Application of Google SketchUp in Tourism Planning—In Case of Heilongjiang Ningan Jiatai Manor

Kai Huang1,a, Jinbin Wang1,b, Dongdong Lin1,c and Yu Liu1,d

1 Beijing Collaborative Innovation Center for Eco-Environmental Improvement with ForestryFruit Trees, Beijing University of Agriculture, Beijing 102206, China
ahk2878@163.com,b516393642@qq.com,ccomel@vip.qq.com,dkaijinhong@sohu.com

Abstract. Tourism planning and design to the current widespread use traditional CAD, 3Dmax and the other software, but rarely used SketchUp software to help the planning and design. The use of these traditional software inadequacies, such as the expression of CAD software planning and design results are not intuitive, 3Dmax complicated computer hardware requirements relatively higher. Using SketchUp software, planners in the creative process both visually express their ideas, but also by the simple shortcuts to complete the design effect and improve the efficiency of the design.

1. Introduction

In traditional computer design of tourism planning, people often use graphics display and computer software with drawing, but ignore its design features. SketchUp software appears to some extent changed this situation and promoted the application of computer technology in tourism planning and design process. At the beginning of software design, its design is different from traditional computer design software, which is a direct design process rather than outcome-oriented software. Google SketchUp software, available for image visualization of the planning process, not only can show planning which spatial distribution of two-dimensional objects, but query functions via graphics overlay and properties, and perspective on a particular area of any feature. It can achieve planning simulation and dynamic display. And various planning can be simulated on a computer to adjust and modify. So as to reduce the intensity of work, improve efficiency and provide more scientific and technical support for planning decisions.

2. Software Introduction and Features

2.1. Google Sketch up Software Introduction
Google SketchUp is process-oriented design tool, which can adequately express the designer's creative process and totally meet the needs to communicate with customers. And it can make very intuitive ideas directly on a computer. So it is an excellent tool for three dimensional design creation.

3. Application of Sketchup in the Tourism Planning

3.1. Application Characteristic
SketchUp can set longitude degrees and time of specific city, it can also make environment get real of sunshine effect, while has rich material figure library by object of actual size built of environment, like garden plants. It can become accurate reference of garden environment scale. Let designer creating the
ideas in an accurate and real simulation environment which can make decision more reasonable and science, and makes program idea more persuasive. SketchUp also has a simple roaming animation function that makes design have sense of immersive. It can be quickly and easily generated a variety of views as needed, in the virtual scene from many angles you can browse drawings. Analysis of landscape plants, people, garden ornaments, roads and other space distribution rationality.

3.2. Application Example
SketchUp directly faces the design process may at any stage to generate a variety of three-dimensional effect that makes drawings more intuitive and modifies more convenient, which is unmatched by traditional models.

In Ningan Jiatai Manor in Heilongjiang province, for example, using the tools named "push-pull" in SketchUp establish the three-dimensional model, designers can easily generate 3D geometry through a graph without complicated 3D modeling, calling-into the landscape in the background related to the component labeled as suitable materials, using roaming animation tool, to scan, analysis and decide the program.

3.2.1. Build the model
The complex model should be controlled by design programs and design requirements. so the first step to establish the model to clearly express the characteristics of the design project, and the numbers of model should be controlled in a certain range while rational model stitching. Plugins plug-in can be installed in SketchUp. Plugins menu can be displayed on the menu bar. Then the CAD drawing can be closed. If unclosed surface is found, it needs to be closed manually through the drawing tool. After closed, it can pass through the flat. The surface layout constructs the spatial model.

![Figure 1. Draw functional zone map](image-url)
Figure 2. Determine the planning programs

Figure 3. Establish comprehensive model

3.2.2. Create component, modify the details
SketchUp software components are very powerful which using the component associated features to quickly modify the program. Moreover, the common model as the component is a good way to improve the efficiency of tourism planning. The biggest feature of components is that they change a set of models, and other components of the same model change as they do, which saves a lot of time and effort in building models. (Figure 4)
3.2.3. Polish color and material
When the whole planning model has completed, it can work on color and texture stage. SketchUp software have their own library of materials that allows users give a variety of texture in any building surface when they need. And display in real time, what you see is what you get, and the user can make her own material. (Figure 5)

3.2.4. Add environment and background
After model material was improve, in order to express the overall effect of the model which can be designed according to the needs adding roads, facilities, plants and so on. (Figure 6)
3.2.5. Making the animation roaming

Through the perspective of roaming functionality of SketchUp software, we can implement a simple animation effect. Than using the third-party software and matching background music to achieve optimal results.

Through this case, designer will attach three-dimensional effect SketchUp model to traditional text and graphics scheme, not only to make the plan more complete, but also give a more intuitive feeling to designers which can help the program to stand out from the crowd.

4. Advantage and Disadvantage

4.1. Advantages

(1) SketchUp is a process-oriented software and the process is similar with hand-drawn sketches by designer’s ideas. And the goal of tourism planners is design instead of drawing. Planners can use throughout the process of planning, and the software overcomes the drawbacks of current design and performance out of your computer, so planners can return to design consistent with performance of traditional working patterns.

(2) Design and performance are more integration. SketchUp modeling the entire operation is carried out in a three-dimensional scene, and then the scene related materials, components, and synthetic copy to the image in a file. Real-time rendering of the scene and the scene show the effect of rendering is same as the final output image effect, so the design and performance are more consistent.

(3) SketchUp has great aided design system. Design of tourism planning is fuzzy design, we do not require rigorous qualitative and quantitative early. Geometry engine in SketchUp has a considerable motion and flexibility, and more intelligent and flexible in parameter design compared with CAD system. The material texture and color can make materials visualization. Meanwhile, the function of shadow analysis in SketchUp can simulate the garden plants and sketches which at a specific time and region under the sun shadow effects to analysis of the shadows instantly. We also can use a variety of view horizontally and the spatial structure of upper and lower or the same plane for the intuitive and accurate spatial relationship in depth, then quickly and easily generating a variety of views on demand. Section design can be also exported into vector graphics software to make charts, illustrations and performance map.

(4) For all phases of the design features, SketchUp can generate a variety of three-dimensional product that focus on the real effect of a design object expressions.

4.2. Disadvantages and Solution

(1) SketchUp emphasis on the design process, but it often ignores the effect of design and late expression. For the high effect drawing, we can use Photoshop to repairing and retouching.
(2) Model planes in design are usually complex. So AutoCAD in drawing "line" has more advantages than SketchUp. Therefore, when it deals some special objects, particularly curved objects, it should be drawn an outline or profile in AutoCAD first and then imported into SketchUp for further processing.

(3) SketchUp has weakness in animation rendering, it should be used in conjunction with other software like Flash and Premiere software.

(4) Landscape design process usually involves a large number of plants, modeling process if implanted a large number of three-dimensional plants, will reduce the efficiency of the software, so to be replaced by two-dimensional, so from the perspective of overlooking, it appears extremely thin, not enough to show the normal state of plants. The solution is not to import three-dimensional plants in the process of model building, until the model is completed, output images, and then import Photoshop for post-processing, in order to improve the configuration of plants.

(5) There was a phenomenon of non-coexistence when drawing line drawings when CAD was imported. The way is to delete the redundant lines in CAD and import them to SketchUp.

5. Conclusion and Future

5.1. Conclusion
The rapid development of computer design software, some design which difficult to representation directly can be solved. But it can be seen from current situation, designers pay no attention to this way. Generally, designer first uses the pen and paper draw the outline of idea in program idea stage, then they spent large of time and energy in AutoCAD 3max and Photoshop which software has complex operation. If program idea handed to professional making personnel to completed, designer is cannot for further perfect, it must will effects the design quality. In that way, designer’s idea and intent would be dispersed by various complex software and could not got full expression. The biggest trouble is the program could not one-time get through. Designer modified the problem again and again, not only it has high time cost, but also reduce the controllability when designer at work.

The software is used to plan the tourism resources, preserve the original landscape in the scenic area, and the geographic location, specifications, patterns of the building, and simulate the impact of the building on the scenic area. Sketchup is an excellent tool for creating three-dimensional architectural designs. It can automatically identify lines when building three-dimensional models. To automatically capture. The modeling process is simple and clear, and the line is drawn into a surface and then extruded.

To solve the existing problem of the tourism planning which based on the Sketch Up application research in tourism planning and design, we do many work as follows:

Study the travel planning process in the SketchUp software technology and traditional design to make a new way for SketchUp design. Giving designers an efficiency and rationality procedure.

Concluding SketchUp plan process through actual cases and summarizing the steps to show their feasibility.

Analysis advantages of SketchUp in the tourism planning and design, summarizing the applied to the tourism planning and design process.

The new flow of design has less original process than before. In beginning of the sketch plan, program and communicate with the person to after the program change or roaming animation, the whole design process is completed in this software. Design is no longer needed in a lot of software to change again and again, not only improve the efficiency, but also focus more on the design itself.

5.2. Future
With the development of tourism planning and design industry, version of the SketchUp software is development, particularly has the further integration with GOOGLE EARTH, which will become more and more powerful. It will be more and more use in the process of design as a means of analysis and expression. SketchUp software in the field of design must be popularity.
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