On the Application of Games in Mobile Phones in the Course of Preparation of Architectural Model

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Abstract: With the development of science and technology, students rely more and more on mobile phones. The attention of students to mobile phones is even higher than that of other social groups. Therefore, that how to combine mobile phones with classroom teaching to stimulate students' interest in learning is the main direction of research. This paper mainly expounds that the course of preparation of architectural model is the first attempt to use the game of Minecraft in mobile phones to quickly create a virtual architecture and then make a solid architecture model. The preparation of architectural model is a bridge to put building concept into practice. It reflects people's feelings about space and architecture, plane and three-dimensional, and is the basic premise of design sketch. The use of the game of Minecraft in mobile phones to create a virtual architecture not only saves the school resources and the time of model making, but also improves students' interest in learning.

1. The Scientific Significance of Games in Mobile Phones in the Course of Preparation of Architectural Model

In the architectural design industry, architectural model is an indispensable means of expression in the process of architectural creation. Architectural model is a tool for designers to communicate with non-professionals, which directly shows the design concept of designers. Therefore, the design and manufacture of architectural model has gradually developed into a new profession. At present, there is no major of preparation of architectural model in domestic colleges and universities. In addition, the quality of existing practitioners is uneven, which can not meet the needs of professionals in preparation of architectural model in the market. Moreover, with the progress of science and technology and the improvement of living standards, mobile phones are not affordable. It is normal for college students to have one, and it is also a common phenomenon for students to play mobile phones in class, which has brought a lot of influence on classroom teaching. Therefore, in order to cultivate students to adapt to the post needs of enterprises and improve students' interest in learning in the classroom, the teaching is carried out by combining students' attitude of playing games, that is, the game of Minecraft in mobile phones is applied to the course of preparation of architectural model, so that students can learn knowledge in the process of playing games and complete the model making of the course. As a result, students' enthusiasm for class can be improved and they can also learn the knowledge of the course.

In the game of Minecraft in mobile phones, the creation mode is used, and students can play their imagination to the full, and use the square to build the architecture model which can be seen in three dimensions. With such advantages, it is easy to build architectural works with different styles. It is convenient for students to make unnecessary mistakes before making finished products, and to see the appearance and shape of finished products intuitively in advance.

2. The Commentary of the Game of Minecraft in Mobile Phones

The game of Minecraft in mobile phones is a 3D sandbox game about cubes and adventures. All kinds of things in the game of Minecraft in mobile phones can be built. In the game, we can build our own world through Lego bricks. As long as the imagination is fully used of, the architectural works can be finished whether it is a castle, a palace or a city in the sky, as shown in Fig. 1.

Fig 1 The game of Minecraft in mobile phones

In the creation mode, there are many kinds of materials, such as the ground materials including land, grassland and floor tiles; the wall materials made of stone, brick, and wood; the scenery with glass, guardrail, water, flowers and trees. Students can make full use of their imagination and use these materials to easily build architectural works of different styles. It plays a certain role in the accuracy, aesthetics and coordination of the later man-made architectural model.

3. Combination of the Game of Minecraft and the Course of Preparation of Architectural Model

The architectural model is mainly formed by turning design drawings into virtual models and forming solid models. At present, there are still traditional teaching concepts in colleges and universities, such as relatively single teaching content, limited thinking of students, teachers' all embracing, and passive learning of students. After the integration of the game of Minecraft into the course with the use of information technology, students can build virtual models in the game and entities in the reference model. It not only improves students' interest in learning, but also saves the cost of resources.

3.1 Production Process of Architectural Model

The model making makes the creation idea form a kind of entity performance, which has more sense of space than the drawing, and the matching surrounding environment can enhance the overall environmental awareness of designers. It is built by using the advanced equipment engraving machine. First of all, the drawings should be designed and input into the computer according to a certain proportion, and then these data should be transmitted to the engraving machine. The engraving machine cuts the ABS rubber plate into small pieces of different shapes according to the instructions of the computer, and then these small pieces should be manually pasted into the model to be reflected in the designed drawings. If the school does not have such equipment resources, students should first draw plans and elevations with CAD software or by hand, and draw the exploded views of the building parts on the copy paper, and copy the prepared drawings to the materials, and manually cut materials according to the decomposition drawings to make models as shown in Fig. 2.

In the production process, there are often unreasonable color and proportion matching, and the final model is not ideal, or has a big gap with the original creative ideas. The production of this method cannot effectively achieve the expected effect, and it wastes production costs and time. So the game of Minecraft in mobile phones can be used to change this traditional teaching mode and solve the problem of seeing the expected effect before making the model.
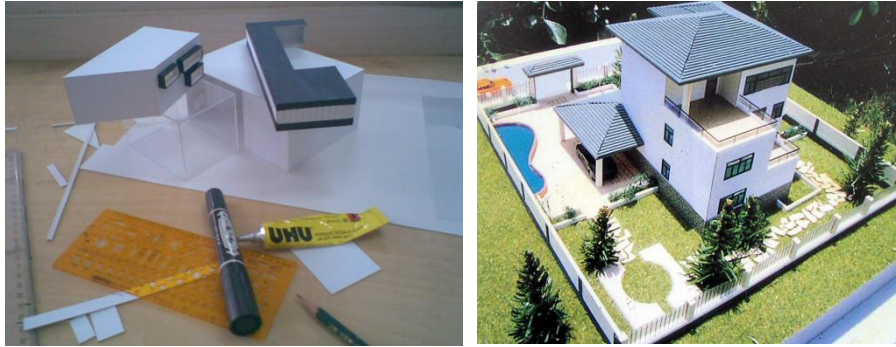
Fig 2 production process of architectural model

3.2 Integration of Mobile Games and Courses of Preparation of Architectural Model

The first step is to draw the plans and elevations of the building model by AUTOCAD software or hand. According to the size, when creating models in the game of Minecraft, students should pay attention to the proportion of block sizes. Since the game of Minecraft are all block models, each block can be treated as 1meter, and the wall can be made by flexibly using the material stone or brick brought in the game, and then the windows and roof can be made. According to the drawings, the whole building is made and matched with the environment, such as pools, plants, bridges, and steps. In the modeling process, the flight mode in the game can also be used to observe the design of each facade of the building. If there is insufficient we should change it to achieve the expected effect, and take a video after completing the model, as shown in Fig. 3.

In the process of making a model, a group of 2-3 students work together to complete the model in a mobile game. In the game, students exercise their creative skills of hand and brain, the cooperation ability of group members, and the allocation and management ability of each group leader.

Fig 3 Side elevation, top view and front elevation of virtual architecture in the game of Minecraft

The second step is to make a solid model according to the 3D model made in the mobile game. First of all, the appropriate proportion should be determined to carry out the overall planning and design of the structure. It is necessary to make a supporting system of the model to paste the surface materials. The cheaper KT board is chosen as the structural floor, which saves money and is easy to cut. And then the main building model can be made according to the designed drawing, and the decomposition drawing of each part of the architecture are drawn on the KT board with reference to the three-dimensional model. And then the materials is cut according to the drawing, and the small parts such as doors and windows, railings are pasted onto such large parts as wall and roof, and the large parts are assembled. Finally the production of the main architecture is completed. Buildings do not exist in isolation, and have an inseparable relationship with the surrounding environment, and form a specific atmosphere with the environment. There are many factors in the making of landscape matching, such as trees, grass flower beds, cars, street lights, pedestrians, and small scenes. Attention should be paid to the collocation of materials, colors and proportions in the production process. At last, the solid model is finished as shown in Fig. 4.

Fig 4 Side elevation, top view and front elevation of solid building model

Conclusion

Nowadays, the development and application of Internet are changing the world. The traditional teaching method cannot meet the needs of students in the new era. In the information age, how to take advantage of the normalization of students playing mobile phones in the classroom to realize student-oriented learning and create a harmonious and mutual learning environment; activate the classroom atmosphere and stimulate the interaction and motivation of students in the classroom to further improve the teaching efficiency and teaching effect, which is the key to integrate modern teaching methods into classroom teaching.

Acknowledgements

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