

Teaching Design of Loop Structure Programming for Statement (Class 1)

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Abstract: This design is for all students, asking questions from shallow to deep, structured, and leave exploratory questions after class, for top students to improve. The teaching plan adopts the task-driven research-based learning teaching model. Teachers encourage students to find "feeling" by divergent thinking and innovative thinking, and conclude and reason through "task". Through each task carefully create a number of classroom teaching climax, layer by layer to promote the teaching of circular structure programming sentence format and its function. This lesson is based on the teacher's question, explanation and students' analysis, discussion and speech. The process of teacher's explanation is the process of constantly guiding students to analyze problems, propose solutions, and finally solve problems.

Keywords: Program design; Looping statements; Statement format; Statement function

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This teaching plan is applicable to the screened and selected members of the "excellent" information technology society in Grade 8 of Junior Middle School of Ningguo middle school. The teaching material is the 5.1 for statement in Chapter 5 of the school-based teaching material "guidance course for informatics Olympic Games" and 1 class hour. Before learning this lesson, students should master the programming environment and operation method of Pascal program, understand the program execution process of sequential structure and selection structure, have a certain algorithm foundation and have a certain ability of comparison and induction.

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1. Teaching Environment

This class should be held in the computer room with multimedia broadcasting teaching system or the multi-function room with large screen projector. Teachers can make full use of the on-site events of students' speeches for effective teaching, stimulate student's enthusiasm for exploration, and strive to create interactive scenes between teachers and students, so that students can learn cooperatively in discussions and share achievements in speeches.

2. Teaching Mode

This design is for all students. The questions are arranged from simple to deep, with clear levels, and exploratory questions are left after class for top students to improve. The teaching plan adopts the task driven research-based learning teaching mode. Through the "task",^[1] teachers encourage students to find "feeling" by divergent thinking, innovative thinking and other methods, and summarize and reason. Through each task, carefully create multiple small climaxes of classroom teaching, and promote the sentence format and function in the program design of teaching circular structure layer by layer^[2]. This class is based on the teacher's questions, explanation and student's analysis, discussion and speech. The process of teacher's explanation is to continuously guide students to analyze problems, put forward solutions and finally solve problems. In the course of teaching, the teaching content shall be adjusted at any time according to the events on the classroom site. When the student's discussion and speech deviate from the teaching objectives and contents of this class, they shall be handled wisely.

3. Teaching Objectives

- A. Master the format of for single loop statement.
- B. Understand the execution process of for single loop statement.
- C. Learn to use for single loop statement to realize loop control structure and solve practical problems.
- D. Further master the methods of program debugging and operation.
- E. Three dimensional teaching objectives

Category	Teaching objectives	Horizontal classification		
		knowledge remember	reason solution	answer use
Basic objectives	(1) learn the command format and function of single loop structure; (2) using single loop structure command statement to design structured program;	√	√	√
Development objectives	Structured programming using three basic structures;	√	√	√
Skill objectives	Cultivate student's research-based learning ability, logical thinking ability and computer operation ability;			
Emotional goals	Cultivate student's learning interest, collaborative cooperation and innovative spirit			

4. Key Points and Difficulties

Key points: let students learn to use the for single loop statement of Pascal language to realize the loop control structure, solve practical problems, and cultivate student's innovation ability.

Difficulties: this section is a difficult part of teaching, and the single cycle structure is the difficulty of program design in this section. The teaching of this section should enable students to organically combine the previously learned knowledge, give full play to their creativity and use three basic structures for programming.

Key points of teaching: use the mathematical knowledge that students have mastered to guide students to integrate the three program structures of Pascal, strive to give full play to students' research-based learning ability, and cultivate students' creative thinking and comprehensive application of knowledge.

5. Teaching Process

(1) Create situations and introduce new courses

division: in our childhood memory, there is a story: Once upon a time, there was a mountain, there was a temple in the mountain, and an old monk in the temple was telling a story to the little monk. The story is: Once upon a time, there was a mountain, there was a temple in the mountain, and an old monk in the temple was telling a story to the little monk. The story is... In primary school mathematics, such

as:

0.3333... 13.673673... 8.534534... It can be said that cycles are everywhere in our life. Let us take a look at the problem related to circulation brought by the teacher today: I want to display five "*" arranged in vertical lines on the screen. Think about how to write its program with the previously learned programming language?

Unripe (Think a little, then answer): use writeln (*)

```
WRITELN('*');
```

```
WRITELN('*');
```

```
WRITELN('*');
```

```
WRITELN('*');
```

Division: Yes, well done, then, if I want to draw 50 lines and 500 lines "*" Can we write in this order? Is it too cumbersome to write in this order? If we can let the computer complete this part of the repeated content, and we just tell the computer the number of repeated operations, can this wish be realized? Yes! Through the circular statements we learn today, we can easily realize this wish.

[setting questions can not only create a teaching situation, but also arouse students' thirst for knowledge]

(2) New knowledge exploration and interactive interest

1) Task 1: incrementalFor loop

Student: Autonomous learning books 24Page content, master incremental for Circular statement format.

The format of incremental for loop statement is: for loop control variable: = loop initial value to loop final value do loop statement (or paragraph). For example: for I: = 5 to 10 do writeln (I); the output result is: 5 6 7 8 9 10, that is, the loop has been executed 6 times in total

Division: The demonstration completes the complete program writing and debugging of the example, and outputs the correct results.

```
program li1(input,output);
```

```
var
```

```
i:integer;  
begin  
assign(output,'li1.out');  
rewrite(output);  
for i:=5 to 10 do  
writeln(i);  
close(output);  
end.
```

S: I have bright eyes

Find out the program errors issued by the teacher, modify and debug, and output the correct results.

```
program li2(input,output);  
var  
i:integer;  
begin  
assign(output,'li2.out');  
rewrite(output);  
for i=1 to 10 do;  
begin  
writeln(i);  
writeln(10-i);  
end;  
close(output);  
end.
```

[consolidate the format of incremental for loop statement to deepen understanding]

2) Task 2: decreasing type For loop

Student: Learn the contents of 24 pages of the book independently and master the format of decreasing for loop statements.

For loop control variable: = loop initial value downto loop final value do loop statement

Division: Distribute materials

for i:=20 downto 10 do

writeln(i);

S: I'm good at cloze

Improve the procedures issued by teachers, debug and output correct results.

[consolidate the format of decreasing for loop statement to deepen understanding]

3) Task 3: Some notes on for loop

Student: Learn the contents of pages 24 and 25 of the book independently, and understand some notes on the for cycle.

Division: Distribute materials

A:=10; B:=50; FOR K:=A TO B DO BEGIN WRITELN (K); END;

A:=1; B:=10; FOR I:=A TO B DO BEGIN A:=5; B:=4; WRITELN (i);

WRITELN (A);

WRITELN (B);

program li3(input,output);

var s,x:integer;

begin

assign(output,'li3.out');

```
rewrite(output);  
  
s:=1;  
  
for x:=1 to 5 do  
  
begin  
  
s:=s*x;  
  
end;  
  
writeln(s);  
  
close(output);  
  
end.
```

Student: I have the strongest reading comprehension

Write the correct results according to the procedures issued by the teacher.

4) Task 4: use the for single loop statement of Pascal language to realize the loop control structure and solve practical problems.

Student: "I'm good at writing articles, and I'm the best at solving problems."

1. Display 50 "*****" arranged in vertical lines on the screen
2. Exercise on page 27 of the book: calculate the value of $1 + 2 + 3 + \dots + 100$.
3. Evaluation, analysis, summary and expansion

Ask students to self evaluate their mastery of the for single loop sentence: very clear, basic understanding, not very clear, do not know. In this link, the "knowledge tree" is introduced through the children's "wisdom tree" program. Considering the comprehensive quality of students, the mode of "teaching supermarket" is used to expand this class. The main methods are from easy to difficult.

6. Design Features

(1) This lesson adopts the traditional "theme question" way to learn, refine the learning content into specific questions, and complete the learning content through the answers to the questions.

(2)Analogy is adopted in teaching. Pascal is a computer language, which is similar to our Chinese and English language learning. Natural language learning emphasizes listening, speaking, reading and writing. Therefore, the author adopts the following methods in practice design: defect identification, cloze filling, reading and understanding, and "article"I am good at writing and I am the best at solving problems, so as to improve my computer language learning ability.

(3)The random roll call device written by Pascal attracts children, enlivens the classroom atmosphere and embodies educational equity.

(4)The model of "teaching supermarket" expands students' vision and embodies layered teaching.

(5)The "knowledge tree" is introduced through the children's "wisdom tree" program, and the "knowledge tree" mode is used to review and summarize the knowledge.

References

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