

The exploration and practice of applied talents training mode based on modern industry College in minority areas

Xiayun Liu, Liangyong Huang, Changhan Wu*

(Guangxi Science & Technology Normal University, Laibin 546199, China)

Abstract: Modern industrial college is an important form of the deep integration of schools and enterprises, and it is an urgent requirement for ethnic minority areas to deepen the reform and innovation of application-oriented talent training mode. Taking SAIC-GM-Wuling College of Automobile Industry in Guangxi Science and Technology Normal University as an example, this paper analyzes the problems existing in the training of applied talents in ethnic areas, explores and studies the “123456” applied talents training mode formed in the process of integration of production and education in modern industrial college under the concept of OBE. It provides reference for effectively improving the training quality of high-quality applied technical and technical talents in ethnic minority areas.

Key words: ethnic minority areas; Industrial college; Applied talents; Talent training mode

As one of the key factors affecting regional economic development, applied talents have been widely concerned by the state and local governments. In 2020, the General Office of the Ministry of Education and the General Office of the Ministry of Industry and Information Technology jointly issued the Guide for the Construction of Modern Industry College (Trial Implementation) (Letter of Education High Office [2020] No. 16), which clarifies the construction goal of modern Industry College, namely, focusing on joint training with application-oriented colleges and universities to meet the urgent need of regional industrial development. With the College of modern Industry as the carrier, clearly serving the needs of regional economy and industry as the guidance, and accelerating the training of high-quality applied technical and technical talents in minority areas to meet the needs of modern industry, it is necessary to discuss the above issues on the basis of certain attempts made by the College of Industry.

I. The dilemma of application-oriented talents training in undergraduate colleges and universities in minority areas

1.1 The training of application-oriented talents is not well matched with the demand of modern industry

Intelligent manufacturing is the focus and trend of modern industrial development in China in the future, which also puts forward higher requirements for applied talents such as professionalism, professionalism and academia. However, the talent training of colleges and universities in minority areas is generally conducted by the single training of schools or the joint training of schools and enterprises with shallow cooperation, and the close cooperation with enterprises is not enough at the professional level. High-quality enterprise education resources can not be deeply integrated with college resources, and the training quality of high-quality applied talents is difficult to meet the new needs of modern industrial development.

1.2 There is a disconnect between the construction of the curriculum system and the demand for vocational post ability

The construction of the curriculum system directly affects the training of high-quality applied talents. Most applied undergraduate courses in minority areas lack scientific and systematic demonstration of enterprise talent needs and job ability requirements, and the curriculum system constructed is out of line with regional economic development goals and job ability requirements. In addition, in the course system construction process, undergraduate colleges lack timely and effective communication and cooperation with enterprises and industries, resulting in students' knowledge, ability and quality are difficult to meet the needs of enterprises and post ability requirements.

1.3 The comprehensive evaluation system is imperfect

In terms of personnel training, application-oriented colleges and universities pay more attention to the cultivation of students' practical and innovative application abilities. However, the quality control of most application-oriented undergraduate talents in minority areas cannot dynamically track the industrial demand, and the comprehensive and effective talent evaluation mechanism is not perfect enough to judge whether the cultivated students have reached the required talent training objectives.

2. Practice exploration of talent training mode of modern industrial college in minority areas

Modern industry colleges for ethnic areas solve the current problems in the training of application-oriented technical and technical talents with innovative ideas and the criteria of serving the economic development of ethnic areas. Taking Guangxi Normal University of Science and Technology as an example, the first batch of automobile industry college construction projects in Guangxi Zhuang Autonomous Region - SAIC-GM-Wuling Automobile Industry College was established with SAIC-GM-Wuling Automobile Co., LTD. The college is shared by the university and enterprise, covering the industrial chain of automotive related fields, such as automobile service, robotics, intelligent manufacturing, logistics, financial management, etc. Taking the requirements of enterprises as the core index of application-oriented talents training, the school has conducted in-depth cooperation with enterprises to achieve teaching reforms such as professional construction, curriculum development and teacher training, and cultivate high-quality application-oriented technical and technical talents needed for industrial and economic development in ethnic minority areas.

2.1 OBE education concept builds a new mode of application-oriented personnel training

Results-based Education (OBE) is also known as goal-oriented, output-oriented and outcome-oriented education in our country. OBE education was first proposed by American educator Spady in his book “Outcome-based Education: Disputes and Answers”. It holds that the goal of instructional design and implementation is the Learning outcomes achieved by students through the educational process. It requires that training objectives be determined according to vocational and professional requirements, so as to obtain the conditions required for graduation, reverse design the knowledge and ability that students should master, and then further promote the curriculum, teaching, evaluation and other aspects. OBE education conforms to the requirements of application-oriented undergraduate education and teaching reform. Application-oriented talent training should follow the connotation of OBE, design talent training programs according to industry standards, and make full use of school-enterprise cooperation platform to realize a new model of education.

Modern Industry College originated from industry, and at the same time to serve the regional industry as the fundamental purpose. It can accurately serve the needs of regional economy, industry and industry development, and has the characteristics of “double main body and deep integration”. The concept of results-oriented education (OBE) is applied to education and teaching, and the application-oriented talent training mode with modern industrial college as the carrier is shown in Figure 1.

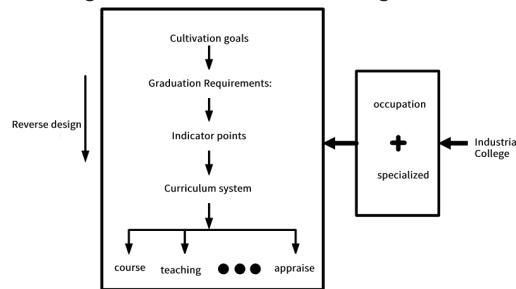


Figure 1: The training mode of applied talents in modern industrial college based on the results-oriented concept

2.2 The “123456” talent training model explores the new path of education for industrial college

Under the guidance of the results-oriented education concept, the innovative training mode of applied talents in SAIC-GM-Wuling Automotive Industry College can be summarized as “one center, two capabilities, three subjects, four new reforms, five industries through integration, and six integration” (FIG. 2), namely: Based on the results-oriented education concept as the core of high-quality applied talents training objectives as the center, improve students’ professional and vocational abilities, adopt multiple integration of education objectives, education subjects, education teachers, professional and vocational abilities, teaching methods, teaching content to ensure the establishment of new courses, new methods, new evaluation, new teacher support. Promote the coordination of industry, enterprise, profession, employment, occupation and entrepreneurship, and realize the integration of goals, subjects, teachers, abilities, teaching methods and teaching content.

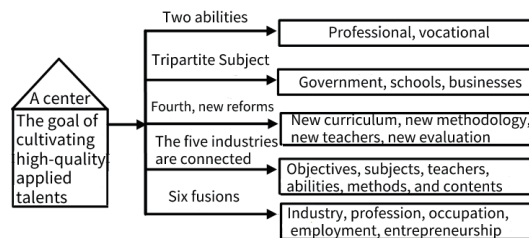


Figure 2 Innovation training mode of applied talents in industrial college

2.2.1 One center

Guangxi Science and Technology Normal University and SAIC-GM-Wuling Automobile Co., Ltd. established the first batch of industrial college construction projects in the autonomous region, namely SAIC-GM-Wuling Automobile Industry College. Relying on the industrial College, it can meet the needs of industrial and economic development in the region, dynamically adjust and build corresponding professional groups to carry out various teaching work, as shown in Table 1.

Table 1 shows the professional groups of industrial colleges with the training goal of high-quality applied talents as the center

Setting of Professional Groups	Automotive service Engineering, Robot Engineering, intelligent Manufacturing Engineering, numerical control technology, logistics management
Docking industrial Cluster	Automotive manufacturing equipment, smart manufacturing equipment, new energy equipment, smart logistics equipment, etc

2.2.2 Two capabilities

Establish an application-oriented talent training goal with the concept of results-oriented education (OBE) as the core, and take SAIC-GM-Wuling College of Automotive Industry as the carrier to improve students’ professional and vocational skills. To realize the coordination

and unity of students' knowledge, ability and accomplishment, promote the balanced and coordinated development of students' vocational, professional and academic characteristics, and promote and enhance their employability.

2.2.3 Tripartite main body

Tripartite main body refers to the main body of school running formed by the government, school and industry through collaborative innovation, mutual contact, mutual cooperation and mutual promotion. Saic-gm-wuling Automotive Industry College is the coupling of the three parties with the support of the government.

2.2.4 The Fourth New reform

(1) Reform the new integrated curriculum system of "major and occupation"

The most important thing for industrial colleges is that personnel training must meet the needs of modern industries, and the fundamental goal is to train high-quality applied talents to meet the needs of modern industries. "School and enterprise" jointly build a new integrated curriculum system of "professional and vocational".

① In accordance with the needs of application-oriented talents' ability training, build an integrated curriculum system of "professional and vocational".

To train high-quality applied talents to meet the needs of modern industry as the goal, the establishment of "professional and vocational" integrated curriculum system. It has established a curriculum system integrating general courses, professional courses, professional practice courses and innovation and entrepreneurship education courses. To meet the coordinated development needs of students' professional cognition, vocational skills and qualities, and vocational innovation.

② To adapt to the employment needs of application-oriented talents, develop "professional and vocational" integration courses

To develop a course system that ADAPTS to the needs of employment positions, that is, to cultivate applied talents and connect industrial services as the goal, reverse design the "professional and vocational" integration course system, analyze the typical tasks of the job post, extract the key points of professional knowledge and vocational skills, integrate them into the course project, reshape the course teaching project, so as to communicate the requirements of professional knowledge and vocational skills. To meet the needs of employment positions and improve students' employability.

(2) Reform new student-centered teaching methods

Student-centered teaching, that is, based on the concept of results-oriented education (OBE), carries out student-centered teaching and learning, guided by the needs of vocational positions, and based on the principles of student personalization and ability cultivation. In terms of learning methods, problem-based learning (PBL), case-based learning (CBL), practice-based learning (PBL), group discussion and other learning methods are adopted. In terms of teaching methods, flipped classroom, task-driven teaching method, project teaching method, demonstration method, case teaching method and other teaching methods are mostly adopted.

(3) Reform the new competency-based multi-level talent evaluation system

Guided by the concept of results-oriented (OBE) education, in the education model of SAIC-GM-Wuling Automotive Industry College, the multi-level talent evaluation system of "curriculum teaching evaluation, professional construction evaluation and professional ability evaluation" has been established by coordinating the cooperation among the teaching and research department, the college and the enterprise.

(4) Reform the new team of "internal and external training" double-qualified teachers

From the outside, relying on SAIC-GM-Wuling Automobile Industry College to adjust the structure of teachers, our school actively expands the channels of teacher recruitment, and introduces a number of senior technical personnel from SAIC-GM-Wuling Automobile Co., Ltd. to teach in the school, promoting the continuous optimization of the structure of the teaching team. From the internal training, that is, the use of enterprise resources to support and encourage teachers to participate in enterprise practice and enterprise temporary training.

2.2.5 Integration of the five industries

Industry, profession, occupation, employment and entrepreneurship run through the whole process of education. Application-oriented personnel training should meet the needs of regional and local industrial development, professional Settings should meet the layout of regional industrial clusters, occupational requirements should meet personal career development, innovation and development should meet vocational entrepreneurship, and employment positions should meet professional skills and qualities, so as to meet the requirements of corresponding jobs in enterprises.

2.2.6 Six-item Fusion

"Six integration" refers to the integration of goal, subject, teacher, ability, teaching method and teaching content. Specifically, it is the integration of application-oriented talent training objectives, education topics between universities and enterprises, teachers and experts, professional abilities and qualities, and student-centered teaching and learning.

3 Experience and reflection

3.1 Innovation based on the results-oriented applied talent training concept

In the face of the reality of rapid development of intelligent manufacturing, combined with the current situation of the transformation of application-oriented undergraduate, under the guidance of the results-oriented education concept, a new mode of application-oriented talent training in line with the industrial development of ethnic areas is proposed. According to the needs of local modern industrial development,

the orientation of applied talents training is connected, and the applied talents training strategy and plan are reversed. Aiming at the cultivation of high-quality applied talents based on the results-oriented education concept, the training process focuses on the integration of the five industries, advocates student-centered teaching and learning, and promotes the quality improvement of applied talents.

3.2 The embodiment of the education approach of modern Industrial College

The educational approach of SAIC-GM-Wuling Automobile Industry College is mainly reflected in the new educational cooperation mode and educational function.

First of all, in terms of school-running cooperation, Industrial College has formed the school-running mode of “school-in-school” and “school-in-factory”. In the SAIC-GM-Wuling automobile manufacturing base, it provides a real enterprise production environment, and the enterprise factory becomes the teaching site for students, forming the mode of “factory middle school”; Our school has introduced many industry experts from well-known enterprises such as SAIC-GM-Wuling Automobile Co., Ltd. to teach in the school, and has established an industrial college in the practical training center of our school, so that students can also get close to the real production link in the school, forming a “school-factory” model.

Secondly, in terms of education function, SAIC-GM-Wuling Automotive Industry College integrates six service functions in order to better improve the quality of application-oriented talents training. Six services, namely: the first is to serve the development of local industry, the second is to serve the needs of local enterprises, the third is to serve the social development, the fourth is to serve the needs of school construction, the fifth is to serve the construction of teachers, and the sixth is to serve the personality development of students. The six service functions of the school of Industry are self-contained and can also be cross-reflected. They connect with local industrial and social development, enhance the sustainable development ability of enterprises, and realize the integrated training of applied talents before and after service.

3.3 Evaluation of the training quality of applied talents

The quality evaluation of applied talents in Modern Industry College reflects the characteristics of multi-level evaluation and ability evaluation. From the multi-level talent quality evaluation of course teaching, professional construction and professional ability, enterprises and colleges and universities are not only the main units of education, but also the inspection units of talent quality evaluation, and participate in the whole process of talent training, which has a positive role in promoting the precise connection of applied talent training goals for industrial colleges.

However, in this process, the value orientation of both schools and enterprises has not been completely consistent. Enterprises pay more attention to the short-term social and economic benefits and practical value of talent training, and their professional cognition needs to be improved. At the same time, enterprises prefer to train application-oriented talents who can comply with and obey the requirements of enterprises, and hold conservative opinions on innovation and entrepreneurship.

References:

- [1] Spady W G . Outcome-Based Education: Critical Issues and Answers.[J]. American Association of School Administrators, 1801 North Moore Street, Arlington, VA 22209. 1994.
- [2] Yongquan Wang,Gailing Hu,Yugang Duan,Xuefeng Chen. Output-oriented Curriculum Teaching: Design, Implementation and Evaluation [J]. Higher Engineering Education Research,2019(3):62-68.
- [3] Yancong Liu,Jun Li. Design of Training Program for Applied Technical Talents based on OBE concept [J]. China Vocational and Technical Education,2018(14):72-76.
- [4] Hong Gao. Industrial College: From industry, Rooted Industry, Service Industry [J]. Vocational and Technical Education,2021,42(30):1.
- [5] Xiangyu Guo,Haiyan Zhou,Hai Liao. Construction of industrial College with “double subject and Deep integration” from the perspective of integration of industry and education [J]. Education and Career,2021(08):62-65.

About the AUTHOR:

About the author: Liu Xiayun (1983), female Han nationality, born in Yueyang City, Hunan Province, postgraduate student, senior engineer. Her research interests mainly focus on intelligent manufacturing technology, robot technology and education.

Corresponding author: Huang Liangyong, 1971 --, male, professor in Heshan, Guangxi Province, his research direction is vocational and technical education.

Wu Changhan, 1991 --, male, Zhaoping, Guangxi, lecturer, research direction is vocational and technical education.

Fund Project: 2023 Guangxi Higher Education Undergraduate Teaching Reform Project “Research and Practice of Hybrid Teaching Reform of Industrial Robot Operation and Programming based on the integration of industry and Education” (Project number: 2023JGA362); 2022 Guangxi Vocational Education Teaching Reform Research Project “Construction and Practice of Integrated Curriculum Resources for Robot Engineering Majors Based on Industrial College” (Project No. : GXGZJG2022B076); Research Fund project of Guangxi Science and Technology Normal University in 2022: Path Planning of Loading and Unloading Robot Based on Optimal Energy Consumption (Project No. : GXKS2022QN006)