Construction and Application of the Task-driven Teaching Method of "Induce, Analyze, Practice and Expand"

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Abstract

The traditional Task-driven approach has many problems, such as the difficulty in stimulating the interest of students with weak foundation, the difficulty in taking into account the learning progress of students at different levels, and the fact that most students can only "read" and can do demonstrations, but not give examples. This paper proposes a Task-driven "induce, analyze, practice, expand" teaching method, combined with the implementation of educational games, to effectively dispatch students' learning enthusiasm, to solve the individual differences between students, and to improve the initiative.

Keywords

Task-driven Approach, Educational Games, Photoshop.

1. Introduction

With the continuous development of modern technology and production organization, the society has put forward newer and higher requirements for vocational education, and the traditional curriculum teaching mode can no longer adapt to the requirements of the rapidly developing vocational education.Various teaching methods have been researched, explored and practiced by the education sector, especially the Task-driven teaching method which is widely used in vocational education. In particular, Task-driven pedagogy has been widely used in vocational education. However, there are still inadequacies and details to be improved in its implementation[1] [2]. This paper proposes a Task-driven teaching method based on "induce, analyze, practice and expand", which is an effective optimization and perfect solution for the application of Task-driven teaching method.

2. The Application of Task-driven Pedagogy and its Limitations

Task-driven pedagogy is a pedagogy based on constructivist learning theory. It takes the completion of a specific task as a cue throughout the instructional process, with the new knowledge to be learned implicit in one or more tasks. Students are motivated by the task, analyze and discuss the task, identify the knowledge and skills involved and the problem to be solved, and with the help of the teacher, complete the task to achieve the construction of meaning.

In the first semester of the 2018-2019 academic year, I used the Task-driven teaching method in teaching "Graphic Design Software" for Product Art and Design, and achieved some results in improving students' interest in learning, analyzing and solving problems, but due to the existence of individual differences, the following numerous problems still exist in the teaching.

2.1. Students with a Weak Professional Foundation have Difficulty Using Common Professional Tasks to Stimulate Interest in Learning

In the initial teaching of basic knowledge and skills, students' interest and awareness can be stimulated through the task of designing a poster or processing a picture of themselves, which

are of interest to them in their daily life. However, the enthusiasm of senior vocational students is generally not high, and their self-learning ability and initiative are also lacking, so it is difficult for them to maintain their interest after the freshness of learning has passed. In the later stage of teaching, it is even more difficult to make the students with a weak foundation interested in the professional comprehensive task.

2.2. Individual Students Vary Widely, and it is Difficult to Take into Account Some of the Later Students in the Analysis Phase of the Task

In the same classroom, students' starting levels vary, as do their personal interests and aesthetic abilities. When guiding students to analyze and complete the task, if each step of the task is carefully explained, students are not given space to think and play, which is not conducive to improving their analytical and problem-solving skills, practice and innovation.

2.3. Most of the Students will Only Follow the Steps Demonstrated by the Teacher in order to Operate the Task and cannot "Do the Same Thing Over and Over Again"

It was found that most of the students would follow the teacher's steps to imitate the implementation of a case, but often did not understand the purpose of each step of the case. As a result, if they leave the step-by-step notes provided by the teacher, or change a Photoshop task, they will be confused about the steps and do not know how to proceed.

3. Build a Task-driven Teaching Method based on "Induce, Analyze, Practice and Expand"

In response to the above several problems, in the first semester of the 2019-2020 academic year product art design major "graphic design software" course teaching process, I continue to improve and add some teaching links, and combined with the implementation of educational games, to form a complete methodology, Task-driven based on the "induce, analyze, practice, expand" pedagogy.

3.1. "Seduction": the Prospective Stage of Knowledge and Serves as an Outline

It is well known that interest is the best teacher, and in a sense it is far more important to impart knowledge directly to students than to increase their interest in learning. Therefore, this pedagogy puts great emphasis on how to increase and attract students' interest in learning. For students of this age, video games are very easy to attract interest and accept. Therefore, the first step of this method is to start the teaching with video games and to integrate the main objectives of the course into the games. The game plays a special role in the task of outlining the syllabus, but also plays a role in emotion regulation, capturing the attention of students, making them interesting and puzzling, and then arousing their desire for knowledge and arousing their enthusiasm and expectation for the task. And can improve the teacher's classroom control ability, so that the teacher's guidance to strengthen, so as to lay a good foundation for the teaching of classroom content.

3.2. "Analysis": the Stage of Deepening, Exploring and Sublimating Knowledge

After the introduction of the game, the enthusiasm of the students is often very high, on this basis, please students through their own observation and thinking, summarize the task-related issues. Think about "why set this game", that is, to guide students to take the initiative to realize the task; think about "in this game, inside the use of what has been learned before, what is not learned", and thus achieve the purpose of reviewing knowledge, understanding students The cognitive level of the students. After the implementation of the above teaching, students' conjectures and questions are diverse, for students' various conjectures and questions, the

teacher does not rush to conclusions, but three students with differences are divided into a group to discuss. The students will be guided to use their existing knowledge to analyze, and the group representatives will summarize and raise questions, and the teacher and students will sort out the key points and difficulties of the task together. At this stage, through grouping, analysis, discussion, debate, questions and answers, students have a certain understanding of the task, so they will be eager to do it.

3.3. "Practice": the Stage of Experience and Inductive Integration of Knowledge

At this stage, the teacher let go of the students' hands and let them communicate while practicing, and after group analysis and discussion, some of the difficult points have been answered. In addition, for individual students with a poor foundation, and then supplemented with detailed operation of the video. In the process of student practice, some students will have all kinds of questions, these questions are predicted, after student discussion and practice, the teacher interspersed with explanations and demonstrations of these difficult points and students are prone to mistakes, students and then improve their content. At this stage, the theoretical teaching and case study are integrated, so that students can master the knowledge and operational skills of this task in a spiral of "practice - teaching - practice" cycle.

3.4. "Expanding": the Stage of Knowledge Innovation, "Learning by Doing" and "Bypassing" Application

In order to test whether the students really understand the importance and difficulty of the task, whether they can achieve the "inverse of one to three, bypass the class" to apply, at this stage, let students complete the same type of different tasks independently. At this stage, students are allowed to complete different tasks of the same type independently. According to the differences of students, different levels of difficulty of the task are assigned, and students with relatively poor receptive ability are given detailed operation of the video. In this way, students are able to apply the basic operation after doing the basic operation, so that they can integrate the knowledge and reach a better generalization and understanding of the knowledge points. In this way, students' practical and adaptability skills are improved.

4. "Graphic Design Software" Course Applications

Photoshop is a compulsory course for product art and design majors in the direction of display with strong practicality. Through this course, students are required to master the main functions and features of Photoshop software, learn the use of the software and skills based on the use of the software, and be able to skillfully post-process various types of spatial renderings.

4.1. "Entice": Using the "Fault Finding Game" as the Carrier, the Objectives of the Course are Carried through the Game

At the beginning of the lesson, the teacher uses the familiar game "Fault Hunters" as the carrier, which is the main content of this lesson, to let students find out the difference between a 3D rendered work and a PS post-processed work. In each level of the game, the work on the left is the image at the end of this phase of the classroom task, while the work on the right is the result of this phase; each stubble in the works on the left and right is the focus of this task. (See Figures 1 and 2 for details.)

Fig 1. Game level settings

Fig 2. Stubble wrong place settings in game levels

4.2. "Analysis": Guide the Students to Analyze the Content of the Game, Summarize the Importance, Difficulties and Operation Steps of the Task

After the game, the students were very enthusiastic, on this basis, please students through their own observation and thinking, answer the following questions. (1) Think about the content setting class of the level of the game.

type", that is, to summarize the general process of interior rendering: analysis and planning; adjustment of the overall color and tone of the rendering; adjustment of local materials; adding scenery; production of light and shadow effects; overall comparison and adjustment. (2) Think about "the difference between the left and right pair of pictures in the game", that is, guide students to conduct an in-depth analysis of the task - villa living room: the overall color tone of the living room is relatively rich, but the color is cold; the background outside the window is missing, unreal; no interior decorative furnishings. The interior space lacks life; the overall lighting effect is bland. (3) Think about "What tools and commands are used to process the left picture into the right picture within the game?" This will lead to a review of knowledge and an understanding of students' cognitive levels.

As a result of the above implementation, students' conjectures and questions are varied, e.g., "How do you adjust the overall color and tone of the drawing? How do you add light and shadow effects?" For students' various conjectures and questions, the teacher guides them to use their existing knowledge to analyze, discuss, and argue. The group representatives will summarize and raise questions, and the teacher will work with students to sort out the key points and difficulties of this task.

Table 1: Steps in the implementation of the "practice" component of the cottage living room post-processing course

	Steps	Teaching contents and methods
Sub-Task 1	Hands-on Practice	Step 1: Overall Effect Adjustment Step 2: Detailing: window background addition, glass material adjustment
	Summary of demonstrations	Demonstrate the difficulties in steps one and two, and summarize the mistakes and easy mistakes made by the students in the operation: fog effect and depth of field treatment in the forest; adjustment of the glass material of the floor-to-ceiling windows.
	refine	Refine the operation of steps one and two and add curtains for floor-to-ceiling windows, balcony glass and railing glass to create reflections
Sub-Task 2	Hands-on Practice	Process Step 3 - Add accessories: potted plants, sofa pillows, wall hangings, plants, and create corresponding shadows and reflections.
	Summary of demonstrations	The teacher demonstrates the difficulties in Step 3, and summarizes the mistakes and easy mistakes made by the students in the operation: making the added scenery match the overall color tone; making shade and reflection effects.
	refine	Refine the operation of Step 3
Sub-Task 3	Hands-on Practice	Treatment Step 4: Lighting Effects Creation
	Summary of demonstrations	The teacher demonstrates the difficulties in Step 4 and summarizes where students are likely to make mistakes: making spotlights and tube light effects. Explain Step 5: Renderings Final Adjustment Techniques - Enhancing Colors and Light and Clarity.
	refine	Make final adjustments to the villa living room rendering

4.3. "Practice": Let Students' Curriculum Knowledge Spiral Upward in the Cycle of "Teaching-practice-teaching"

The task of this phase is to integrate theoretical and case study teaching. According to the outcome prompts of the sub-tasks set in the game level and the discussion results of the group members, students practice first. The teacher interspersed in the process of student practice analysis of the theoretical knowledge involved, important points of difficulty and students are prone to mistakes in the demonstration, skills pointing. Students refine the results of the sub-tasks in this phase, strengthen their knowledge and move on to the next phase of the task. At this stage, the teacher let go of the students' hands and let them communicate with each other while practicing. After group analysis and discussion, some of the difficulties have been answered. (For details, see Table 1: Implementation steps of the post-processing of villa living room "practice" part of the teaching) In addition, for individual students with poor foundation, then provide the operation video for learning after class.

4.4. "Expand": Let Students Learn to "Lift the Inverse of Three, Bypass the Class", and Assign Different Tasks According to the Differences of Students

In order to test whether students really eat the task of the difficulties, whether they can achieve the "inverse of three, bypass" to apply the effect, at this stage, so that students independently complete the post-processing of commercial space. Teachers for student differences, assign different levels of difficulty of the task: the acceptance of high ability students on the mall lobby post-processing; acceptance of relatively poor students, the post-processing of the hotel box, and supported by detailed operation of the video. In this way, after doing the basic operation, students are able to cite the application, so as to integrate the knowledge and achieve a better generalization and understanding of the knowledge points. In this way, students' practical and adaptability skills are improved.

5. Conclusion

The Task-driven teaching method of "induce, analyze, practice and expand" is the inheritance and deep optimization of traditional Task-driven teaching, and is implemented in the teaching process of "Graphic Design Software" to arouse students' learning interest and enthusiasm. This method effectively strengthens students' hands-on ability, successfully creates an "easy and enjoyable" learning environment, effectively carries out leveled teaching, and makes students improve as a whole and make progress together. In the treatment of the teaching content, different training tasks are assigned from different angles, so that students can learn from different perspectives. This method has perfect implementation steps, which can be an effective case study for the promotion of higher vocational education.

Acknowledgements

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