

Research on the Cultivation of Skilled Talent in Intelligent Construction to Facilitate a Model of Shared Prosperity

Danlei Ying¹, Na Li²

¹Taizhou Vocational and Technical College, Green and Intelligent Building Research Institute, Taizhou, China

²Tarim Polytechnic, Tarim, Xinjiang, China

Abstract: With the rapid advancement of technology and globalization, intelligent construction has become an important trend in the construction industry. Intelligent construction not only improves building efficiency and quality but also brings new opportunities for environmental protection and sustainable development. Talented individuals with skills in intelligent construction are crucial in driving the industry towards intelligence, green practices, and efficiency, playing a significant role in achieving shared prosperity. However, there is a current shortage of such skilled talent, which limits the industry's sustainable development. Therefore, to promote the sustainable development of intelligent construction and support shared prosperity, it is essential to develop targeted cultivation strategies based on actual developmental needs. This involves providing more learning and exchange opportunities for skilled individuals, effectively addressing the shortage of talent in intelligent construction, and propelling the sustainable development of the construction industry and the realization of shared prosperity.

Keywords: Intelligent Construction; Skilled Talent; Shared Prosperity

1. A Brief Explanation of Intelligent Construction

1.1 Definition of Intelligent Construction

Intelligent construction is an emerging field involving multiple disciplines and areas. Its core technologies include Building Information Modeling (BIM), the Internet of Things (IoT), big data, artificial intelligence, etc. The core concept of intelligent construction is people-oriented, focusing on safety, quality, and efficiency during the construction process. Through the application of intelligent technologies, it aims to enhance construction precision and efficiency, reduce waste and errors, and achieve sustainable building development^[3]. By fully utilizing intelligent technologies and related techniques, intelligent construction strives to improve the intelligence level of the building process, reduce reliance on human labor, achieve safe construction, and enhance the cost-effectiveness and reliability of buildings. Intelligent construction aims to create a smart environment for project construction and operation, implementing effective improvements and management throughout the entire lifecycle of engineering projects through technological and managerial innovation.

1.2 Development Trends of Intelligent Construction

Intelligent construction represents a crucial direction for the transformation and upgrading of the construction industry. By integrating intelligent technologies, traditional construction methods can be transformed, promoting digital, networked, and intelligent development in the industry and enhancing its competitiveness and sustainable development capabilities. The development trends of intelligent construction are shown in Figure 1. First, with continuous technological advancements, intelligent construction will focus more on digitalization and intelligence. By applying BIM, IoT, and big data technologies, it aims to achieve digital management throughout the entire lifecycle of construction projects, improving efficiency and quality. Second, with growing environmental awareness, intelligent construction will emphasize greener practices and sustainable development. By using green building materials and energy-saving technologies, it aims to reduce energy consumption and environmental impact, promoting greener development in the industry. Third, intelligent construction will engage in

cross-sector integration and innovation, merging with fields like the internet, artificial intelligence, and new energy, to foster innovative development in the construction industry. Fourth, as intelligent construction rapidly develops, talent cultivation and education will become key. Universities and enterprises need to strengthen cooperation to train individuals with the skills and qualities for intelligent construction, providing talent support for the industry's sustainable development.

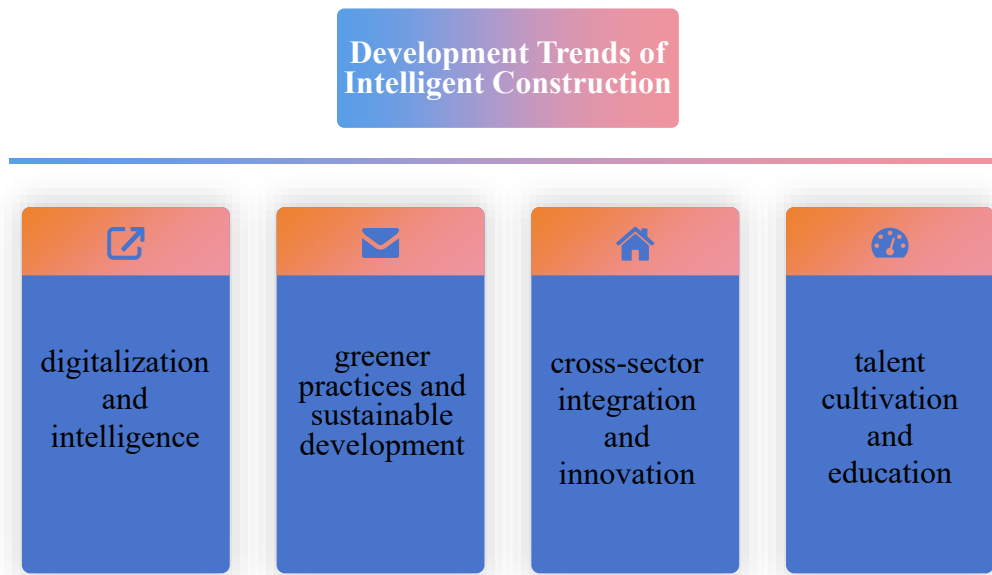


Figure 1: Development trends of intelligent construction

2. Research on the Cultivation Model of Skilled Talent in Intelligent Construction

2.1 "Industry-Academia-Research" Integrated Talent Cultivation Model

The significance of the Industry-Academia-Research training model primarily lies in promoting technological innovation and economic development. This model fosters collaboration between the industrial and academic sectors, combining scientific research with practical applications, thereby improving the efficiency and effectiveness of technological innovations. Moreover, Industry-Academia-Research cooperation can accelerate the application and dissemination of new technologies, enhancing product competitiveness and market share, and strengthening national and regional technological capabilities and economic development^[1]. Applying this model to the cultivation of skilled talent in intelligent construction, in line with actual development needs, involves establishing close cooperative relationships with enterprises in the construction industry. It is essential to understand industry demands and trends and jointly develop talent cultivation goals and plans. Enterprises can provide practical sites and project cases, helping students integrate theoretical knowledge with practice and enhance their practical skills. Additionally, universities and research institutions should conduct in-depth research in the field of intelligent construction, focusing on cutting-edge technologies and theoretical developments. Through collaboration with enterprises, research findings can be transformed into practical applications, advancing intelligent construction technology. Academic research also provides theoretical support and teaching materials for talent cultivation. As globalization deepens, international cooperation in the field of intelligent construction becomes increasingly close. The Industry-Academia-Research training model encourages international cooperation and exchange, introducing advanced international educational concepts, teaching methods, and quality education resources, enhancing the quality and international competitiveness of China's intelligent construction talent cultivation.

2.2 "Project-Based" Learning Talent Cultivation Model

Rapid societal development and continual technological updates necessitate a shift from traditional talent cultivation models, which no longer meet the demands for skilled professionals in various fields. The project-based talent cultivation model better adapts to societal development needs, producing talents who meet the requirements of the new era. These individuals possess rapid adaptability,

enabling them to better respond to societal changes and challenges. In practical talent cultivation, challenging and practically valuable intelligent construction projects should be designed according to actual needs and industry trends. Projects may cover various aspects such as the automation of construction processes, efficient project management, and the intelligentization of architectural design. Furthermore, students should participate in projects as teams, mastering relevant technologies, tools, and methods of intelligent construction through hands-on operation and practice. During project implementation, students are required to solve real-world problems and challenges, improving their problem-solving abilities. When feasible, collaboration with enterprises in the construction industry can be sought to bring real-world projects into schools, providing students with authentic professional environments and practical opportunities.

2.3 “International Perspective” Talent Cultivation Model

International learning often involves interaction and cooperation with people from different cultural backgrounds, enabling students to learn and master cross-cultural communication skills, enhancing their adaptability and communication abilities in a multicultural environment. Students also gain access to cutting-edge international knowledge and technologies, understand international standards and rules, thus improving their advantages in international competition. Additionally, students can accumulate international experience and enhance their comprehensive qualities by participating in international projects, internships, or volunteer services. To this end, international teaching content and courses, including advanced intelligent construction technologies, standards, and regulations, as well as cross-cultural communication and international cooperation, should be introduced into the curriculum for cultivating skilled talent in intelligent construction. Schools may hire teachers with international backgrounds and rich practical experience to provide students with international teaching and guidance^[5]. Teachers are encouraged to participate in international academic exchanges and cooperation, enhancing their teaching levels and international perspectives. They should also guide students positively, encouraging them to obtain international certifications and accreditations in the field of intelligent construction, such as international certification in intelligent construction and international architect registration.

3. Building a Model for Shared Prosperity through the Cultivation of Skilled Talent in Intelligent Construction

3.1 Strengthening Policy Guidance at the Government Level

Government policy guidance can provide a clear direction for talent cultivation. By formulating relevant policies, the government can express its concern for the talent needs of specific fields or industries, thereby guiding educational institutions, enterprises, and individuals to carry out targeted talent cultivation activities. In this regard, government departments should fully play their macro-guidance role. On one hand, the government can develop long-term development plans for skilled talent in intelligent construction, clarifying talent cultivation goals and directions at the national level. Plans should include in-depth analysis of current industry development and talent needs, as well as specific cultivation plans and implementation steps based on the analysis results. Through such planning, the government can provide clear guidance and strong support for the cultivation of skilled talent in intelligent construction. On the other hand, the government needs to support universities and vocational schools in offering relevant majors and courses in intelligent construction, and encourage enterprises and social forces to participate in intelligent construction education and training. In this way, a diversified education and training system for intelligent construction can be formed, meeting the learning needs of different groups. The government should also increase investment in related education and training projects, improving the quality and coverage of educational resources.

3.2 Strengthening Diverse Contributions at the Social Level

Diversified social contributions can expand the channels for talent cultivation. Besides traditional school education, social organizations, enterprises, and communities can become crucial venues for cultivating talents. These various entities can offer a more diverse range of learning and development opportunities. When carrying out the cultivation of skilled talents in intelligent construction, social forces such as organizations, industry associations, and volunteer groups can provide significant support and assistance. They can organize various training activities, practical exercises, and

community service, providing more opportunities for learning and development in intelligent construction. Additionally, they can raise public awareness and importance of skilled talents in intelligent construction through promotion and advocacy. Furthermore, social capital plays a vital role in promoting the cultivation of skilled talents in intelligent construction. By directing social capital into the field of intelligent construction, it can drive the development and growth of related industries, providing more employment opportunities and professional development platforms for skilled talents. The investment of social capital can also promote technological innovation and industrial upgrading, fostering sustainable development in the field of intelligent construction. Thus, these measures can stimulate the enthusiasm and creativity of all sectors of society, providing a robust talent guarantee for achieving shared prosperity.

3.3 Strengthening Innovation in Educational Models

Innovative education models emphasize the cultivation of students' innovative spirit and practical abilities, encouraging them to think independently and be bold in trying new ways of thinking and methods. Such education models help in developing students' innovative thinking and problem-solving skills, instilling in them the consciousness and habit of proactive and continuous learning, gradually shaping them into versatile talents needed for societal development^[2]. As is shown in Figure 2, the first measure involves deepening the integration of industry and education, where schools actively collaborate with the industrial sector to jointly develop talent training programs and teaching plans, ensuring a close alignment between curriculum and actual work demands. By incorporating industry standards and business needs, educational institutions can timely adjust their course offerings and teaching methods, enhancing the specificity and practicality of talent training. The second measure is innovating teaching methods, such as introducing advanced technologies like virtual and augmented reality to provide immersive learning experiences, thereby improving teaching effectiveness and student engagement. The third measure strengthens practical teaching, an essential component of training skilled talents in intelligent construction, where schools can enhance cooperation with businesses to provide more practical opportunities and platforms for students^[4]. The fourth measure is cross-disciplinary training, breaking down disciplinary barriers and implementing interdisciplinary training to provide students with diverse learning resources and courses.

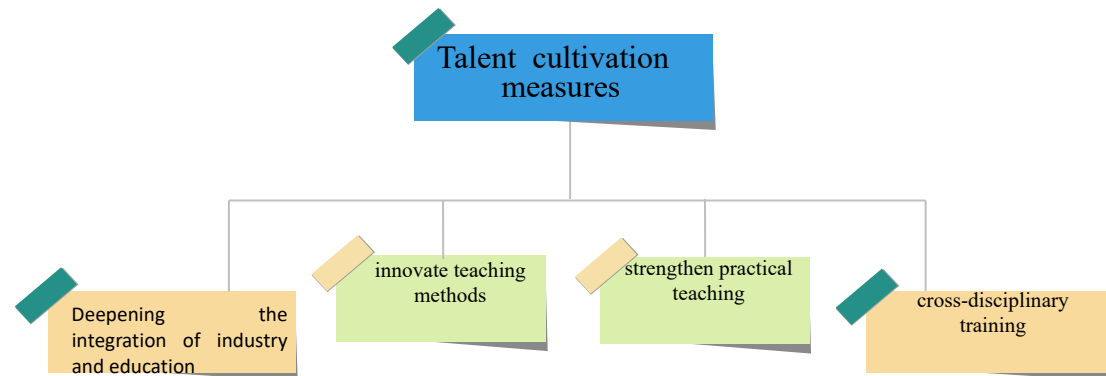


Figure 2: Measures for the Cultivation of Skilled Talent in Intelligent Construction.

4. Conclusion

With the rapid development of technology and continuous social progress, intelligent construction has inevitably become a trend in the transformation and upgrading of the construction industry. Cultivating skilled talent in intelligent construction is a crucial pathway to drive the intelligent development of the construction industry and is also an important means to facilitate the realization of shared prosperity. By training highly skilled talents in intelligent construction with innovative spirit and practical abilities, the transformation and upgrading of the construction industry can be promoted, enhancing the overall competitiveness and sustainable development capacity of the industry. However, the cultivation of skilled talent in intelligent construction is a systematic project that requires the joint participation and efforts of the government, universities, and all sectors of society. The government needs to strengthen policy guidance and support, universities must enhance teaching and research work, and all sectors of society should offer attention and assistance. Only by forming a consensus and concerted effort across society can the cultivation of skilled talent in intelligent construction be deeply

implemented. This effort will train more highly skilled talents in intelligent construction, contributing significantly to the intelligent development of the construction industry and the realization of shared prosperity.

Acknowledgement

Topic name: TG23457 Taizhou City Education and Science Planning Project” Research on the Cultivation of Skilled Talent in Intelligent Construction to Facilitate a Model of Shared Prosperity”

References

- [1] Ding, J. *Establishment of a Talent Cultivation Platform for the Intelligent Industry in China* [J]. *TVET@Asia*, 2017(9), 1-9.
- [2] H. Wang. *Research on the Talent Cultivation Model of the Integration of Production and Education in Higher Vocational Education under the Background of “Internet +”*[C], 2021 16th International Conference on Computer Science & Education (ICCSE), Lancaster, United Kingdom, 2021, 943-946.
- [3] Lei Ding. *Research on Digital Professional Talent Cultivation Based on Key Capability Model* [C]. In *Proceedings of the 2022 5th International Conference on Education Technology Management (ICETM '22)*. Association for Computing Machinery, New York, NY, USA, 2023, 263–268.
- [4] Qiu Wenhua, Wang Liang, and Qiu Zhenzhen. *Research on the Reform of Talent Cultivation Model in Higher Vocational Colleges under the Background of Intelligent Manufacturing* [C]. In *Proceedings of the 2020 9th International Conference on Educational and Information Technology (ICEIT 2020)*. Association for Computing Machinery, New York, NY, USA, 2020, 184–188.
- [5] Zhang X, Li C, Jiang Z. *Research on Talent Cultivating Pattern of Industrial Engineering Considering Smart Manufacturing* [J]. *Sustainability*, 2023 15(14):11213.