

Research on International Talent Cultivation Mode of Internet of Things Professional Cluster under Digital Intelligence

Yongjie Zhang^{1,2,*}

¹Guangxi Vocational Normal University, Nanning, Guangxi, China

²Key Laboratory of Application Technology of intelligent connected vehicle (Guangxi Vocational Normal University), Education Department of Guangxi Zhuang Autonomous Region, Nanning, Guangxi, China

Abstract—This paper researches the current talent cultivation mode under the new ecology of IoT professional group by analyzing the real demand of China-ASEAN for composite talents of IoT professional group, discussing the influence of digital intelligence on the cultivation of new engineering talents, and designing the mechanism framework of "ASEAN+Digital Intelligence". The mechanism studied can effectively solve the problems of poor integration of talent cultivation, lack of industry-driven curriculum system and single type of output on the supply side of teaching. It has certain guidance and reference significance for the new mode of talent cultivation in the new engineering professional group in digital intelligence.

1. Introduction

In 2021, the Joint Statement of the 30th Anniversary Summit of China-ASEAN Dialogue Relations pointed out the deepening of China-ASEAN connectivity cooperation in accordance with the Joint Statement on China-ASEAN Cooperation on the Belt and Road Initiative and Docking Cooperation. By the end of 2020, Chinese-funded enterprises in ASEAN countries have contracted projects with a total contract value of US\$512.8 billion, completed turnover of US\$336.63 billion, the cumulative total of more than 50,000 people to send various types of workers. After completion, the China-ASEAN FTA has benefited more than 2 billion people, and from a total GDP of nearly US\$6 trillion at the beginning to about US\$17.72 trillion in 2020. L Perevozchikova's team and RBR-Varma's team conducted a study on education based on digital intelligence[1] [2]. The impact of digital intelligence on talent development was studied by Mkrтчian and J Gao's team. [3] [4]. The use of neural networks for teaching evaluation was investigated by Y Jin et al[5]. A study of the Numeracy Learning Platform for Adolescents was conducted by Shafie et al[6]. At present, the research on the talent cultivation mode of IoT professional cluster of "ASEAN+Digital Intelligence" is of great significance to cultivate international composite talents.

2. Talent development mechanism model

The use of digital intelligence technology to broaden students' engineering vision, industrial vision and

international vision helps to cultivate students' independent and innovative thinking ability, stimulate students' interest and enthusiasm in learning, and improve their internationalization quality. Adhering to the goal of cultivating ASEAN-oriented engineers of excellence, it promotes the implementation of the cooperative education model of "park to enterprise and enterprise to education", adopts the multi-dimensional cultivation method of interlocking rings and layers, gives full play to the multi-dimensional synergy effect of "park to enterprise school", and realizes the innovation of "three-dimensional blending" in the cultivation of academic, vocational and international talents. We are currently facing both opportunities and challenges. We need to solve the problems of poor integration of technical and skilled talent cultivation in IoT, lack of industry-driven curriculum system, and single type of output on the supply side of teaching and learning. A study on ASEAN-oriented quality education by Das et al[7].

The traditional talent cultivation mechanism cannot meet the current needs of international composite talent cultivation. A study on numeracy education technology in ASEAN countries was conducted by Machmud et al[8]. I Khan et al. research on collaborative innovation in Industry 4.0[9]. Integrating industry and education in the IoT industry was explored by Burke et al[10]. In this paper, we have constructed a framework of training mechanism for "ASEAN + Digital Intelligence" IoT professional cluster by designing three main mechanisms. The framework is shown in Figure 1 below.

*Corresponding author: 1012331963@qq.com

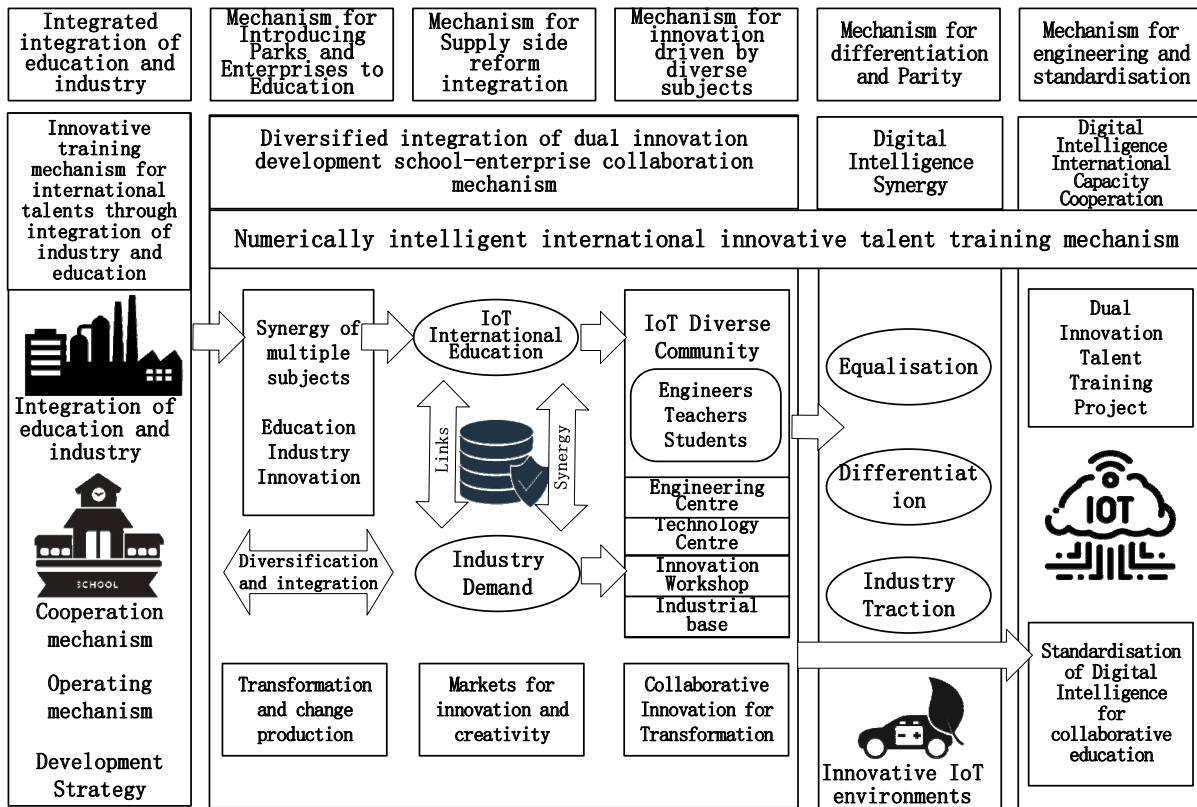


Fig. 1. "ASEAN + Digital Intelligence" talent development mechanism

2.1 Innovative training mechanism for international talents through integration of industry and education

Through the integrated development of education and industry, the university-enterprise cooperation mechanism, operation mechanism and development strategy will be established. Among which the cooperation mechanism includes industry-linked innovation mechanism of industry-education integration, new cooperation mechanism of diversified school operation and new cooperation mechanism of virtual supply chain; the operation mechanism includes open innovation resource gathering operation mechanism, mutual assistance and co-construction operation mechanism of complementary advantages, three-dimensional superposition. The operation mechanism includes open innovation resources gathering operation mechanism, mutual help and co-construction to complement each other's advantages operation mechanism, three-dimensional overlapping virtuous cycle operation mechanism, IOT new disciplines and courses development mechanism, IOT + double creation type industry-education integration standardization mechanism; development strategy includes teaching frontier change development direction, the university hinterland to industry enterprises penetration for fission, enterprise base into the university for innovation and breakthrough, IOT into new engineering and liberal arts new era discipline transformation and upgrading.

2.2 Diversified integration of dual innovation development school-enterprise collaboration mechanism

Through the mechanism of attracting enterprises to the park and education, the mechanism of supply-side reform and integration, and the new mechanism of innovation driven by multiple subjects, the development of industry-education integration is realized. The use of digitization of education, digitization of industry and digitization of innovation to realize the synergy of multiple subjects, to realize the digitization link between internationalized IoT education and industry needs, and to promote multiple synergies, so that enterprise engineers, university teachers and university-enterprise students form an IoT multiple community.

2.3 Numerically intelligent international innovative talent training mechanism

Through differentiation and equalization mechanisms, the IoT environment will be developed in collaboration with digital intelligence, including equalization, differentiation and industrial traction. The equalization education technology system triggers the multi-dimensional nature of "education technology" through new technologies such as the Internet and the Internet of Things, innovates training patterns, teaching designs and teaching channels, and builds a hyper-temporal ecological education environment with rich and shared teaching resources; differentiation responds to precise needs, links China-

ASEAN IoT resources with digital intelligence technology, integrates Optimizing regional advantages, following the development trend of the industry, building a resource sharing platform to enhance the utilization rate of resources, and extending and widening the accessibility of education services, so as to realize the common construction and sharing of education resources within the region and the inter-regional ex-change and sharing of education resources; industrial traction lies in establishing models of different disciplines and industrial needs, so that the front-line teaching needs match with the front-line production needs.

3. Design of the " ASEAN + Digital Intelligence " framework for talent development

3.1 Architectural design

Based on the mechanism of "ASEAN + Digital Intelligence" and the original study on the cultivation of talents in new engineering disciplines [11], the paper takes the training of digital intelligence talents in the IOT professional group of Guangxi Vocational Teacher's College as an example, and designs the innovative training model of "23355". The innovation and breakthrough is carried out with 2 core drivers as the general leader, 3 chains of synergy, 3 industries across borders, 5 integrations and 5 outputs as the practice, and the structure diagram is shown in Figure 2 below.

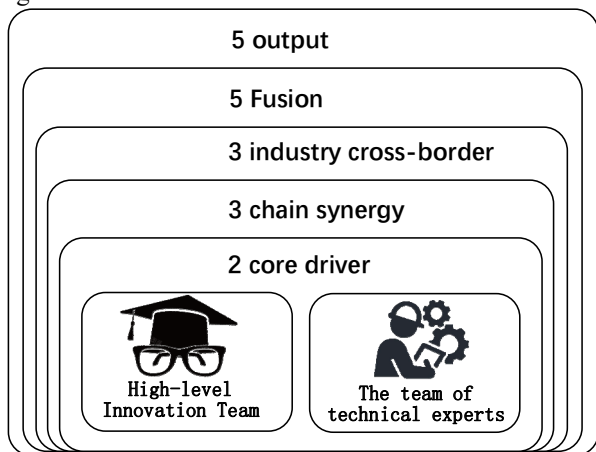


Fig. 2. "23355" IoT Professional Cluster Structure

3.2 2 core driver.

With the Guangxi high-level innovation team and the national team of technical experts to build the driving core of digital intelligence cross-border chain integration of industry education integration of the Internet of Things professional cluster, the integration of the convergence of six vocational teacher training new engineering majors and five cross-disciplinary majors, forming the Internet of Things professional cluster. The cluster is designed to facilitate the integration of knowledge across majors, disciplines and fields, enrich students' horizons and improve their own knowledge systems, help them fully understand

the economic development of IoT in Southeast Asian countries, national conditions, international practices and popular culture, and develop their cultural confidence and the courage and ability to communicate across cultures.

3.3 3 chain synergy.

Relying on the state-level New Engineering Platform, we use digital intelligence technology to create a talent training chain of "vocational education teacher talents - vocational skills talents", a technological innovation chain of "teaching technology - industrial technology", and a platform construction chain of "education and teaching platform - technology research and development platform", so as to realize the collaborative education of the three chains and improve students' mastery and application of knowledge of adjacent majors and related disciplines.

3.4 3 industry cross-border.

The university has established a cross-fertilisation teaching and learning model based on Digital Intelligence, and has partnered with local industries in ASEAN to develop three regional industries with specific characteristics, namely water transport and ship networking, new energy and smart connected vehicles, and smart manufacturing and industrial robotics.

3.5 5 Fusion.

Led by two teams of Guangxi teaching masters and four skill masters' studios of cooperative enterprises, 11 IOT composite master courses and first-class course clusters will be created through the integration of "industry-driven, innovation potential, core technology, professional matching and international ecology". Focus on strengthening the integration of discipline competition and curriculum to achieve the competition to promote learning.

3.6 5 output.

Design a five element progressive output model for the supply side reform of education and industry, including "Curriculum and Projects - Teaching Research and Scientific Research - Teachers and Engineers - Master and Craftsman - Discipline and Industry", to achieve the construction and implementation of laboratories and related courses such as intelligent networking application technology, unmanned driving, intelligent manufacturing electronic assembly, etc. The relevant team of teachers has been awarded the title of "High-Level Innovation Team in Higher Education Institutions in the Autonomous Region", and two teachers have been awarded the title of "Guangxi Famous Teaching Teachers"; students have participated in more than 40 innovation and entrepreneurship projects for college students, and more than 20 teams have participated in the National College Electronic Design Competition, all of which have achieved excellent results.

4. Effectiveness analysis

The paper team started the construction of the IoT professional cluster through the "ASEAN+Digital Intelligence" innovative education model in 2021, and comparing the effectiveness of talent training in 2000 with that in 2021-2022, it can be seen that the teaching results have increased significantly. The trend of the comparison is shown in Figure 3 below.

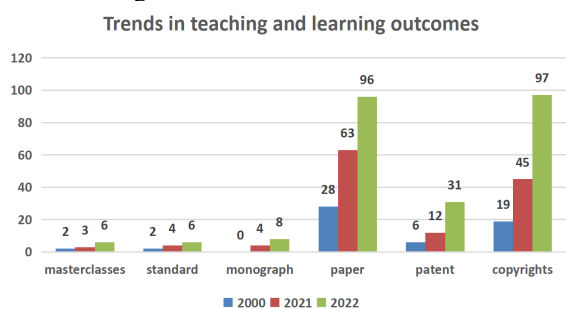


Fig. 3. Data source: 2023 Guangxi Vocational Normal University Newly Established Undergraduate Major Evaluation Data Table

It can be seen from the comparison that in 2021-2022, compared to 2020, there is a continuous growth in all aspects of results. In addition, we randomly select 100 IoT-related students each year to conduct an educational satisfaction survey, and the results are shown in Table 1 below.

Table 1. Questionnaire on student growth

Vintage	Talent development satisfaction	Confidence in professional competence	Employment intentions towards ASEAN
2020	75%	45%	15%
2021	88%	57%	35%
2022	91%	61%	39%

It can be seen that in 2021-2022, compared with 2020, after the adoption of the "ASEAN+Digital Intelligence" structure, students are more recognized for their talent training, and their confidence in their own professional skills and their intention to work in China-ASEAN partners have improved to some extent.

5. Conclusions

The paper explores the talent cultivation mode of IoT professional cluster in the context of "ASEAN+Digital Intelligence", designs the mechanism framework of "ASEAN+Digital Intelligence". The study solves the problems of poor integration of technical and skilled talents cultivation in IoT, lack of industry-driven curriculum system, and single type of output on the supply side of teaching and learning. The study is of some significance to similar institutions in exploring the new strategy of engineering talent cultivation under the current "nation-alisation + digitalization". The follow-up and analysis of employment will be refined with reference to the study by Alqahtani et al [12].

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