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# Three-Dimensional Software Professional Skill Training of Mechanical Majors Based on Witkey and Project-Driven Teaching Method

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**Abstract.** Given that the teaching of three-dimensional software professional skill training is not corresponding with the actual demand of enterprises, on the basis of project-driven teaching, we introduce Witkey to build a training mode of three-dimensional software professional skill. The application of this mode can improve students' initiative, partnership and employment competitiveness.

## Introduction

Three-dimensional software skill is a kind of required skill in mechanical majors. The main traditional teaching style is 'theory +practice'. The mainly used teaching methods are cases (projects) teaching. That teachers prepare the corresponding projects and then organize their teaching tasks according to the existed teaching procedures (plans) is the core of traditional teaching measures [1]. However, there are some disadvantages: relatively simple programs, relatively out-of-dated teaching content, lack of real practice.

In the background of rapid updating manufacturing industrial skill and the myriads of changes of manufacturing market demand, how to establish on social demands, combine closely with development of market [2] and then combine three-dimensional software skill with practice are the problems to be solved with emphasis in practical teaching of mechanical majors.

Witkey is the person transforming knowledge and ability into actual income through internet [3]. Composed of knowledge seeker (enterprises), knowledge provider (Witkey) and market manager (websites), Witkey is a knowledge-exchanged platform which can solve users' problems through a reward mechanism. That bringing Witkey in three-dimensional software skill training presents these advantages: (1) teachers contact directly with market through Witkey and take advantage of the effectiveness of Witkey tasks to extend the practical teaching content; (2) teachers utilize the real Witkey tasks to motivate students' practical activities.

Considering that the development of manufacturing industry requires a number of innovative talents of mechanical majors, on the basis of project-driven teaching method, we lead Witkey in to support the training mode of three-dimensional software skill, which integrates teaching, learning and doing. Witkey highlights real practical process and offers a referenced scheme to the training of three-dimensional drawing ability of students of mechanical and engineering majors.

## Three-dimensional Software Skill Training based on Witkey and Project-driven

Training mode of three-dimensional software skill is shown in Fig 1. Every part is explained as follow.

(1) Project studio: teachers divide students into groups and every group is a project studio. Students accept tasks in the name of their studio or choose relevant Witkey tasks according to their own interest.

(2) Three-dimensional software skill training of project-driven: transform the real tasks from Witkey into the teaching contents of training and foster students' three-dimensional drawing skill using Witkey tasks in the process of training courses.

(3) Three-dimensional software technical practice task-driven: organize students to practice through the Witkey platform; teachers and students work together to complete the tender and make comments on them and summary; make full use of the authenticity of Witkey tasks to boost students' ability of three-dimensional drawing.

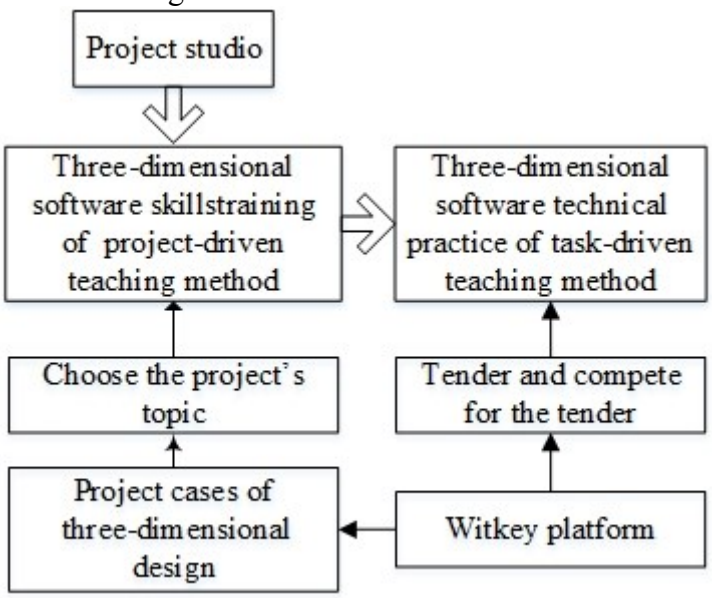


Figure 1 Training mode of three-dimensional software skill

**Application and practice of the mode**

(1) Establishment of Witkey platform

Project team chooses aerospace yunwang Hengli mold cloud special area [4] as their Witkey platform. Aerospace yunwang Hengli mold cloud special area is an industrial internet platform towards mold industry. It not only provides information about supply and demand and services of innovation and enterprise such functions in the aspect of design and manufacturing around mold industry, but also help to run the Witkey platform. The specific information about Witkey platform can be looked up in our previous research [5].

(2) Establishment of project cases

Structure of Projects cases is shown in Fig. 2, composed of completed project cases and practical experienced projects. The tasks issued from the Aerospace yunwang Hengli mold cloud special area make up the cases. According to the practical teaching plan of mechanical majors, teachers will select suitable tasks and then guide students to bid for them. Practical experienced projects consist of sticky posts in the interactive discussion area and students' participation record of projects. That teachers guide students to write down their own practical experiences during the participation can not only improve students' ability of self-reflection but also enrich the project cases.

(3) Three-dimensional software skill practice based on Witkey

Students create Witkey-based virtual workroom and take part in relative Witkey tasks according to their own interests, hobbies and speciality. Supported by their team, they bid for some relatively complicated and important Witkey tasks so that students can touch the real running pattern of businesses and enhance their ability of entrepreneurship more effectively. Students' training is shown as in Fig. 3.

A company released its manufacturing and design needs of one model of unmanned aerial vehicle in the Witkey platform. The Dongguan University of Technology (DGUT) got the task in the Witkey platform. 3D model of unmanned aerial vehicle which is designed by the DGUT is shown in Fig. 4.

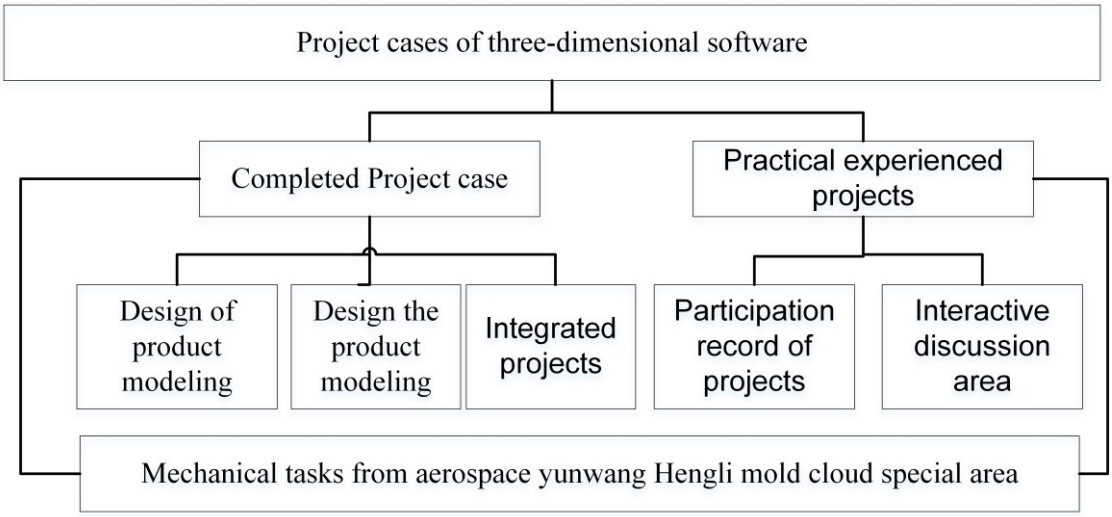


Figure 2 Project cases

Figure 3 Students' training

Figure 4 3D model of unmanned aerial vehicle

## Conclusion

In face of the teaching requirements of three-dimensional software professional skill of mechanical majors, this paper explains training mode of three-dimensional software professional skill which is based on Witkey and is project-driven. It also designs a feasible implementation scheme preliminary to provide references for further practice. Next, we are going to start teaching practice according to research findings illustrated in this paper.

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