

Application of Case Guide in CAD Learning

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Abstract

For computer-aided drawing software for engineering purpose with strong practicality, it may be easier to understand the learning objectives generally to use an actual engineering case as the guide and break down so many simple operation commands into all steps of the case during the learning process. With completion of the modeling for the project, it may mobilize the students' initiative and sense of achievement to the maximum extent. This article simply discusses the application of case guide in CAD learning.

Keywords

CAD, Case oriented, Draw.

1. Introduction

In the initial stage of learning engineering CAD software, many people may feel that they have no way to start. If you review related books or video courses, you may often find information regarding how to draw such basic operation commands as point, line, circle, Copy, Paste and Extend. As a matter of fact, such commands may be repeated within a very short time; however, students cannot apply such commands to complicated cases even after they have completed basic operations. Based on years' experience in learning the drawing software, the author divides the learning process into three different stages, namely basic learning, case drawing and individual design. As shown in Fig.1, this simple cube may be drawn after such basic drawing commands as point and line and such editing commands as Copy and Rotate. The simple sketch practice may be completed with many drawing methods, essentially including such operation commands as line drawing, copy, shift, fill and rotate. Guided by specific simple cases, students may complete the initial stage of learning, namely the stage of basic learning.

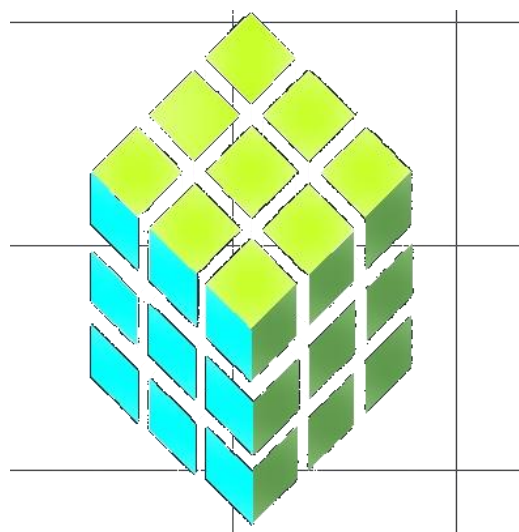


Fig. 1 Sketch practice

When it comes to the learning of basic cases, the guider shall choose the cases that cover all operation commands from simple ones to complicated ones and from less to more as possible and encourage students to give full play to their imagination to carry out simple design in this stage, i.e. from Fig.1

Sketch design to Fig.2 Advanced drawing, thus allowing students to develop their initiative in drawing in the initial stage. Since drawing itself is a boring and cumbersome thing, it is very hard to keep learning to get good learning effect without attraction arising from interest^[1-2].

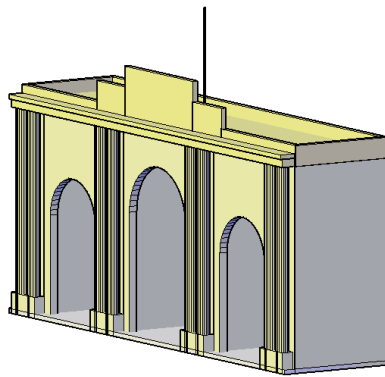


Fig. 2 Advanced drawing

During the learning process, it is necessary to divide a group because everyone may find and master certain “function” of the drawing software but other classmates may not find it all the time, resulting in the sluggish progress. For instance, when drawing input, the software may, by default, allow dynamic entry of any command. But, if the command is closed in the very beginning, it is difficult for a beginner to solve this issue during actual drawing. In such case, the issue may be solved well through discussion among the group members. Finally, any issue that cannot be solved and submitted by each group may be answered by the teacher, thus improving the learning efficiency and allowing the teacher to offer more specific teaching later.

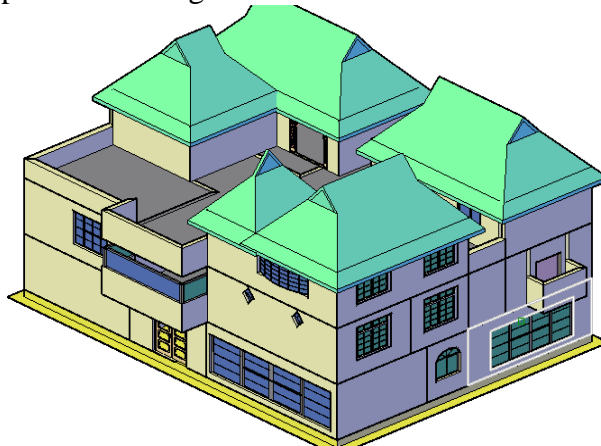


Fig. 3 Axonometric drawing

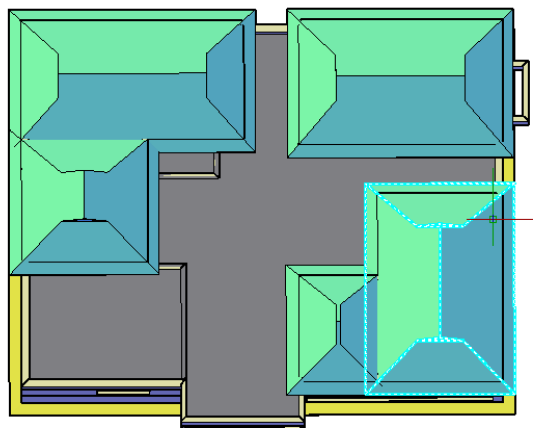


Fig. 4 Top view

Upon completion of the stage of basic learning, the selection of drawing cases may be closer to actual engineering projects. In such case, it is necessary to choose an actual engineering case for drawing practice. This stage is the most important one since, in this stage, students may review the previous stage and be encountered to complicated application cases, such as the axonometric drawing shown in Fig.3 and the top view shown in Fig.4. It is a slighted modified villa. With floor plan, elevation drawing and sectional view only, students are requested to draw and display it with a 3D model.

The last learning stage may be summarized as individual design stage. Through initial learning, students have understood the tool and basic design ideas. In such case, they may give full play to their imagination and combine it with the building form in actual living for individual design.

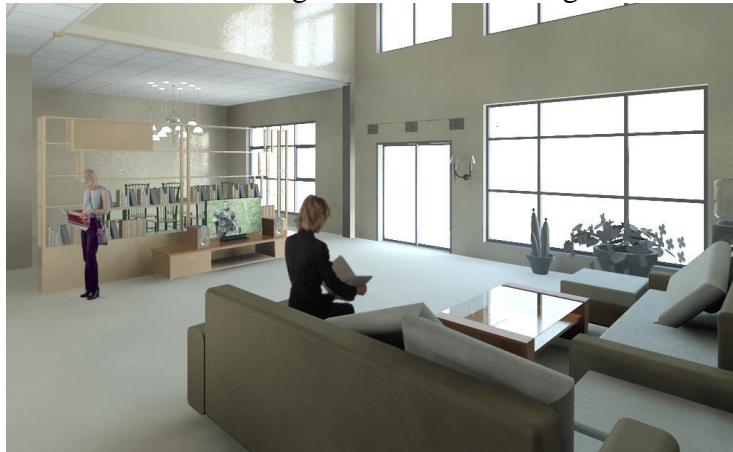


Fig. 5 Display of building effect drawing

Fig.5 and Fig.6 are the display of the building effect drawing as submitted. In this stage, the teaching objectives of CAD software teaching may be achieved well and students need to have subsequent in-depth understanding by combining it with the learning of other related theoretical courses.



Fig .6 Display of building effect drawing

Through analysis and summary of actual engineering cases, adaptation into teaching cases, and group working and individual practice, the teacher have guided students in completing three stages, namely basic learning, case drawing and individual design, thereby maximizing students' learning enthusiasm and initiative.

References

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