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**An Empirical Study on the Relationship
between Combination of Industry and
Education and Talent Training Performance**
高職院校產教結合與新型人才培養績效
的實證研究

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Shi Baofeng
史宝凤

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摘要

當今我國宏觀經濟穩步發展與產業轉型升級加快，快速發展已成為一個新常態，高等職業教育與經濟發展聯繫日趨緊密。高等職業院校作為高素質技術技能應用型人才主要來源，其人才培養方式面臨更新的機遇和挑戰。基於以上背景，本文研究了高等職業教育行業中產教結合模式對技術技能應用型人才培養績效的影響機制，並對提出理論進行實證研究。從而為當前高等職業教育理論以及實踐發展方向、方式提出合理化建議。

本文回顧了我國高職教育的整體狀況，分析了研究高職教育產教結合的研究背景和意義。對產教結合模式、教學過程組織、師資隊伍、人才培養績效進行了相關文獻梳理和評述。從實踐和理論出發，提出了產教結合模式、新型人才培養績效、教學過程組織、師資隊伍建設的理論模型。首先分析了當前高等職業教育的主要培養模式-產教結合模式：企業辦學、校辦產業、校企合作、產教聯盟、職教集團等，並檢驗了他們對教學過程組織（包括教學方法的結合和課程內容的結合）的影響。其次，本文從教學過程組織為主要切入點，分析了教學過程組織對新型人才培養績效（就業率、滿意度、創業意識創新能力）的影響方式，以及教學過程組織在產教結合模式和新型人才培養績效之間的仲介作用，描繪了三者之間作用過程。最後，本文研究了師資隊伍結構對產教結合模式和教學過程組織以及教學過程組織和人才培養績效關係的調節作用。

本文通過調查問卷研究法對理論模型進行了結構方程模型檢驗。實證結果發現。

(1) 不同產教結合模式對教學過程組織具有不同的顯著影響，企業辦學、校辦產業、產教聯盟對課程內容的產教結合程度具有顯著正向影響。校企合作對

課程內容的產教結合程度具有顯著負向影響。企業辦學、校辦產業對教學方法的產教結合程度的影響不顯著，校企合作和產教聯盟對教學方法的產教結合程度具有顯著正向和負向影響。

(2) 教學方法的產教結合對人才培養績效顯著正相關，說明提升教學方法的產教結合能顯著提升人才培養績效。而課程內容的產教結合對人才培養績效顯著負相關，也就是說，提升課程內容理論和實踐結合，短期內可能不利於畢業生的就業表現。

(3) 教學條件、資金投入、區域經濟貢獻對人才培養績效的影響得到證實。生源品質對人才培養績效沒有影響。資金投入對人才培養績效具有顯著影響，但影響程度低於其他控制變量，可能原因是當期資金投入直接提升人才培養績效的效果一般，而需要一定時間消化，例如購買固定資產、進行教學研發活動等。而教學條件對人才培養的提升在控制變量中最為有效。區域貢獻對人才培養也有一定影響，畢業生對區域經濟貢獻越高，其創新創業的能力和意識也可能越強。教學方法的產教結合程度得到增加，並不會促進高職院校的課程內容進行產教結合，然而，課程內容的產教結合會啟發或促使院校在教學過程組織中採用新穎和匹配的教學方法，從而提升教學方法的產教結合程度。

(4) 教學方法的結合與課程內容的結合互相促進互相影響。教學方法的結合對課程內容的結合沒有顯著影響，然而，課程內容的產教結合，會啟發教學過程中，採用新穎和匹配的教學方法，提高教學方法的產教結合程度。

(5) 教學過程組織對產教結合模式和人才培養績效的仲介作用部分顯著。企業辦學、校辦產業、校企合作對人才績效直接影響不顯著，因此存在完全仲介作用。產教聯盟對人才培養績效影響顯著，存在部分仲介作用。

校企合作通過課程內容、教學方法提升了人才培養績效，但作用方式不同。校企合作通過降低課程內容的產教結合程度、提高教學方法的產教結合程度，從而間接提升人才培養績效。產教聯盟通過課程內容、教學方法降低了人才培養績效，但作用方式不同。產教聯盟提升了課程內容的產教結合程度，降低了教學方法的產教結合程度，從而間接降低了人才培養績效。

(6) 雙師結構對產教結合與教學過程組織的結合關係的調節作用部分顯著。雙師結構對教學過程組織和人才培養績效關係的調節作用也顯著。

雙師結構對企業辦學和課程內容的正向影響具有負向調節作用，對校辦產業和課程內容的正向影響具有負向調節作用，對校企合作和課程內容的負向影響具有正向調節作用，對產教聯盟和課程內容的正向影響具有負向調節作用。雙師結構對校企合作和教學方法的正向影響具有負向調節作用，對產教聯盟和教學方法的負向影響具有正向調節作用。

雙師結構對課程內容和績效的負向影響具有正向調節作用，對教學方法和績效的正向影響具有負向調節作用。

雙師結構對教學方法、課程內容的產教結合程度具有顯著正向影響。雙師結構對人才培養績效具有顯著負向影響，可能原因是雖然雙師比例較高，但雙師結構也要求更高的教學協調能力、掌控能力，短時間內可能不利於人才培養績效。

綜上所述，本文的核心觀點有：一、企業辦學、校辦產業、產教聯盟促進了課程內容的產教結合，校企合作的穩定合作依賴於較為保守的課程內容產教結合程度。二、校企合作和產教聯盟能有效促進教學方法的產教結合。三、提升教學方法提升了人才培養績效；改善課程內容短期內不利於人才培養績效。四、改善教學條件、資金投入、區域經濟貢獻能提升人才培養績效。而生源品質不是培養

效果的必要條件。五、課程內容的產教結合促進教學方法的產教結合，而教學方法難以影響課程內容的演進。六、校企合作模式下，適當降低課程內容的產教結合程度，提高教學方法的產教結合程度獲得更好的人才培養績效。七、產教聯盟模式下，提升課程內容的產教結合程度，降低教學方法的產教結合程度，從而間接獲得理想的人才培養績效。八、企業辦學，校辦產業，產教聯盟模式下，降低雙師結構能加強課程內容產教結合升高的程度，校企合作模式下，提升雙師結構能改善課程內容產教結合程度降低的狀況。校企合作模式下，降低雙師結構能加強教學方法產教結合升高的程度，產教聯盟模式下，提升雙師結構能改善教學方法產教結合程度減弱的狀況。九、提升雙師結構能彌補課程內容對人才培養績效的不利影響；但提升雙師結構可能阻礙教學方法對人才培養績效的改善。

本文主要創新之處

(1) 構建了產教結合和新型人才培養績效的計算模型

本文還採用實證研究檢驗產教結合理論。當前產教結合研究主要集中在理論研究，本文通過大範圍調查問卷、資料分析，為當前理論分析提供實證證據。在目前的成果中，能運用科學的評價指標體系和評價方法，對我國職業教育產教結合、校企合作的緊密程度、效果好壞、效益高低、科學與否等進行評價的定量研究成果比較薄弱，本文進行了進一步豐富和創新。

(2) 提出了最優產教結合運行和實現機制

首先，現有研究對產教結合模式通過何種途徑影響人才培養存在爭議。本文提出了教學過程組織的重要概念，梳理並分析了其中重要的兩個方面。本文在原有研究基礎上，提出了產教結合的四種分類，並分別分析和擴展了不同類型產教結合模式對教學過程組織的作用機制和效果。其次，教學過程組織對人才培養績

效的影響機制。接著，本文討論了教學過程組織在產教結合模式和人才培養績效之間的仲介作用，為產教結合模式的影響路徑提出了合理解釋。最後，本文提出了師資隊伍的重要性，梳理並解釋了雙師結構的三個主要維度，及其對產教結合方式和教學過程組織、教學過程組織和人才培養績效的調節作用機制。

(3) 豐富了產教結合和人才培養績效的理論

在選題方面，產教結合方式是當前高職教育的重要研究課題。當前高職教育面臨變革的挑戰，急需迎合不斷變化的市場環境，而產教結合是當前職教發展的唯一有效途徑。當前高職教育產業研究，雖然關注企業辦學、校企合作等問題，但缺乏從行業層面整體思考產教結合體系。產教結合方式是現有高職教育主要辦學形式，考察這些模式有助於分析各自模式間關係，及其對人才培養效果的不同作用機制。通過對產教結合方式的研究，找到高職教育體系變革的理想途徑，使之與產業結構升級對接，滿足市場不斷變化的需求，讓利益相關者諸如企業、畢業生等滿意。豐富了產教結合理論，增加了產教結合理論分類。

通過以上分析，豐富了產教結合理論機制，提出了新的理論框架，為實踐提供理論指導。明確界定產教結合概念，總體提煉產教結合的特徵和模式，搭建產教結合的理論基礎，論述實現產教結合發展在構建現代職業教育體系中的重要作用，系統分析產教依存關係的內外部影響因素，構建完整的產教結合理論分析體系，填補職業教育研究相關領域的空白。

未來可能的研究

(1) 對產教結合方式進行進一步細分。

例如政府購買、股份混合所有制、教育集團化、科技園區、政校行企聯動模式，並分析對教學過程的影響。開展校企合作下的現代學徒制研究，規避現有校

企合作的風險。畢業生通過學校教師和企業師傅的共同培養，畢業時一般就是企業認可的‘三星店長’，不需要再從基層幹一兩年再做店長，解決了傳統‘訂單班’培養模式下企業留不住人的問題。

(2) 進一步研究產教結合制度和機制。

例如保障機制、激勵機制、利益分配機制、責任機制等。產教結合機制是產教結合各參與要素，在合作中的內部關係和外部環境之間，相互制約、相互聯繫產生的運行規則和方式。產教結合外部保障機制包括：利益(分配)機制、信息資源服務機制；內部合作機制包括：動力機制、保障機制、實施機制、評價機制。余祖光認為校企合作機制應該包括：合作中利益與責任關係—動力與制約機制、合作中的政府引導—引導與激勵機制、靈活適應的調節機制、合作中的社會化服務機制。陳錫勇等提出，校企合作制度建設主要包括優惠政策扶持制度、媒體推進制度、校企共建人才培養培訓聯合體制度、校企共建技術創新戰略聯盟制度和在企業建立教授工作室制度等。

(3) 進一步細分討論教學過程組織。

例如從教學考核評價方式、教學資源等角度進行探討。教學考核與評價方式改革可以從項目、方法、方式、物件、環節等角度進一步完善，例如：兼顧智商項目和非智力項目、動態方法和靜態方法、主觀方式和客觀方式、過程物件和結果物件、課內環節和課外環節等，從而提升教學組織效果。

(4) 完善問卷調查設計。

在產教結合模式方面，細化四種模式的測度項，更準確地衡量產教結合模式。在教學過程組織方面，考慮其他教學過程組織的測量指標，例如教學資源的產教結合等。在師資隊伍方面，有待考察教改意願、認知程度對雙師結構的影響。

對人才培養績效進行更為多元化的指標設計。例如加入畢業生成長的指標等。

(5) 再其次，採用案例分析的方式對典型產教結合模式進行實地調查，總結新的產教結合理論。

關鍵字：高職教育、產教結合、教學過程組織、人才培養績效

ABSTRACT

Nowadays, Macro and industry economy develop rapidly in our country, the link between higher vocational education and economic development is becoming tighter too. Vocational colleges as the main source of high-quality manufacturing talents, facing new opportunities and challenges on its talent training mode. Based on the above background, this paper studies the impact of integration modes of education and industry on personnel training performance in higher vocational education industry, carry on theoretical and empirical research. Provides reasonable suggestions for the development of higher vocational education, theoretically and practically.

This article reviewed the overall situation of higher vocational education in China, the research background and of combination of industry and education in higher vocational education are analyzed. On teaching mode, teaching organization, teaching staff, the performance of the talent training in a combing and review the relevant literature. We first collected and review the literatures on integration model of industry and education , teaching process organization, faculty team building, training performance and so on. From the practical and theoretical view, this dissertation provided a model of industrial-education methods, talent training performance, organization of teaching process, teaching team building. We first classified the major four training modes: factory in school, school in factory, dual system, Industry-Education alliance, and so on. Examine their impacts on teaching organization process. Secondly, we analyzed how teaching process organization affect the training performance, and the intermediation between industry-education mode and performance. Lastly, we study the moderating effect of faculty structure on industry-education mode and teaching process organization, as well as teaching process organization and performance.

We use survey method to analyze the theoretical model through structural equation model. The empirical results show that:

(1) different combination mode of production and education has different significant

impact on the teaching process. Enterprise-run schools, school-run industries, school and industry alliance has significant positive influence on the combination of production and education in the curriculum content. School-enterprise cooperation has significant negative effects on curriculum content. Enterprise-run schools, school-run industries were not significant on curriculum content, the influence of school-enterprise cooperation and alliance has significant positive and negative effects on the degree of industry and education combination of teaching methods.

(2) The degree of industry and education combination of the teaching method and talent training performance is significantly related. And the combination degree of production and education of the course content and talent training performance is significantly negative correlation.

(3) effects of teaching conditions, capital investment and regional economic contribution on the performance of the talent training are confirmed. Quality of students has no effect on talent training performance. Funding has a significant impact on talent training performance, but the influence degree is lower than other control variables, the possible reason is that the current funding less directly promote the talent training performance, more time is needed digest, such as the purchase of fixed assets, conduct research and development and teaching activities. And teaching conditions in the control variables is most effective in promotion of talent training. Regional economic contribution has some influence on talent training, the higher the graduates` contribution to regional economy and the stronger its innovative and entrepreneurial ability and consciousness may be. Increases the combining production and education degree of teaching method, does not promote vocational colleges course content, however, the increase combination of production and education of the course content will inspire or encourage integrating industry and education in the teaching process, by adopting creative and suited method of teaching.

(4) intermediary role of the combination of teaching process organization on industry and education integrative mode and talent training performance are partially significantly. Enterprise-run education, school-run industries, school-industry cooperation is not remarkable influence talent performance, thus completely

mediating role is found. Alliance has significant effects on talent training performance, thus partial intermediary role exists.

School-enterprise cooperation, through the course content, teaching method, improve the performance of personnel training, but their role in a different way. School-enterprise cooperation by lowering the combination of course content, improving combination of teaching method, thus indirectly promote the talent training performance. Alliances, through the course content, teaching method reduces the training performance, but their role in a different way. Alliance promoted the combination of course content, reduced the combining of teaching method, thus indirectly reduces the training performance.

(5) Dual structure of faculty team on industry-education mode and teaching organization process is partially significant. Dual structure of faculty team has significant moderating effect on teaching organization process and personnel training performance relationship.

Dual structure of faculty team has a negative moderating effect on positive relationship of enterprise-run school and course content, has a negative moderating effect on positive relationship of school-run enterprise and course content, has positive moderating effect on negative relationship of school-industry cooperation and course content, has a negative moderating effect on positive relationship of alliance and course content.

Dual structure of faculty team has positive moderating effect on negative relationship of school-industry cooperation and teaching method, has a negative moderating effect on positive relationship of alliance and teaching method.

Dual structure of faculty team has negative moderating effect on positive relationship of teaching method and performance, has a positive moderating effect on negative relationship of teaching method and performance.

Dual structure of faculty team has significant positive impacts on teaching method and course content, has significant negative impacts on performance, the main reasons are dual structure of faculty team required higher coordinate and control-ability which is harmful to performance

In this paper, the main innovation place

First of all, we built the computing model of industry and education mode as well as talent training performance.

We apply empirical study on industry-education combination theory. Current research may focus on theoretical research, through large scale survey and data analysis, provide empirical evidence on current theory. Recent literatures are weak in apply scientific evaluate index system on quantitative research on performance, industry-education combination, teaching process organization and so on.

Secondly, we provided the effective operational and implement mechanism of industry-education combinations. First of all, current research is in dispute of how industry-education mode affect performance. We raised the important concept of teaching process organization, mainly study the two aspects of the concept. We analyzed the mechanism and effectiveness of different types of industry-education combination mode on performance. We put forward four types of industry-education combination modes as well as their mechanism and effects on teaching process. For example, we emphasize the impact of industry-education alliance. Secondly, we study the role of the organization of teaching process on performance and provided reasonably explanation. The mediating effect of teaching process organization between industry-education combination mode and performance. As well as the moderating effect of dual faculty system on the relationship between industry-education combination mode and teaching process organization.

Thirdly, we enrich the theory of industry-education combination modes and talent training performance.

In the aspect of topic selection, the mode of industry and education combination is one of the most important topics in high vocational education. High vocational education faces the challenge of change, recently, in need of meeting the rapid changing market environment, and the combination of industry and education is one of the most effective way. Current research on high vocational education, although focus on issues about enterprise-base school and school-industry cooperation and so on, lack of overall industry level view toward the system of combination of industry

and education. The modes of industry and education combination are major high vocational education forms. Research these modes are helpful to recognize the relationship between different modes as well as various mechanism on talents training performance. Through these research, we find the ideal transformative pathway of high vocational education system, combine vocational education and industry structure upgrade, in order to fulfill the changing market needs, satisfied the stakeholder like enterprises, graduates, and so on. Enrich the industry-education combination theory, enlarge the taxonomy of industry-education combination modes. Through above research, we enrich the theoretical mechanism of industry-education combination theory, provide new theoretical framework and practical instruction. Define the concept of industry-education combination, refining the character and modes of industry-education combination in general, build the theoretical foundation. We conclude the import role of industry-education combination in modern vocational education system. Systematically analysis the relationship between industry and education as well the inside and outside influence factors, construct compete analysis system, shadow a light on the gap of high vocational education.

Potential research in the future.

(1) To further classify industry-education mode.

Such as government purchase, the mixed ownership, education group, science and technology park, government-school-industry-enterprise linkage, and analyses its influence on the teaching process. Modern apprenticeship under school-enterprise cooperation study, hedge the risks of existing school-enterprise cooperation. Graduates were training through school teachers and enterprise teachers, after graduation is generally approved of three stars' manager, don't need to work from entrance level again or another one or two years to be a manager, which has solved employee mobility problem under the traditional mode.

(2) to further study the system and mechanism of combination mode of production and education.

For example, guarantee mechanism, incentive mechanism, interest distribution mechanism, the responsibility mechanism, etc. Combining industry and education

mechanism is a mutual cooperation and restrict rule and way between elements under inside relationship and outside environment during cooperation. External guarantee mechanism includes: education benefit (distribution) mechanism, information resource service mechanism; Internal cooperation mechanism include: dynamic mechanism, guarantee mechanism, implementation mechanism, evaluation mechanism. Zuguang yu think school-enterprise cooperation mechanism should include: relationship between interest and responsibility, motivation and restriction mechanism, the cooperation of government guidance in cooperation, government guide and incentive mechanism in cooperation, flexible and adaptive adjustment mechanism, the social service mechanism in the cooperation. Xiyong Chen put forward, such as construction of school-enterprise cooperation system mainly includes the preferential policy support system, media promotion system, build the complex system of talents training between colleges and enterprise, build system of technology innovation alliance between colleges and the enterprises as well as professor studio, etc.

(3) further discussion teaching process organization.

For example, the aspects of teaching evaluation ways, teaching resources will be discussed. The reform teaching evaluation, assessment and evaluation methodology, in combine with intelligence factors and non-intelligence factors, dynamic and static, process evaluation and result evaluation, in-class and after-class, internal and external of school, subject and object, which reflect students' actual situation objectively, activate the students' subject consciousness, promote the comprehensive development of students, to obtain twice effect as teaching effort.

(4) improve the questionnaire design.

In the aspect of the combination of production and education mode, detailed measure the four patterns. In the aspect of teaching process, to consider other measures, such as combination of production and education resources. In the aspect of faculty team, to examine the influence of educational reform willingness, cognitive degree on dual faculty team. Develop a more diversified index design of talent training performance. Such as growth index of graduates.

(5) third, with the method of case study, carry on field research, summarizes new combination of production and education theory.

Key Words: Vocational Education, Integration of Production and Education, Education Process Organization, Talent Training Performance

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