

Innovation and practice of computer application professional curriculum system based on the integrated training mode of education + skills

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Keywords: Academic qualifications + practical skills integration; curriculum system innovation; computer application major; practical teaching

Abstract: In the rapid development of the information age, higher education faces a significant challenge in nurturing high-quality professionals adaptable to societal demands. This challenge is particularly pronounced in the field of computer applications, where students not only need a solid theoretical foundation but must also possess practical skills and innovative thinking. Therefore, exploring a new model that effectively integrates academic education with practical skill development is imperative. In this regard, this paper focuses on the education model combining academic qualifications with practical skills and aims to explore its application value and feasibility in the innovation and practice of the curriculum system for computer application majors.

1. Introduction

With the rapid development of information technology and the continuous expansion of its application domains, the educational goals for computer application majors have become increasingly complex and diverse. Traditional academic education often emphasizes the imparting of theoretical knowledge, leaving a gap in the cultivation of practical application skills. Simultaneously, skill training institutions, while capable of providing practical operational skills training, lack systematic education in disciplinary knowledge. Therefore, achieving an organic integration of academic education and skill development in computer application majors has become a critical issue.

2. Overview of the Academic Qualifications + Practical Skills Integration Training Model

The innovation and practice of the curriculum system for computer application majors based on the academic qualifications + practical skills integration training model is an instructional approach that combines theoretical knowledge with practical skills. This model aims to enhance students' overall quality and competitiveness in the job market.

Specifically, this model draws inspiration from the concept of the "Integration of Job Positions, Courses, and Certifications" talent development model. It organically integrates the work positions and professional skills of enterprises, vocational skill level standards, vocational skill competitions, and the curriculum system. The elements are interconnected and mutually reinforcing. Simultaneously, it also incorporates the "Vocational-Technical Integrated Education Model,"

achieving a balance between vocational education and general education, academic and technical talent development, regular college entrance examinations and vocational college entrance examinations, credit recognition, and enrollment transfer.

Furthermore, it introduces the concept of "Industry-Education Integration and Certification Integration," incorporating the vocational skill level standards in socially urgent industries and areas with a shortage of technical talents into the talent development programs of major institutions. This ensures the integration of teaching content with vocational certification content and job requirements, genuinely realizing a model where students graduate with both academic qualifications and several vocational skill level certificates. This model aims to establish an empowered applied talent development model that aligns with the goals of comprehensive employment and high-quality employment.[1]

3. Characteristics of the Academic Qualifications + Practical Skills Integration Training Model

3.1. Diverse and Flexible Teaching Modes

The academic qualifications + practical skills integration training model is characterized by diverse and flexible teaching modes. Through various teaching methods such as classroom instruction, hands-on practice, project training, and university-enterprise cooperation, students are provided with a comprehensive learning experience. The instructional content goes beyond traditional theoretical knowledge, placing a greater emphasis on cultivating students' practical skills and problem-solving abilities. Moreover, tailored learning plans and teaching resources can be provided based on students' individual characteristics and developmental needs, meeting their learning requirements and training goals.[2]

3.2. Joint Training Mode Promoting Industry-Education Integration

This model emphasizes close cooperation and communication between schools and enterprises, fostering the in-depth development of industry-education integration. Schools and enterprises collaboratively participate in curriculum design, internships, and practical training activities, aligning instructional content with practical needs. Through the implementation of university-enterprise cooperation projects, students gain insights into the actual work environment and industry requirements, acquiring more practical experience and professional skills. Simultaneously, enterprises gain a more tangible understanding of students' actual capabilities and potential, offering additional support and assistance for graduates' employment and career development.[3]

3.3. Cultivation of Comprehensive Qualities and Professional Abilities

The model is dedicated to cultivating students' comprehensive qualities and professional abilities, emphasizing the organic integration of theory and practice. Students not only acquire solid academic knowledge but also enhance problem-solving abilities and innovative thinking through practical operations and project practices. Participation in various practical activities and project cases helps students develop strong teamwork spirit, innovative awareness, and practical operational skills, laying a solid foundation for future career development.

3.4. Personalized Teaching Facilitating Individual Development

The academic qualifications + practical skills integration training model focuses on personalized teaching to promote individual development and skill enhancement. By gaining a deep understanding

of students' individual characteristics and developmental needs, teachers can provide personalized learning plans and instructional guidance, assisting students in discovering their potential, addressing deficiencies, and achieving comprehensive development. Additionally, students can choose learning directions that align with their interests and strengths. Through personalized learning paths and teaching resources, they can achieve self-improvement and professional development.

3.5. Emphasis on Lifelong Learning and Career Development

The model underscores that learning is a continuous process, advocating for students to possess awareness and capabilities for lifelong learning. Through continuous learning and practical experience, students can continually enhance their professional competence and comprehensive qualities, adapting to the demands and challenges of societal development. Moreover, the model guides students in planning their career development paths, clarifying personal career goals and directions. Through ongoing learning and practical experience, they continuously enhance their professional capabilities and competitiveness.

4. Significance of Innovative Curriculum System in Computer Application Major Based on the Academic Qualifications + Practical Skills Integration Training Model

4.1. Adapting to Market Demands and Enhancing Students' Employability

In traditional computer application major curriculum systems, students often only encounter theoretical knowledge, lacking practical experience. This singular educational approach renders many graduates less competitive in the job market, as companies prefer candidates with practical skills. Therefore, the innovative curriculum system based on the academic qualifications + practical skills integration training model combines theoretical knowledge with practical skills. This integration better prepares students to meet market demands by providing them with more practical opportunities beyond the classroom. This training model offers students more hands-on experience in real work scenarios, thereby enhancing their employability and practical skills.

Additionally, this training model helps address students' deficiencies in practical skills. Through diverse practical training, students can master various practical skills, making them more adept at solving real-world problems. This not only increases their competitiveness in the job market but also facilitates their seamless integration into the work environment, leading to improved job performance.[4]

4.2. Fostering University-Enterprise Cooperation for Resource Sharing

The innovation of the computer application major curriculum system based on the academic qualifications + practical skills integration training model strengthens the connection between educational institutions and enterprises. Schools can leverage the rich practical experience and advanced technological equipment of enterprises to provide students with more authentic practical opportunities and internships. Through collaboration with enterprises, students gain deeper insights into the industry's actual requirements, better preparing them for future work.

Simultaneously, enterprises benefit from this collaboration by gaining access to a more extensive pool of talent. Graduates from schools not only possess solid theoretical knowledge but also have abundant practical experience, enabling them to quickly adapt to the company's work environment. This university-enterprise cooperation not only helps students integrate into the workplace more effectively but also enhances the core competitiveness of enterprises, creating a win-win situation.[5]

4.3. Driving Curriculum System Reform and Innovation

With the continuous development of technology, traditional computer application major curriculum systems are no longer sufficient to meet societal demands for talent. The innovative curriculum system based on the academic qualifications + practical skills integration training model propels the reform and innovation of curriculum systems. This training model emphasizes the integration of theory and practice, focusing on cultivating students' comprehensive qualities, which is conducive to their overall development. Under this curriculum system, students not only master theoretical knowledge but also enhance problem-solving abilities and innovative thinking through practical activities.

Moreover, this training model promotes the professional development of teachers. Designing courses and teaching methods requires a greater emphasis on cultivating students' practical abilities, necessitating continuous updates to educational concepts and the enhancement of teaching skills. Therefore, this training model benefits not only students' development but also contributes to elevating the overall quality of education and teaching.[6]

4.4. Cultivating Comprehensive Qualities for Holistic Development

The innovation of the computer application major curriculum system based on the academic qualifications + practical skills integration training model emphasizes not only the development of students' skills but also the cultivation of their comprehensive qualities. This training model demands that students not only grasp solid foundational theoretical knowledge but also possess strong practical and innovative abilities. Through the combination of theory and practice in training, students can not only improve their professional skills but also develop non-technical competencies, such as teamwork, excellent communication skills, and efficient problem-solving abilities. The cultivation of these comprehensive qualities helps students better adapt to various challenges and changes in the future workplace, transforming them into well-rounded, high-quality talents.

Furthermore, the curriculum system based on the academic qualifications + practical skills integration training model also emphasizes the cultivation of students' humanistic qualities. In addition to developing professional skills, the curriculum system focuses on fostering students' cultural literacy and awareness of human care. This contributes to students' ability to handle various complex situations in society with composure, demonstrating higher comprehensive qualities and social responsibility.[7]

4.5. Adapting to the Development Trends of the New Economic Era

The innovation of the computer application major curriculum system based on the academic qualifications + practical skills integration training model holds significant importance in adapting to the development trends of the new economic era. With the rapid development and widespread application of information technology, computer applications have become an indispensable part of various industries. Therefore, cultivating professionals with solid computer foundational knowledge and practical application capabilities is crucial. Traditional academic education often focuses on theoretical knowledge transfer, neglecting practical skill development. In contrast, the innovative curriculum system based on the academic qualifications + practical skills integration training model places greater emphasis on cultivating students' practical operational abilities and problem-solving skills. Through collaboration with enterprises, students gain exposure to real work environments, understanding corporate needs and requirements, and applying their acquired knowledge to practical work.

Simultaneously, schools can invite industry professionals from enterprises to conduct lectures and

training sessions, sharing their experiences and insights. This helps students gain a better understanding of industry development trends and employment prospects. Through this innovative educational model, students can engage in practical work early on, accumulate practical experience, and enhance their competitiveness in the job market.[8]

5. Innovative Practice Path for Computer Application Major Curriculum System Based on the Academic Qualifications + Practical Skills Integration Training Model

5.1. Establish a Market-Driven Curriculum System

The construction of the curriculum system for the computer application major should be guided by market demand, closely aligned with the needs of societal development and technological progress. When designing the curriculum system, in-depth research on industry trends and market demands is essential. Understanding the skill requirements that companies have for computer application talents is crucial, and the curriculum content and teaching plans should be designed accordingly. For instance, with the rapid development of artificial intelligence, there is an increasing demand for talents with skills in deep learning, natural language processing, and other related areas. Therefore, the curriculum can be enriched with relevant theoretical and practical courses, such as machine learning, data mining, and intelligent algorithms, to meet the market demand for artificial intelligence professionals. Additionally, attention should be given to emerging technology trends, allowing for timely adjustments to the curriculum to ensure alignment with market requirements.

5.2. Strengthen Practical Teaching to Enhance Students' Skill Levels

To enhance practical teaching and improve students' skill levels, the school can actively establish internship bases in collaboration with enterprises, providing students with more practical opportunities. For example, partnering with well-known internet companies to create internship bases allows students to gain insights into the actual workflow and business requirements of enterprises, learning and mastering relevant skills through practical experience. Moreover, the school can organize diverse practical courses, such as project development competitions and innovation design contests. Through participation in these activities, students can apply their acquired knowledge to solve real-world problems, fostering problem-solving and innovation skills. Simultaneously, the integration of practical components with theoretical courses should be emphasized, ensuring a match between practical and theoretical courses. This allows students to solidify theoretical knowledge through practical application, expanding their skill sets. Through these forms of practical teaching, students can face various technological challenges in a real work environment, improving their skill levels and problem-solving abilities. This comprehensive and diverse practical teaching model helps students better adapt to future career development needs, enhancing their competitiveness and career prospects.

5.3. Emphasize the Cultivation of Students' Comprehensive Qualities

The education of the computer application major should not only focus on the cultivation of students' technical skills but also aim for comprehensive qualities. In the design of teaching plans, courses related to humanities and professional planning should be included. Humanities courses help students broaden their perspectives, enhance cultural literacy, and improve their understanding and appreciation of aspects such as culture, art, and history. By studying these courses, students can develop sensitivity to beauty and care for societal issues, enhancing their comprehensive qualities. For example, courses in art appreciation can be introduced, allowing students to appreciate different types of artworks, cultivating their aesthetic and artistic appreciation abilities, and thereby elevating

their overall quality. Additionally, the inclusion of professional planning courses is crucial. Through these courses, students can understand different career development paths and requirements, learning how to plan their own careers effectively. In these courses, students can acquire skills such as writing excellent cover letters and handling interviews, enhancing their competitiveness in the workplace. Inviting experienced professionals to teach these courses, sharing their career experiences and insights, can greatly benefit students in planning and preparing for their future.

5.4. Promote the Continuous Update of Educational Concepts and Teaching Methods for Teachers

Teachers should continually strengthen their awareness of their educational mission, value students' individual differences, and actively explore diverse teaching strategies to inspire students' intrinsic motivation to learn. Encouraging teachers to engage in interdisciplinary collaboration helps broaden their teaching perspectives, promoting knowledge integration and innovation. Teachers should continuously update their educational concepts, emphasizing the cultivation of students' abilities for independent thinking and problem-solving, nurturing innovative spirit and teamwork skills. During the teaching process, the integration of theory and practice should be emphasized. Teachers should guide students to participate in practical projects, enabling the combination of classroom knowledge with real-world application and improving students' practical operational abilities. Teachers should also continuously learn and update their knowledge of industry trends, enhancing their professional competence to better guide students in facing the ever-changing landscape of technological advancements and market demands. In summary, by continuously updating educational concepts and teaching methods, teachers can better adapt to the demands of innovative practice in the computer application major curriculum system, laying a solid foundation for students' comprehensive quality improvement and career development.

5.5. Construct a Diversified Evaluation System

In the innovative practice path of the computer application major curriculum system based on the academic qualifications + practical skills integration training model, constructing a diversified evaluation system is crucial. To achieve this goal, students need to be comprehensively, objectively, and fairly assessed from multiple dimensions, including their mastery of theoretical knowledge, practical operational abilities, innovative capabilities, teamwork, and more. Additionally, attention should be given to students' individual development, encouraging them to leverage their strengths and interests during the course of their studies. Various assessment methods, such as written exams, practical experiments, project practices, paper writing, oral presentations, etc., can be employed to gain a comprehensive understanding of students' learning situations. Moreover, establishing a robust feedback mechanism is essential, providing students with timely evaluation results and improvement suggestions to help them continuously enhance their comprehensive qualities. In conclusion, constructing a diversified evaluation system is a key aspect of improving the teaching quality of the computer application major curriculum, serving as an important guarantee for cultivating students' well-rounded development.

5.6. Facilitate International Exchange and Cooperation

In the context of innovative practices in the computer application major curriculum system, schools can actively establish collaborations with renowned international universities or research institutions. This collaboration can involve joint research projects or cooperative training programs, providing students with opportunities to participate in international projects. Through exchanges and cooperation with outstanding educational institutions abroad, students can access advanced international teaching philosophies, technological research outcomes, and industry development

trends, broadening their international perspectives and enhancing cross-cultural communication skills. Additionally, encouraging students to participate in international academic conferences, competitions, or exchange programs can strengthen academic exchanges with international peers, improving students' research and innovation capabilities. Furthermore, schools can organize international exchange and study programs, encouraging students to study abroad at foreign universities. This firsthand experience exposes students to different educational environments and cultural atmospheres, broadening their international perspectives and cultivating their international competitiveness. Through these initiatives of international exchange and cooperation, students can open up broader career development opportunities, enabling them to better adapt to the international working environment and enhancing their competitiveness as globally competitive talents.

6. Conclusion

The innovation and practice of the computer application major curriculum system based on the Academic Qualifications + Practical Skills Integration Training Model provide a new approach to cultivating students' comprehensive abilities and competitiveness in the job market. By breaking traditional disciplinary boundaries and organically combining academic education with skill development, this model emphasizes not only the imparting of theoretical knowledge but also the cultivation of practical operational skills. This model holds significant importance for driving innovation in the curriculum system of the computer application major and serves as a valuable reference for the innovation of curriculum systems in other disciplines. Future research can further refine this model, exploring additional teaching strategies and assessment methods to continually enhance students' learning outcomes and comprehensive abilities.

Acknowledgement

LANZHOU RESOURCES & ENVIRONMENT VOC- TECH UNIVERSITY School level Science and Technology Project: Research on the Construction and Application of Curriculum System of Computer Science Application under Educational background + Skills Integration Training Mode, no. X2023A-32.

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