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A Study on the Competency Cultivation of Graduates from Applied Universities from the Perspective of Smart Cities

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Abstract

With the rapid development of smart cities, higher education is facing new challenges and opportunities. The cultivation of applied college graduates has always been a focus of attention in the education industry, and its essence is a higher requirement for student competence. In the context of smart cities, society's expectations for graduates are not only limited to knowledge and academic abilities but also urgently require talents with practical and adaptable abilities. Hence, the objective of this research is to investigate methods for enhancing the development of competencies in graduates from applied universities within the context of smart cities. This includes the revision of training programs, enhancement of practical teaching, and coordination of various resources. These efforts are aimed at aligning with the evolving and intricate social requirements, and offering innovative concepts and strategies for nurturing graduates who are better equipped to fulfill the developmental demands of smart cities. We hope to establish an open, integrated, and diverse education system to cultivate graduates who are more adaptable to social needs and possess practical competence.

Keywords

Smart city perspective; Graduates from applied universities; Competency

1. Introduction

In today's rapidly developing social context, the essence and role of education are becoming increasingly prominent. The cultivation of applied college graduates is no longer limited to imparting knowledge but emphasizes more on their practical ability and competence. Competence, as a core characteristic of talent literacy, not only encompasses professional skills and knowledge, but also encompasses personality, motivation, and the ability to respond to diverse challenges at a deeper level. The rise of smart cities has provided a new perspective on education, requiring universities to not only cultivate students' academic abilities, but also attach importance to their ability to cope with practical challenges. Therefore, the cultivation of graduates based on competency has become one of the important directions of applied higher education. How to cultivate graduates who meet social needs through comprehensive teaching and resource integration, with competency as the core, is the current focus of educational exploration.

2. Competency and Competency Model

The concept of competence was first proposed by Professor David C. McClelland of Harvard University in 1973. It is expressed as Competence or Competency in English and is commonly translated as "competence" or "competency features" in China. It refers to the deep-seated characteristics that can distinguish between outstanding and ordinary

individuals in a certain job. These traits not only include explicit professional knowledge and skills, but also encompass implicit aspects such as personality, motivation, attitude, or values.

The Competence Model is a collection of multiple competency elements closely related to job performance. These elements can be measured by certain standards and can also be enhanced or improved through specialized training or development activities. The competency model not only considers the skills and knowledge required in the job, but also focuses on factors such as human behavior, motivation, and values. Its core is to provide a systematic framework to help understand the various abilities required for success in a specific work environment.

Therefore, the competency model is not only a simple summary of skills and knowledge, but also delves into various factors that affect performance. These models vary across different industries and professions, as the competencies they require depend on the specific needs of the job field. However, competence is an important tool for businesses and educational institutions to understand, measure, and improve the abilities of employees or students (Cao Caixia, 2023). Through the application of these models, it is possible to cultivate and evaluate talents more systematically and comprehensively, thereby promoting the improvement of work performance and personal growth.

3. The Current Situation of Cultivating Graduates from Applied Universities

3.1 The training mode is traditional and the characteristics of "application-oriented" are not obvious

At present, the cultivation of employment-oriented applied graduates faces some challenges from traditional training models, and the characteristics of "applied" are not very obvious. This kind of cultivation requires a large group of young teachers with innovative spirit and practical operation experience. However, unilateral resource investment by universities is often limited, and there is an urgent need to leverage external forces such as enterprises, industrial parks, or incubation bases to provide teachers and students with richer practical platforms and knowledge application scenarios. Unfortunately, many application-oriented universities still lack such a foundation, and their talent cultivation models mainly rely on classroom teaching, treating the practical stage only as a part of students completing the training plan and meeting graduation standards. Some schools attempt to compensate for this deficiency through online platforms or purchasing simulation systems, allowing students to have access to the operational processes of enterprises through virtual environments. However, there are significant differences between this programmatic system simulation and actual company operations, and students cannot truly experience the complexity and variability of enterprise operations.

3.2 Weak practical teaching links and insufficient collaborative training efforts

Although the combination of industry, academia, and research, the full utilization of alumni resources, and open school-enterprise cooperation are considered key ways for modern university talent cultivation, applied universities face insufficient development in school-enterprise cooperation. Firstly, the participation enthusiasm of enterprises is not high, and the cooperation between schools and enterprises is limited to nominal cooperation, without providing students with opportunities for in-depth corporate practice. Secondly, when schools carry out professional construction, they fail to deeply explore the interdependence between school and enterprise cooperation, resulting in a lack of shared interest bonds between schools and enterprises. In addition, the development of alumni resources did not meet expectations, and the lack of such resource support has led to difficulties in smooth cooperation between schools and enterprises. The emergence of these problems can be attributed to the traditional emphasis on theoretical teaching during the self-study period, which has hindered the development of practical teaching and school-enterprise cooperation. On the other hand, it is also limited by the small scale of cooperative enterprises and the lack of strong motivation for the demand for high-quality applied graduates (Yin Xiang & Tong Xiaoxiao, 2023).

3.3 The quality evaluation and feedback system for talent cultivation is incomplete

The evaluation and feedback system for talent cultivation quality is similar to performance evaluation and feedback in performance management in applied universities and plays a key role in the talent cultivation process. The evaluation and feedback system can effectively promote the improvement of talent training quality and optimize the training mode, but it is not perfect in current applied universities. Although many application-oriented universities have adjusted their evaluation methods for students, they have not established a set of evaluation and feedback mechanisms for the ability and quality of application-oriented graduates, which cannot fundamentally and comprehensively evaluate students' application abilities. The lack of evaluation has led to blind spots in the training process, and schools

are unable to fully understand the actual ability level and potential of students, making it difficult to adjust teaching modes and content in a timely manner, and unable to effectively guide students in learning direction and ability improvement. Establishing an evaluation and feedback mechanism for the competence of applied graduates can be based on actual work scenarios or simulated environments, comprehensively assessing students' practical application abilities and innovative thinking, in order to better promote the quality management of talent cultivation in applied universities.

4. A Competency Model for Applied College Graduates from the Perspective of Smart Cities

In the current employment environment dominated by buyers in the labor market, employers are increasingly demanding of college students. Research has shown that some employers believe that college students have "high vision but low skills", "weak practicality of the knowledge they have learned", and "knowledge and skills are disconnected from job requirements". This shows a certain disconnect between the knowledge level of students and the needs of employers. Universities can construct a universal competency model by deeply analyzing the characteristics of applied talents and combining them with the training objectives of different levels and majors. This not only helps universities cultivate applied talents that better meet the needs of modern society but also improves the pertinence and efficiency of graduate training and competency development.

At present, the training goals of universities for students are focused on knowledge, abilities, and qualities. Combined with the demand for talent in smart cities, the specific elements of the competence of applied university graduates can be brought closer to them, especially in the areas of digitization, intelligence, regionalization, or internationalization. For example, in terms of knowledge, in addition to basic common sense and professional knowledge, graduates also need to master certain data analysis knowledge and be able to use tools such as Python for information mining; At this level of ability, graduates need to integrate and apply relevant software and equipment such as artificial intelligence when analyzing and solving problems, and be able to achieve interdisciplinary integration, gradually transforming from professional talents to diversified talents; At the level of quality, graduates need to develop innovative, dialectical, and diverse ways of thinking, be able to view social reality and future environmental changes from a macro perspective, and be mentally prepared to actively respond. In summary, the cultivation of graduates in applied universities should follow the changes in talent demand from society, industries, and other factors, so that graduates can better serve the smart city.

5. A Competency-based Approach to Cultivating Applied College Graduates from the Perspective of Smart Cities

5.1 Revise the graduate training plan based on competency requirements

From the perspective of smart cities, universities need to be guided by their application capabilities and social job demands, with professional, practical, innovative, and individual qualities as their training objectives. At the same time, based on local economic development needs and competency indicators, refine talent training requirements, fully consider the characteristics of applied universities, and formulate specific training standards based on this. When formulating talent cultivation plans, it is necessary to consider not only the characteristics of applied universities and local economic development trends but also fully listen to the employment standards and needs of enterprises, while also taking into account the career planning and development of graduates. If conditions permit, universities should try to invite enterprises to participate in the process of formulating plans to ensure that talent training programs are effectively tailored to the competency development needs of applied graduates. The talent training program of applied universities should become a blueprint that keeps up with the times and matches market demand, providing students with an educational experience that is more in line with practical job requirements (Zhao Jinguo, 2017). In recent years, universities have strengthened the construction of characteristic majors and classes, such as classes based on deep cooperation between schools and enterprises, as well as majors oriented towards special fields of smart cities in the future. These innovations can not only better serve the personal growth of students, but also better meet the actual employment needs of society, providing strong support for the talent supply of smart cities.

5.2 Constructing a practical teaching system guided by competence

From the perspective of smart cities, the practical teaching system in the cultivation of applied college graduates

based on competency requires not only knowledge transmission but also a two-way communication and theoretical innovation dissemination process. Although some applied universities have begun to try simulation based practical teaching methods, it is still necessary to reconstruct the teaching system based on competency. Firstly, it is necessary to build a professional theoretical teaching system centered on applied technology and competency, in order to cultivate students' professional theoretical knowledge and thinking ability. Secondly, according to the competency requirements, it is necessary to establish a variety of practical teaching modes including simulation training, enterprise practical teaching, and career simulation teaching. Teachers play a role in deepening and expanding theory in the practical process, while enterprises are responsible for guiding and establishing real-life scenarios, and both work together to cultivate students' abilities. The competency-oriented practical teaching model not only provides a theoretical foundation, but also fits the actual job requirements, laying a solid foundation for students' future career development in smart cities (Zhang Guobao, Wang Qi, & Lv Peishan, 2019). In short, the reconstruction of the teaching system should be combined with the needs of competency cultivation to create more effective and adaptable graduate training programs, in order to better adapt to the increasingly complex social requirements and the needs of smart city development.

5.3 Coordinate multiple resources and promote collaborative education

From the perspective of smart cities, applied universities face the challenge of limited resources, and relying solely on the school itself makes it difficult to fully cultivate the competence of graduates. Collaborative education not only helps universities adjust their competency evaluation standards to meet market demand, but also solves the difficulties students encounter in social practice teaching, promotes two-way communication and integration between students and the job market, and prevents talent cultivation from being disconnected from society. Through the two-way communication method of "in-school teachers conducting internships in enterprises and senior executives entering the classroom for teaching", not only does it enrich teachers' practical experience in enterprises, but it also allows students to understand the development process of smart cities in advance under the guidance of high-end talents in enterprises, and verify the effectiveness of competency training (Ha Jing & Wu Zhenmei, 2018).

Meanwhile, fully utilizing and developing alumni resources, especially alumni entrepreneurial resources, is also a key direction. Through the mode of "alumni entrepreneurship project outsourcing + student project operation", combined with the "Internet plus" College Students Innovation and Entrepreneurship Competition, students' practical skills and innovative thinking can be cultivated. In addition, it is possible to collaborate with enterprises to build on-campus workshops, encourage students to actively participate in innovative practical activities, increase their understanding of smart cities, and stimulate their interest in emerging industries. In short, the collaborative education of multiple resources not only expands the teaching resources of the school but also benefits the comprehensive development of students. A more open and diversified educational environment has been created for applied universities, which helps to cultivate more competitive and practical graduates, and better aligns with the development needs of smart cities.

6. Conclusion

In the context of smart cities, it is particularly important to cultivate the competence of graduates from applied universities. The concept of competence runs through the entire education system, requiring universities to continuously improve their training programs based on social and industrial needs, making them more in line with practical work needs. At the same time, it emphasizes the importance of practical teaching, allowing students to gain richer experiences outside of the classroom. However, to make these measures truly effective, it is necessary to unite multiple forces such as the government, enterprises, and alumni to jointly promote the integration and sharing of educational resources. In the end, we hope to establish an open, integrated, and diverse education system to cultivate graduates who are more adaptable to social needs and possess practical competence. Not only does it serve the personal growth of students, but it will also provide a continuous source of intellectual support for the sustainable development of smart cities, promoting social progress and development.

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