contrast, on the other side of the implementation of the integration of industry and education, the industry is composed of various micro enterprises,

and "survival oriented" is the basic goal of most micro enterprises and corresponding development strategies are adopted. Profit seeking is also an inertia thinking of micro enterprises, while small and medium-sized enterprises focus more on visible, even short-term economic benefits or marginal profits. This "profit seeking" and "survival oriented" mindset of enterprises leads to the inability of the industry to focus on medium - and long-term talent cultivation, as well as related innovative technology research and development investment. Therefore, the development vision of micro enterprises is often inconsistent with the value chain and industrial development strategy of regional industrial development, and lacks coherence.

When analyzing the reasons for this current situation, the academic community generally agrees that in the process of promoting the integration of industry and education in applied undergraduate universities, there is actually a certain "game" relationship between the subjects on both sides of the integration, which directly leads to the difficulty of achieving long-term balance of interests among all parties and forms a "game" constraint relationship, thereby limiting the role of the subject of industry education integration in applied undergraduate universities. And if the relevant incentive mechanisms are not sound enough; If the relevant linkage is not deep and timely enough, it will lead to a mismatch in the integration of high-quality educational resources for industry education integration in applied undergraduate universities, and the utilization of industry education integration resources will be insufficient. In this way, the subject consciousness of enterprises participating in the integration of industry and education is not strong, and they lack the inherent incentive power, which will easily lead to the dilemma of some enterprises acting as supporting role in the integration of industry and education; However, in the process of deep cooperation with enterprises, application-oriented undergraduate universities often encounter problems such as untimely changes in the mindset of some university teachers, insufficient participation in industry education integration, and weak innovation awareness, resulting in insufficient depth of industry education integration in joint education.

3.2. Innovation driven mechanism of industry education integration and perspective on the issues of industry education integration in application-oriented undergraduate universities

According to the theory of "community" in evolutionary economics, the collaborative development of the "integrated" education model through the integration of industry and education is a systematic "community", which includes the coupling and collaboration of three innovative models: system knowledge innovation, scientific and technological innovation, and teaching industry collaborative education innovation that run through the entire dynamic process. It is also a driving force for the collaborative development of the "integrated" education model with the participation of multiple parties. It is precisely because of the participation of multiple parties that its diversity has led to various practical problems in the coordinated development of the integrated education model of industry and education integration.

Enterprises, industries, industries, and higher education institutions (including their research institutes) constitute the diverse entities that contribute to the collaborative development of the "integrated" education model. In order to express this, enterprises, industries, and industries are often classified as the "industry" side, while higher education institutions and their research institutes are classified as the "education" side. Due to their different positions and roles in the integration of industry and education, they have heterogeneity. Therefore, in the process of collaborative development of the "integrated" education model, the understanding of how to carry out the collaborative development of the "integrated" education model and the collaborative development goals pursued by multiple parties are heterogeneous. The collaborative development of the "integrated" education model is often difficult for all

parties to form a clear and simple understanding. The vision of collaborative development of the simple "integrated" educational model, These issues urgently need to be addressed in order to ensure the coordinated development of the "integrated" education model and the sustained digital and high-quality development.

The second reason is that the collaborative development motivation of the "integrated" education model overly emphasizes the utilitarianism of short-term benefits. The collaborative development of the "integrated" mode of education through the integration of industry and education is an important path choice for promoting technological innovation in industries and universities. Under the guidance of macro policies, enterprises, industries, universities (and their research institutes) integrate factor resources through market-oriented "invisible hands", complement each other's advantages in industrialization, and transform commercial achievements into collaborative innovation. Its fundamental purpose is to enhance the scientific and technological innovation capabilities of both parties in the integration of industry and education and achieve high-quality digital development. In this process, if there is a cognitive bias in the collaborative development of the "integrated" education model, it is possible that some entities in reality may have cognitive variations and execution deviations in choosing the purpose of the "integrated" education model for collaborative development, which affects the sustainable digital and high-quality development of the "integrated" education model.

Essentially, the collaborative development of the integrated education model is a distinctive economic and social activity. Whether all participating parties can obtain expected economic benefits and achieve the goal of innovation driven digital high-quality development through the collaborative development of the integrated education model is a goal oriented prerequisite for the collaborative development of the integrated education model. Generally speaking, the collaborative development of the "integrated" education model of industry education integration is largely driven by various factors, including but not limited to social and economic benefits, scientific and technological development, public expectations for educational products and services, industry market demand, industry competition pressure, enterprise development needs, and macro policy supply guidance. However, the diverse subjectivity of the collaborative development of the "integrated" education model of industry education integration affects its heterogeneous collaborative development goals. Universities and research institutes pay more attention to the academic foresight of the "integrated" school running mode and collaborative development project, emphasize the progressiveness and cutting-edge nature of scientific and technological research and development, and put the rapid realization of technological breakthroughs in the first place; This will indirectly lead to unclear market demand for products with actual technology integration and a lack of market awareness, resulting in insensitivity to cost and price. One typical case is that the research expertise of university personnel lies in the fundamental research and theoretical analysis of disciplines. Due to the "soft constraints" of their own knowledge background and experimental training room conditions, in the collaborative development of the "integrated" education model of industry education integration, universities are often more willing to conduct preliminary research, and their research and development goals are also to produce more original results, such as journals, conference papers, and relevant patents obtained after project completion. However, enterprises and industries often prioritize the benefits of the market economy, which is in line with the economic concept of "pursuing profit maximization". Therefore, when the integrated education model of industry and education develops and produces technological innovation, enterprises and industries not only focus on project technological innovation, but also urgently pay attention to whether projects, technological innovation, patents, or research findings have market prospects, unlike universities; Whether it is possible to truly achieve commercial transformation of achievements and obtain market economic benefits, even if the

project technology innovation, patent or paper research discovers significant historical technological breakthroughs, if it cannot be produced on a large scale, or if the lack of "economic scale" leads to sustained high prices and costs of the goods and/or services, it will be difficult for the industry to recognize the innovation, at least to a certain extent, the degree of recognition will differ from that of universities. The differences in the collaborative development goals of this "integrated" educational model, especially in the research and development concepts, especially in basic research concepts, between universities, enterprises, and industries, will have a negative impact on the confidence of enterprises, industries, and universities (research institutes) in the collaborative development of the "integrated" educational model. Field research has found that many times, the theoretical and basic research level of universities in technological innovation, the effective transformation of innovative achievements in the integration of industry and education, and the "hard constraints" of enterprises on the cost of transforming innovative products have an impact on the level of technological innovation and R&D complexity of universities. These factors can dampen the enthusiasm and persistence of the theme of industry education integration and collaborative development.

4. Research on the Impact of Supply Side Reform on the Integration of Industry and Education in Applied Undergraduate Universities

4.1. Corpus Description

This study selected excellent cases of the integration of production and education from the "China Higher Education Training Center" in 2023 to build a corpus. Focusing on the key theme of "innovation driven integration of industry and education in applied undergraduate universities in the new era", this article first analyzes the factor of "innovation driven". From the frequency of keywords, "innovation driven innovation" (Freq=73) highlights its importance, while from its cooperative factors, collaborative (Freq=8); The team collaboration (Freq=6) indicates that the collaborative attributes required for innovation driven development are significant. Integrated integration (Freq=6) also indicates its basic mode of integration. In addition, technical (Freq=6) also indicates the importance of technological innovation in the drive of industry education integration innovation.

Rank	Freq	Freq(L)	Freq(R)	Collocate
1	73	0	0	innovation
2	48	20	28	and
3	27	0	0	Innovation
4	8	0	0	collaborative
5	6	0	6	team
6	6	0	6	Integration
7	6	0	6	Base
8	6	0	0	technological
9	4	0	0	technology
10	4	0	4	chain
11	3	0	0	the
12	3	2	1	of
13	3	0	0	industrial
14	3	1	2	Ability
15	3	0	3	ability
16	2	0	0	teaching
17	2	0	2	services
18	2	1	1	service
19	2	2	0	research
20	2	1	1	mechanism
21	2	0	0	integration
22	2	0	2	in
23	2	0	2	demonstration
24	2	0	2	centers
25	2	0	2	Center
26	2	0	2	between
27	2	0	2	base

Figure 1: Frequency of collaborative factors driven by innovation

Further analysis of the KWC of "innovation driven innovation" yields the following interface, with the main terms shown in Figure 2:

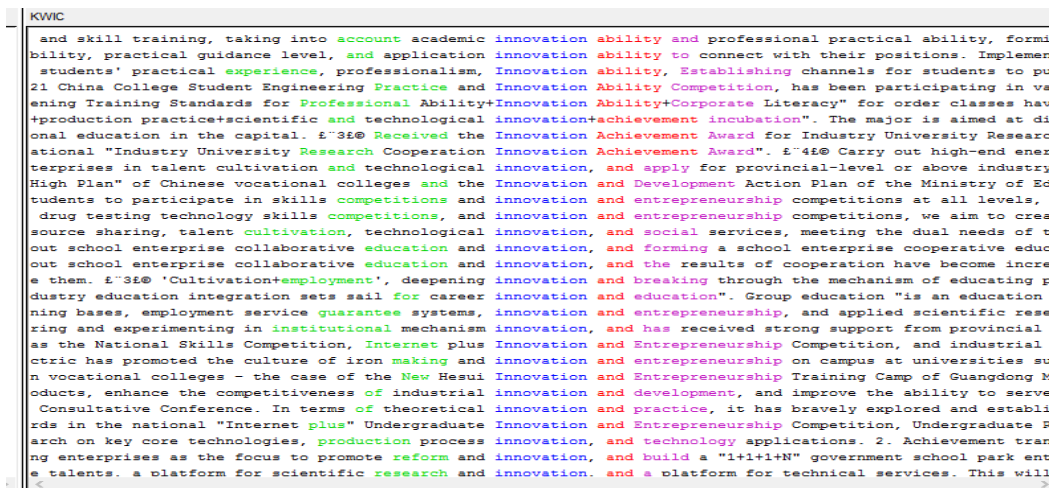


Figure 2: KWC interface of "innovation driven innovation"

From the Word Net graph of the innovation driven entry, it can be summarized that "innovation driven" in the entire process of industry education integration in applied undergraduate universities is mainly divided into four intermediary paths: the innovation chain driven by innovation capability, innovation institutions, and innovation clubs; Innovation driven by innovative mechanisms, innovation demand, and innovation services; Innovation planning and paradigm driven by innovation system; And innovation teams driven by innovation platforms, innovation forums, innovation bases, etc. These paths achieve "innovation performance" through the two major effects of collaborative innovation and practical innovation, which are specifically reflected in technological innovation, scientific research innovation, technological innovation, and educational innovation. These four achievements can be divided into process innovation and technological innovation output from the industrial end, and educational innovation and scientific research innovation output from the university stage. These are also the basis for benefit sharing and output in the entire process of industry education integration in applied undergraduate universities.

4.2. Corpus based Game Analysis of Industry Education Integration

According to game theory, the game model of industry education integration in applied undergraduate universities belongs to a typical cooperative game. On the basis of exploring the basic mode of integration, this section further discusses and analyzes the impact of changes in the main participants of industry education integration in applied undergraduate universities on the game of industry education integration in applied undergraduate universities, in conjunction with corpus entries.

Firstly, from the perspective of the operational basis of the integrated system of industry education integration and innovation driven integration in application-oriented undergraduate universities: from the connotation and characteristics of the integrated system of industry education integration and innovation driven integration in application-oriented undergraduate universities, "integration" corresponds to the "Integration" of the corpus. The KWC interface is as follows:

Based on the KWC classification, it can be found that the innovation driven integrated system of industry education integration in applied undergraduate universities is a long-term, stable, and close innovation driven model of industry education integration in applied undergraduate universities, which is gradually formed through multiple rounds of cooperation and coordination, namely dynamic game theory, based on the common interests, mutual trust, and common development of all participating parties in industry education integration, realizing the complementary resources and shared risks of industry education integration.

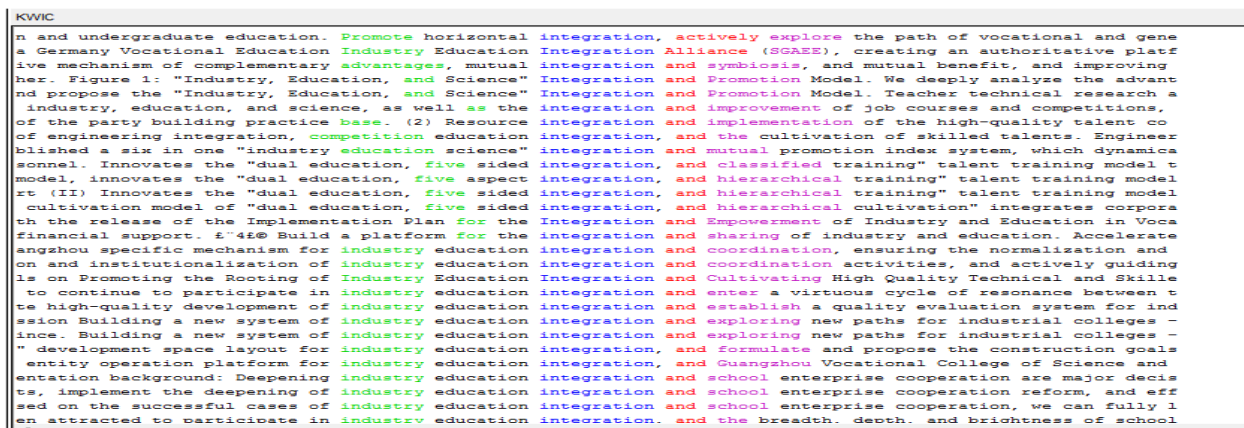


Figure 3 :KWC interface of "Integrated Integration"

The various entities in the integrated system of industry education integration can work together to maximize innovation (economic) profits. At this point, the innovation driven integration system of industry education integration can be considered as having reached a consensus of "cooperative game" among all entities. The corpus also confirms the consensus of innovation driven integration of industry and education in universities, which is guided by "common development" and based on the complementary resources and shared risks of industry and education integration. This can be intuitively reflected in the "integrated promotion model" and "integrated integration and improvement model", such as the industry, education, and science integrated promotion model reflected in the corpus vocabulary, and the integration and improvement of industry, vocational courses, and competitions. From the perspective of achieving complementary resources in the integration of industry and education, the corpus vocabulary indicates that the practice base is the implementation carrier and measure for resource integration and high-quality talent cultivation in the integrated system of industry and education. The typical cases in the corpus also indicate that the government has institutionalized and actively guided the integration and coordination activities of industry education integration. This also confirms that the innovation driven integrated system of industry education integration in application-oriented undergraduate universities is a system of mutual trust among all participating parties in industry education integration based on official government guidelines. The multi round cooperation and coordination of industry education integration, also known as dynamic game theory, means that various stakeholders continuously participate in the supply side integration of industry and education. The corpus shows that these excellent application-oriented undergraduate universities have entered a virtuous cycle of innovation driven integration, that is, an innovation driven integration cycle. The integration of industry and education, driven by innovation, promotes a mutually beneficial cycle between the industry and universities, and promotes the "Nash equilibrium" state. The typical cases in the corpus also indicate that the high-quality development of industry education integration driven by innovation requires the establishment of a quality evaluation system, and at the same time, the construction of a new system for industry education integration driven by innovation. In the new era, industrial colleges are exploring new development paths derived from industry education integration driven by innovation. The corpus shows that these industrial colleges can further develop by building industrial education integration communities, with more high-quality enterprises and universities integrating into society in the "industrial college" model. The Quanzhou case in the corpus shows that the industrial education integration community can ultimately create a national pilot city for industry education integration, fully connecting universities and industrial resources. The corpus also confirms the effectiveness of innovation driven integration of industry and education in promoting the development of university teaching, especially student training. This is reflected in the construction of a production education integration practice system with

deep student participation and the integration of technology integration, teacher integration, and standard integration. This also indicates the trend of standardization construction in the game process of industry education integration.

This is clearly reflected in the "Innovation Driven Corpus Vocabulary" and highlighted in WordNet. Specifically, innovation demand serves as an adaptation to the constantly evolving demands of the external market. The integration of industry and education innovation drive adapts to innovation demand by focusing on their respective skills, practices, and innovation needs, combined with industry analysis on how to continue innovation driving. This is transmitted from the innovation chain to the continuous iteration and innovation of product technology in enterprises and industries. In addition, emerging industry technologies and skills innovation services also play a radiating and driving role through innovation driven innovation, forming an open, shared, and collaborative innovation system among universities, enterprises, society, and society. Universities are guided by the transformation of research and development technology achievements, and have more motivation to promote their own technological innovation and research level, forming various industry university research cooperation innovation achievements based on the integration of industry and education. The "Innovation Driven Corpus Vocabulary" clearly reflects the formation of skills training, taking into account both academic innovation ability and professional practical ability. The "double innovation" of innovation and entrepreneurship forms practical experience, professional literacy, innovation ability, and establishes a "double innovation" channel for students. In the medium and long term, it forms a talent cultivation based on the integration of industry and education, which includes "professional ability+innovation ability+enterprise literacy". Standard.

Secondly, cooperative game theory enables the integration of industry, education, and innovation to drive the sharing of internal resources among all entities in the integrated system through complementary advantages. The resource and endowment capabilities of each stakeholder in the integration of industry and education are relatively limited, which is particularly prominent in enterprises and industries. For example, according to the theory of technological economic cycles, enterprises and industries cannot have all the optimal (leading) technologies for a certain product (or service) in the long run. Therefore, the cycle of technological economic cycles will inevitably "force" enterprises and industries to continuously carry out technological innovation in their products (or services).

In the integration of industry and education, universities undertake the task of scientific research and innovation, thus possessing the endowment advantage of technological research and development. However, they often face the problem of funding constraints and the problem of funding support for technological research and development. For this reason, whether it is enterprises or universities, the strategies adopted by both in this game of interests are consistent, that is, to utilize each other's resources (which are relatively external resources) in the larger "biosphere" of the system. Enterprises and universities, as players in the game, will actively create conditions and complementary advantages to ultimately achieve optimal allocation and sharing of resources. In this dynamic process, the various stakeholders in the integrated system "biosphere" driven by the integration of industry and education innovation pursue each other in terms of capital flow, knowledge flow, technology flow, and information flow, and ultimately achieve data precipitation and "closed loop".

This is clearly reflected in the "Innovation Driven Corpus Vocabulary", which forms a systematic "innovation chain". The cases in the corpus show that the education chain, talent chain, and industry chain jointly form the "innovation chain", which is not only the core mechanism of industry education integration, but also an important lever for promoting globalization. This indirectly reflects the necessity and importance of building industry education integration landmark cities in regional economic development. From the perspective of universities as the main body of education supply, deep integration into the industrial chain

and innovation chain can integrate the competitiveness of universities' "courses", and the innovation of teaching and learning by university teachers and students in practice has also formed a performance improvement of "practical innovation". The corpus also confirms that the integration of industry and education is an important new paradigm for promoting innovation in applied schools.

The research and development of this type of "blockchain" technology and the commercialization of product services are intertwined with knowledge management and technology sharing. The innovation driven process of knowledge sharing and transmission is also constantly accelerating, ultimately leading to a collaborative innovation effect of "1+1>2" in the high-quality industry education integration system formed by innovation driven development; To achieve the maximization of factor utility and economic benefits, from this perspective, the important foundation of the integrated system cooperation game driven by industry education integration innovation is resource sharing, among which knowledge and technology resource sharing is the most prominent.

Thirdly, cooperative game theory enables the integration of industry and education, innovation driven integrated system, and the sharing of risks and benefits among all game players. Firstly, under the combined effects of the new normal of the economy, post crisis, and post pandemic, the external environment of enterprises and industries is becoming increasingly complex and unstable, while market competition is becoming increasingly fierce, accompanied by various risks. The changes in the international and domestic markets in the new era have raised higher and more frequent requirements for technological innovation and research and development by enterprises and industries. The prominent manifestation of this is that the technology research and development cycle of enterprises in the new era is facing a trend of continuous shortening, and the research and development costs are also facing pressure of continuous decline. This objectively requires that the risks of new technology research and development urgently need to be diversified and diluted. To achieve effective risk diversification, enterprises and industries cannot rely solely on their own strength. Moreover, the improvement of innovation driven capabilities not only faces risks, but also requires significant long-term costs, which cannot be borne by ordinary small, medium and micro enterprises.

5. Feasibility analysis of the innovative driving path of industry education integration in application-oriented undergraduate universities based on corpus analysis

This section continues to combine the three spiral chains of "industry chain, teacher chain, and value chain" derived from corpus analysis. These three chains form the bond of the "integration of industry and education" community, and also run through the entire innovation driven industry education integration model system engineering, forming the feasibility of the innovation driven path of industry education integration in applied undergraduate universities. The three spirals of "industry chain, teacher chain, and value chain" serve as an innovative "three spiral" model to promote the long-term, close, and stable performance improvement of the "industry education integration" community.

From the analysis of the above industry chain entries, it can be seen that an important manifestation and core of the industry chain is the "co construction of characteristic industry colleges". The corpus shows that the commonality of these cases is to vigorously promote the integration of industry and education in "industry colleges", use innovation to drive their "characteristic construction", deeply carry out diversified innovation driven cooperation between "industry university research", and jointly build industry colleges with applied undergraduate universities that are in line with local economic characteristics.

From the above analysis of the terms of the teacher chain, we can see that an important embodiment and core of the teacher chain is to jointly build a "double qualified" teaching team. The corpus shows that the commonness of these cases lies in strengthening the connection between undergraduate majors and industries when promoting the integration and innovation drive of applied undergraduate universities with local industries and industries.

From the analysis of the above value chain entries, it can be seen that an important manifestation and core of the value chain is the integration of industry and education, which promotes the increase of "output value". The corpus shows that the commonality of many cases lies in the fact that the integrated community of industry and education relies on industrial colleges or advanced forms of industry education strategic alliances, fully utilizes the advantages of industry university research cooperation, and cooperates with industries and enterprises to create new output value.

In summary, the case corpus reflects the empirical cases and main contents of the "three chains" double helix innovation industry education integration model, and further clarifies the driving mechanism of industry education integration innovation in applied undergraduate colleges and universities in the new era under the promotion of supply side reform. This also provides empirical reference for the proposed innovative driving path of industry education integration in applied undergraduate colleges in the new era in this article.

6. Conclusion

Based on the supply side theory and corpus entry analysis above, this article proposes the following path suggestions for the "three chains" double helix innovative industry education integration model:

Path suggestion 1: Emphasize the core role of application-oriented undergraduate institutions as the education supply side in the integration of industry and education, and promote the construction of high-quality platform carriers for the integration of industry and education.

The overall deployment and construction of a high-quality platform for the integration of industry and education in applied undergraduate institutions under the background of the new era, driven by innovation, should focus on leveraging the core role of applied undergraduate institutions in the integration of industry and education. On the supply side of education, a series of high-quality applied undergraduate institutions should be built with industry education integration training bases and innovation platforms. With the new development concept, applied undergraduate institutions should plan and construct industry education integration parks, and develop industry education integration alliances for the physical operation of applied undergraduate institutions. At the same time, in the diversified innovation driven process of "industry university research", the industry chain should also be guided by promoting "industrial application", that is, characteristic industry colleges should choose valuable projects and be based on the platform of applied universities. Building a training base and integrating it into a park, Conduct further testing, exploration, and development to generate actual innovative results.

From the perspective of the industrial chain, leveraging the core role of applied undergraduate universities in the integration of industry and education, and promoting the integration of industry and education, requires the construction of high-quality platforms as carriers, especially relying on industrial colleges. Applied undergraduate universities can gather high-quality educational resources from regional industries and local enterprises, and drive innovation in the integration of industry and education to jointly create a truly productive full chain practice base for the integration of industry and education. The core role of application-oriented undergraduate colleges in driving innovation through industry education integration is to create a series of high-quality application-oriented undergraduate colleges' industry

education integration training bases and innovation platforms through high-quality platform carriers, which will act on the industrial chain and enhance the core competitiveness of application-oriented undergraduate colleges in cultivating and supplying high-quality talents driven by industry education integration innovation; And the enhancement of this core competitiveness further consolidates and continues to play the core role of applied undergraduate institutions in the integration of industry and education, promoting the construction of higher quality platforms for industry education integration at a higher level of the industrial chain. The construction of an industry education integration platform centered on application-oriented undergraduate colleges and universities promotes the deep integration of the latest cutting-edge technologies of enterprises and industries with the scientific research of application-oriented undergraduate colleges and universities. It revitalizes traditional scientific research in application-oriented undergraduate colleges and universities, unleashes new momentum, and plays a role in the transformation and upgrading of teaching dynamics, thereby achieving the improvement of resource output and the enhancement of research and development technology capabilities. Starting from the end of application-oriented undergraduate colleges and universities, a high-quality platform is built as a carrier to promote the optimization of the teaching structure and the improvement of the management mechanism of application-oriented undergraduate colleges and universities, ultimately achieving the transformation and upgrading of application-oriented undergraduate colleges and universities, enhancing the core competitiveness of application-oriented undergraduate colleges and universities in cultivating innovative talents through the integration of industry and education. Innovation alliances and technology standardization promotion have also formed an "industrial agglomeration" effect through the industrial chain.

Path suggestion 2: Application oriented undergraduate colleges and universities should increase their support for the integration of industry and education systems, and improve the implementation of policy support systems for the integration of industry and education in application oriented undergraduate education guided by mechanism innovation.

On the one hand, application-oriented undergraduate colleges and universities should implement the top-level design of the national integration of industry and education, concretize macro support, focus on playing the core role of application-oriented undergraduate colleges and universities in the integration of industry and education, and strengthen the driving force of education policies and industries. On the other hand, from the perspective of the faculty chain, application-oriented undergraduate colleges and universities should increase their support for the integration of industry and education systems, improve the implementation of the policy support system for the integration of industry and education guided by mechanism innovation, establish a sound mechanism for the open sharing of innovative economic and technological resources, and encourage innovative economic researchers to carry out innovative technology development, consulting, training and other "science and technology innovation corridors" for application-oriented undergraduate colleges and universities. This can effectively achieve the deep integration and "spiral" rise of technological innovation and innovation and entrepreneurship in application-oriented undergraduate colleges and universities. From the perspective of enterprises, application-oriented undergraduate colleges and universities should increase the supply of mechanism innovation, especially in the areas of technology special envoy stationed system and the construction of "teacher workstations" within enterprises, to more efficiently help "dual teacher" teachers improve their own application innovation capabilities in real enterprise environments. Research can also be conducted in the "teacher workstations" to immediately promote the transformation of achievements, and more efficiently promote the improvement of teaching and research abilities of university teachers. At the same time, the technology special envoy stationed system also promotes the acquisition of skills by "dual teacher" teaching teams in actual enterprise on-the-job work, especially in

practical training and guidance of students in talent cultivation, ultimately promoting the construction of an integrated community of industry education integration.

(3) Path suggestion 3: Give full play to the precise "bonding effect" of application-oriented undergraduate institutions in aggregating resources in the market and enhancing added value together with industries.

By promoting cooperation with industry organizations and industrial integration, applied undergraduate colleges and universities can better integrate the supply side reform of education and the cultivation of applied undergraduate talents with industrial policies. Through precise "bonding", the integration of industry and education can provide accurate assistance for the development of local industries. This is also a manifestation of the function of applied undergraduate colleges and universities in serving the local economy. In addition, from the perspective of education supply, the precise "bonding" of industry education integration can promote the increase of "output value". In fact, this precise "bonding" and "output value" increase originates from "value demand education". Therefore, this path is also an education and training mechanism based on the increase of "output value", and it is also an education that relies on industrial colleges to improve the literacy and values of undergraduate students in the integrated community of industry education integration. By leveraging the precise "bonding effect" of market aggregation resources in applied undergraduate higher education institutions, upstream and downstream resources can be gathered on a larger scale, and the number, specifications, and levels of industry talent cultivation can be accurately predicted at the forefront of applied undergraduate higher education talent cultivation. This will create a talent supply chain system for industry talent cultivation and innovative research and development, accelerate the formation of a high-quality and sustainable business innovation ecosystem that supports the development of strategic emerging industries, social service industries, and local advantageous characteristic industries. This integrated community of industry education integration is still a manifestation of "group education" in the value chain of the commercial innovation ecosystem of regional economic output, especially attracting high-quality local enterprises to actively participate in school enterprise cooperation and industry education integration in the commercial innovation ecosystem, realizing the "double helix" of the value chain and industry education chain, promoting the construction of a "value led, goal clear, and path clear" integrated community of industry education integration, and providing a lever for enhancing the breadth and depth of industry education integration.

Acknowledgements

Fund Project: This paper is the result of Guangdong Province Ordinary University Characteristic Innovation Project "Research on the Innovative Driving Path of Industry Education Integration in New Era Applied Undergraduate Universities" (Project Approval No. 2022WTSCX138); Guangzhou College of Business and Technology Research Project (Key Cultivation) "Research on the Innovation Driven Development Path of Service Trade in the Guangdong Hong Kong Macao Greater Bay Area from the Perspective of Standardization" (Project No. KYPY2023029); Guangdong Provincial Department of Science and Technology Project "Joint Construction of Guangdong Cold Chain Standardization Engineering Technology Research Center" (Project No. 2020440121000082).

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