

# Application of Bim Technology in Building Electrical and Intelligent Specialty

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**ABSTRACT.** With the popularity of BIM technology in the construction industry, more and more schools and enterprises have noticed the development prospects of BIM and the development level of BIM directly affects the development of China's construction industry in the future. This paper mainly analyses the use of BIM technology in the construction electrical industry. With the application of intelligent specialty education, it also analyses the value of BIM in teaching and the reserves and sources of teachers.

**KEYWORDS:** Bim, Building electrical and intelligent specialty, Teaching, Revit

## 1. Introduction

In recent years, the continuous improvement of social-economic level has prompted people to put forward higher requirements for construction projects. Therefore, in the electrical design process of construction engineering, some relatively advanced technologies are required to improve quality, one of them is the BIM technology. BIM uses relevant information data of building projects to build models and simulate real information of buildings through digital information.

## 2. The Value of Bim Technology in Education

The application of BIM Technology in college teaching can materialize abstract theoretical knowledge, promote the improvement of teaching quality and effectively improve teaching efficiency.

### 2.1 Stimulate Interest in Learning

The BIM technology will break the traditional two-dimensional model, think with some technical means, automatically change the content into three-dimensional, change the aesthetic appearance of the model, and stimulate students' interest in learning. Therefore, students will study hard with a positive attitude, which greatly reduce the teaching difficulties, in order to enhance the confidence of learning and stimulate students' learning potential.

### 2.2 Develop Practical Ability

Colleges and universities train front-line talents, which puts very high requirements on the practical application of talents. In traditional teaching models, practical teaching is often ignored, resulting in the lack of practical application of students. Through the teaching of BIM, colleges can greatly improve practical teaching and provide more effective guidance for students. Therefore, it is best to promote the development of students' practical skills through BIM.

### 2.3 Teaching Contents

The application of BIM technology in higher education will change the traditional teaching methods of higher education. The BIM technology is different from the traditional two-dimensional technology. The BIM technology integrates three-dimensional and even multi-dimensional design. Its application in higher education will change the

traditional way of expressing content and makes it more inspiring and targeted. It promotes the realization of teaching goals and the implementation of teaching tasks, and improves teaching efficiency.

### 3. Application of Bim Technology in Building Electricity and Intelligence

The BIM technology can convert two-dimensional models into three-dimensional architecture models, thereby changing the traditional teaching mode. Compared with traditional CAD design, BIM design has considerable advantages in any aspect. The following introduces the advantages of BIM technology in teaching application from five aspects: architectural lighting, weak current, power distribution, fire alarm and integrated wiring, as shown in figure 1.

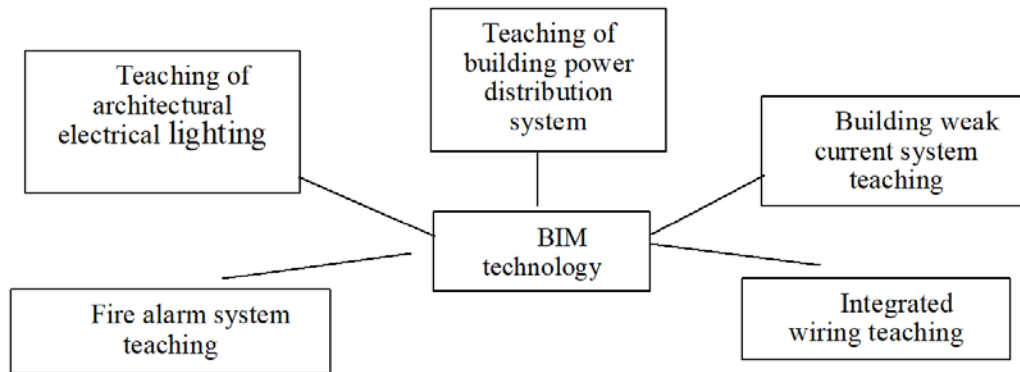


Fig.1 The Relationship between Bim Technology and the Teaching of Building Electrical Intelligent

#### 3.1 Teaching of Building Electrical Lighting

BIM technology is applied to the teaching of lighting design. Through the visualization of the software, students can see the complete three-dimensional virtual design effect, so that they can better understand and stimulate their interest in learning. Make full use of BIM technology to design the lighting system, thereby greatly improving the design efficiency, reduce design costs, effectively managing and controlling related personnel, and effectively improving system performance.

#### 3.2 Teaching of Building Weak Current System

At present, the weak current technology is developing rapidly, and it is increasingly used in intelligent buildings. The degree of application of weak current technology is directly related to the level of building intelligence. In the construction of weak current systems, BIM is mainly responsible for the connection and coordination with the building. Equipment configuration, power distribution design and remote monitoring. Better control the system, such as building automation, security, access control and parking management. Not only can you query real-time information, but also query the historical information. Building performance, sound, light, heat, environment, comfort, energy consumption and ventilation simulation analysis can all be performed in real time. Although the above can also be performed through modeling, the workload is large.

#### 3.3 Teaching of Building Power Distribution System

In the teaching of building power distribution subjects, students of the major can check whether the power cord is complete, and check whether the power supply conditions are met in the heating, water supply and drainage industries. The design is determined by the BIM coordination function and the BIM technology detection function. When designing and constructing a power transmission system, the relevant personnel will use the BIM technology according to a specific operating process: Preparing existing data and information, and build a power distribution system; Make full use of BIM software and establish a reasonable power line according to the requirements of relevant documents of building power distribution system; BIM can automatically install a line configuration plan that meets the requirements of the building's energy distribution system, and can automatically generate BIM files; The placement of electrical equipment and wires is properly labeled on the design so that it can be used in a clear and reasonable manner Design.

### ***3.4 Teaching of Fire Alarm System***

For fire alarm teaching, you can use the check function of BIM technology to check in real time whether the data of the fire detector meets the requirements of relevant protection standards. At the same time, it meets the requirements of multiple professional firefighting linkages such as electrical, water supply, drainage, HAVC, and other-professional. The requirement of the fire protection system makes the design of the fire alarm system safer and more reliable, which greatly improves the comprehensive practical ability of the fire protection system. BIM can also improve the coherence between courses, transfer the on-site training to the classroom, and visualize the course teaching through the simulated three-dimensional building models, thereby more Good grasp of teaching content.

### ***3.5 Comprehensive Wiring Teaching***

In comprehensive wiring teaching, building a three-dimensional patch panel model in the BIM system can more intuitively show the evolution of each line, so that students can visually observe and better understand the wiring rules. For example, there are pressure pipes, single pipes to avoid the use of discharge pipes and small pipes to avoid large pipes. The impact point can be adjusted to meet the requirements of the site construction. Compared with the traditional two-dimensional power supply design, the BIM technology used in building electrical and intelligent professional education. It has great advantages. In addition, learning BIM can enhance the employment competitiveness of students majoring in building electrical and intelligence.

## **4. Effective Strategies to Improve the Professional Level of Bim Teachers**

The BIM course teacher reserve, the focus of teacher training is to train BIM technical lecturers and expert teams. The basic skills include familiarity with BIM theory and related knowledge, understanding of BIM operation software and understanding of BIM operation methods, and practical project framework. Put forward the following three teacher reserve plans: Build a BIM faculty team; Improve comprehensive capabilities; Cooperate with software companies. The focus is to strengthen the BIM technical education team and improve the comprehensive training of classmates to maintain the age structure of the education team and the sustainability of education.

### ***4.1 Build a Bim Teacher Team Platform***

In order to improve the professional level of BIM teachers, higher education institutions should pay more attention to the training of BIM teachers and provide more systematic and advanced training platforms for BIM teachers. Establish a BIM teaching resource platform to reform and innovate the teaching content of BIM courses and maintain education the age structure of the team and the sustainability of education.

### ***4.2 Improve Teachers' Comprehensive Ability***

To improve the professional level of teachers, teachers should continuously improve their abilities in various aspects, such as teaching ability, practical ability, and expression ability, so as to fundamentally improve the professional level of the BIM faculty team in universities. Carry out horizontal contacts, active academic exchanges, make up for the professional lack of knowledge. We should make the best use of local education resources, actively participate in the training and discussions on BIM organized by provinces, municipalities and districts, and enable teachers to learn new teaching concepts, new educational content and teaching methods, and activate their own Teaching concepts to enrich your own teaching content.

### ***4.3 School-Enterprise Alliance***

Hire BIM technical staff to teach part-time teaching at universities to make up for the lack of teachers. The knowledge they impart is more practical and can better target the employment problem of college students. College staff can also go to companies to practice and accumulate BIM specialized practical ability.

## **5. Conclusion**

The application of BIM technology in the field of construction and power has become the trend of industrial development. It is necessary to study BIM technology for students of building electrical and intelligence and other electric and architecture majors. This article analyzes the advantages of BIM technology in architectural lighting, power

distribution, fire alarm and integrated cables. Although BIM education has limitations at this stage, its opening in universities is inevitable.

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