Research on BIM Technical Personnel Training of Construction Engineering Specialty Based on Computer

Lina Lu¹,*

¹Changchun University of Architecture and Civil Engineering, Jilin, Changchun, 130607, China
*Corresponding author e-mail: dfsdwe223@s.hlju.edu.cn

Abstract. At present, there are still many problems and deficiencies in the production scale and management mode of domestic construction engineering, especially in the aspect of efficient data mining and utilization. The digitization level of construction industry is far lower than that of manufacturing industry and other industries, and the requirements and potential of industrial informatization upgrading are very strong. On account of this, this paper first analyses the current situation of BIM tech utilization in the information development of construction engineering specialty, and then studies the training objectives, training system and training strategies of BIM tech talents in construction engineering specialty on account of computer.

Keywords: BIM Tech, Construction Engineering Specialty, Personnel Training

1. Introduction

With the iterative progress and maturity of intelligent tech represented by computer, it has been widely and deeply studied and popularized in many fields. In particular, the utilization of BIM tech talents in the training of professional talents incalculably promotes the rapid build-up and progress of construction engineering talents [1]. On the other hand, with the iterative build-up of social economy, infrastructure construction represented by construction engineering has been in full swing. In this context, the social demand for construction engineering talents is also growing, which not only puts forward better requirements for the number of talents, but also brings more severe challenges to the quality and ability of talents [2].

In addition, the demand of society and enterprises for construction engineering talents is diversified, and different levels of talents have different responsibilities [3]. BIM technical talents become an important human resource support that cannot be replaced. At present, there are still many deficiencies in the production scale and management mode of domestic construction engineering, especially in the aspect of efficient data mining and utilization. As a kind of building information integration tech, BIM has the characteristics of multidimensional, which can make the construction and operation management of construction engineering become more efficient [4]. One belt, one road, AI, and the further development and implementation of the strategy of the whole country and the whole area, the demand for BIM skilled talents represented by the construction project is expanding. How to cultivate BIM technical talents with higher quality, which can better match and serve the social development has become the focus and hot spot of current research in relevant colleges and institutions.
As the pillar industry of the national economy, construction engineering has incalculably promoted the expansion of all walks of life. On the one hand, the industry has absorbed a large number of labors to improve the employment rate; on the other hand, it has also supported a large number of construction tech personnel training institutions and colleges. BIM tech makes incalculable changes in the construction industry, which not only makes the production tools and cooperation methods of construction engineering have a thorough innovation, but also optimizes the rules and order of the construction industry [5]. BIM tech collects all the data of the construction project, so as to realize the analysis and Simulation of the real construction project, which can show the real situation of the construction project virtualized. As a data tool, BIM Tech organically integrates several aspects of building model information as shown in Figure 1 below to realize the sharing and transmission of the whole life cycle information of construction engineering.

Figure 1. BIM tech integration of building model information link

With the utilization of BIM Tech, it can effectively highlight the production efficiency of construction engineering, shorten the construction period and reduce the cost, so it has become the key expansion direction of construction engineering informatization [6]. In this context, BIM personnel training mode should actively adjust the teaching content according to the market demand. Professional colleges and institutions should give full run to the advantages of computer information tech, and actively cultivate BIM tech civil information professionals. Therefore, with the help of computer tech, combined with the technical industry expansion needs of construction engineering system, it is of incalculable engineering practical value to improve the concept, optimize the structure and carry out the research on BIM technical personnel training of construction engineering specialty on account of computer.

2. Information expansion of construction engineering and utilization status of BIM Tech

2.1. Relationship between construction engineering and BIM

With the continuous build-up of the market scale of the construction industry, all kinds of construction projects are constantly deepening. However, the informatization process of construction engineering is relatively slow. At present, the digitization level of construction industry is far lower than that of manufacturing industry, so the requirements and potential of industrial informatization upgrading are very strong [7]. In this context, BIM Tech, as a model visualization, parameterization, interactivity and digital model tech involving the whole life cycle of construction engineering, has gradually become the focus and hot spot of information expansion in the field of construction engineering.

At present, the popularization and utilization of BIM Tech in the field of construction engineering is gradually supported and guaranteed by laws and regulations, and the large-scale construction projects in China also bring huge market prospects. The informatization rate of China's construction industry is far lower than the average level of international construction industry. On account of the huge market space of the construction industry, the domestic construction industry information space is huge.

2.2. The relationship between computer AI tech and BIM industry utilization
The expansion of computer AI tech provides the driving force for the industry utilization of BIM Tech [8]. On the one hand, computer AI tech can train machines to sort out and analyze massive data, capture the patterns and rules behind the data, and then quickly make behavioral decisions according to the information with strong patterns; on the other hand, computer AI tech can further assist labor and improve efficiency in the process of BIM of construction engineering, so as to further promote the further expansion of BIM industry.

The integration of BIM and AI tech can further improve the intelligence and functionality of repetitive and obvious mode related operations, and reduce the burden of operators. For example, with the help of machine learning, BIM software can integrate information data, select reasonable design scheme among many configuration solutions, and realize the rapid modeling of building information model. With the iterative progress of AI, BIM Tech Utilization will continue to innovate in function and efficiency, providing more efficient technical support for the deepening utilization of BIM Tech.

2.3. **Utilization status of BIM Tech in construction industry**

At present, there are still many deficiencies and constraints in the further promotion and popularization of BIM Tech in the construction industry. The specific performance is that the standard of BIM industry system is not perfect, which limits the expansion of the industry, and the lack of relevant BIM technical talents and large gap seriously affect the operation and Implementation of BIM Tech in construction projects. With the deepening utilization of BIM Tech in the construction industry, the demand of BIM industry for BIM software R & D, modeling and project management professionals is also growing.

Generally speaking, the education, training and qualification system of BIM industry in China is still in the initial stage of expansion, and a complete BIM talent training system has not yet been formed, especially for the cultivation of BIM talents and the ability to transport professional talents that meet the expansion needs of the industry [9]. In addition, BIM professionals in the current construction industry are still mainly software operation, and there is a lack of engineering practice talents related to professional training, knowledge popularization and skills promotion, which makes it difficult for relevant talents to effectively guarantee and support the in-depth utilization of BIM Tech.

At present, BIM Tech is in the stage of rapid expansion. The inspection of BIM talents in the construction industry involves several aspects of comprehensive ability and literacy as shown in Figure 2 below, and has gradually become the key rigid index of BIM talent selection and confirmation. It can be seen that as an important guarantee for the promotion of information tech in construction engineering, the professional training of BIM Tech has become an important content and key point to improve the competitiveness of the industry.

![Figure 2. Comprehensive ability of BIM talents in construction industry](image)

3. **Training of BIM technical personnel of construction engineering specialty on account of computer**

3.1. **Training objectives of BIM technical talents in construction engineering**

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The cultivation of BIM technical talents of construction engineering specialty should first clarify the expansion trend of the industry, especially under the premise of iterative progress and utilization of computer intelligence, it is necessary to further strengthen the integration with computer tech, so as to further deepen the informatization level of construction engineering industry [10]. Secondly, on account of the needs of the industry, size up the situation, clear talent training objectives, and strengthen the training of students' practical ability, important skills and innovative thinking, so as to deliver more high-quality skilled talents to the society and industry.

In addition, the construction engineering BIM technical personnel training objectives should be determined on the basis of full market analysis and research, and more industry enterprises should join in the goal making process, so as to realize the students' quality and better serve the needs of the industry and society. Colleges should further strengthen cooperation and communication with enterprises, so as to improve the employment rate and provide more high-quality human support for the improvement of the informatization level of the construction industry.

3.2. BIM curriculum system of construction engineering
At present, the proportion of BIM related courses in construction engineering is still low, and it has not formed an organic system. Most of the existing BIM teaching courses focus on the learning and operation of BIM modeling software. As a tech covering the whole building life cycle, BIM's professional courses should be more rich and comprehensive. Therefore, the school should scientifically arrange the courses from the perspective of the whole life cycle of construction engineering, whether it is BIM theory course, or the connection between BIM and other disciplines should be further strengthened. In addition, the BIM curriculum system should be integrated into the drawing class, construction class, management class, and set up the corresponding practical courses to ensure that students can be trained and improved in the real engineering cases.

The construction goal of BIM curriculum system of construction engineering specialty includes not only the training of professional skill level and professional ability, but also the training of students' basic morality and quality and professional basic knowledge. The construction of the system should be carried out according to the principles shown in Figure 3, so as to improve students' comprehensive information literacy.

3.3. Strategy of BIM technical personnel training in construction engineering specialty
First of all, colleges should strengthen the construction and expansion of project-based curriculum system characterized by BIM Tech, including the integration of BIM curriculum, BIM modeling curriculum, construction tech, building materials, building equipment and BIM Tech. Secondly, with the help of school enterprise cooperation to establish BIM training room, explore the cooperation between government, school and enterprise to cultivate BIM teachers, and build a variety of BIM talent training mode. In addition, colleges should make full run of the advantages of computer tech, especially the advantages of information tech, to realize the communicating and exchange of related
resources, and promote the continuous progress of BIM technical talents and construction engineering professional information level.

4. Conclusion
In summary, BIM personnel training mode actively adjusts the teaching content according to the market demand, which helps to give full play to the advantages of computer information tech, and actively cultivate BIM tech construction engineering information professionals. Through the analysis of the current situation of BIM Tech utilization in the information expansion of construction engineering, this paper studies the relationship between construction engineering, computer AI tech and BIM industry utilization, as well as the current situation of BIM industry utilization. Through the research on the training of BIM technical talents of construction engineering specialty on account of computer, this paper analyzes the training objectives, curriculum system and training strategies of BIM technical talents of construction engineering specialty.

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