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On the "Double Adaptation" of Teaching and its Comprehensive Effect

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On the "Double Adaptation" of Teaching and its Comprehensive Effect

Hui Lan [α] & Shoutian Lan [σ]

Abstract- The teaching methods of various subjects should not only meet the inner needs of students, but also conform to the objective laws of external development. After repeated research and experimentation, we found that the "guided learning method" implemented with a "four-step procedure" can better solve this problem. On this basis, we can achieve a high degree of integration of "teaching" and "learning", a high degree of integration of lesson plan, textbooks, assignments and examination papers, a high degree of integration of teaching methods of various disciplines, and a high degree of integration of many teaching steps such as explanation, practice, consolidation and review. The role and power of this "high level of integration" All kinds of effects should not be underestimated. With the "high level of integration", it is easy to knock on the door of simple, efficient and effective teaching and learning, thereby making the education to step on a healthy track.

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Introduction

In the current teaching, either the teacher speaks first and students practice later, or students practice first and teachers speak later, or students speak on their behalf, or students are left to their own. All of these fail to meet the inner needs of students and do not conform to the objective law of development. The reason is that the essence of teaching is not truly understood. Therefore, not only the teaching quality is low, but also, more seriously, it puts a heavy academic and psychological burden on the students. This kind of teaching can no longer continue. We should find a new simple and efficient teaching method to allow teachers and students spending less time and energy, thus achieving the goal of cultivating a large number of outstanding talents.

I. The Importance of the Inner Needs of Students

Students themselves have certain learning resources, and these learning resources have the instinct that needs to be continuously developed, used and expanded. This is called inner needs of students. If our teaching methods can meet the students' inner needs, the students will be extremely happy and positive. In contrary, if the students' needs cannot be met, the students will be disturbed, negative, and irritable.

II. The Importance of the Objective Law for the Development of Things

The basic sequence or law of the development of things is "cause-process-result". If we only focus on the result and ignore the cause and process, everything is incomplete and untenable. Similarly, if the teaching of various subjects focuses only on the results and ignores the causes and processes, the loss will certainly outweigh the gain, which will increase the students' workload and psychological burden, and the students will not learn any real knowledge.

III. The Basic Approach that Meets Inner Needs and Conforms to Objective Laws

The teaching methods of various subjects must not only meet the inner needs of students, but also conform to the objective laws of the development of external things. After repeated research and experimentation, we believe that the basic approach is to follow the four-step teaching procedure, i.e., "creating a teaching context - sketching a knowledge structure - asking a series of questions - solving problems separately". The essence of this teaching method is "inspired by teachers to guide students' independent learning", referred to as "guided learning".

IV. The Specific Operation of the Four-Step Procedure and its Rationale

a) Create a teaching context

It means using a variety of teaching methods to create a context that is relevant to the content and enjoyable for the students. Take teaching "travel diary" as an example, we can guide students to travel in the countryside, or let students talk about the most interesting things in their own experiences, or use multimedia to show a related storyline. This way students from the beginning as immersive, they can fully mobilize and use the existing learning resources to participate in learning. At the same time, this is also the "cause" of teaching. Once the "cause" is solved, the rest of the teaching will be easier to develop.

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b) Sketch the knowledge structure

With certain contexts, students will further demand to know about the phenomena that occur in those contexts. Students can then be guided to read a text, such as a "travel diary", which will enable them to quickly comprehend the text and enter the role. Then the teachers can further propose the following questions for the students to consider: How many parts can "travel diary" be roughly divided into? Can you list these parts? Then the following structure diagram can be drawn to help students understand.

In the case of science teaching, the original textbook can be discarded and students can just sketch out a structural diagram by thinking about it in some context.

This step is to outline the knowledge structure. All knowledge has its own composition structure and also exists within a knowledge structure. With the knowledge structure, the interconnections between knowledge can be clearly seen, which makes it easy to grasp and easy to apply. We need to train students to start from the whole knowledge structure from the beginning of learning knowledge, and follow the cognitive law of "whole-part-whole". If the teaching starts with a word-by-word recording and description, it violates this rule.

c) Ask a series of questions

The knowledge structure outlined at the beginning may be incomplete, unspecific, or biased. This is all allowed. Thus it is very necessary to enrich, perfect, and modify the structure. Students can be guided to ask a series of questions based on the initial knowledge structure and enter the middle step of "whole-part-whole". For example:

1) What are the key points in the first part of "Travel Diary"? What are the characteristics of each point?
2) ……
3) ……

It is important to start with simple questions, so the questions can root deep in the existing knowledge and the students can use the existing learning resources. Then the difficulty of the questions is gradually increased, and finally it can exceed the requirements of the current textbook. This is called "seeking high in low".

Each question should have a space underneath it, similar to an assignment or an exam paper, for students to answer later.

d) Solve the problems separately

After a series of questions are raised, they must be solved individually. For each question, the four-step process can be used, i.e., "asking questions - exploring and guiding - independent answering - correction and reinforcement", which is called "small four steps". The four-step procedure mentioned earlier is called "big four steps".

① *Asking questions:* Ask each of the questions in the series and encourage students to find knowledge-growth points in their existing resources, i.e. to use the knowledge they have gained to consider how to independently answer the questions.

② *Exploration and guidance:* The teacher provides the necessary guidance at key moments when students are exploring how to answer questions on their own, or when they encounter difficulties. Guiding is different from explaining, and focuses on ways of thinking.

For example, ask the following questions: What are the key points in the first part of "Travel Diary"? What are the characteristics of each point?

Exploration and guidance are as follows: I believe that you are able to solve this problem well through your own efforts. You can solve this problem through reading the text or you can start with marking the key sentence...

Guidance must be open, layered, and rhythmic. Don't provide the guidance too early; otherwise it's easy to degenerate into speaking first and then practicing. On the other hand, don't give the guidance too late; otherwise it is easy to degenerate into first practicing and then speaking. To fully achieve the integration of "guiding" and "learning", the teacher's "guidance" should be hidden in the students' "learning".

Teachers' guiding students to learn seems much slower than teaching students to practice. But only in this "slow" process, students can gradually master the law, and then the learning process will naturally be faster after the law is mastered.

③ *Independent answering:* While teachers guide students, students can answer questions through independent learning with or without the guidance of teachers. Generally speaking, written answers are given first, followed by verbal answers. It is important to treat the question-answering as an exam, in which students should not whisper or look around. The teacher should create a situation of mutual competition.

Once a problem is solved, the solution should be filled into the knowledge structure, so that the knowledge structure is constantly improved.

④ *Correction and reinforcement:* According to the students' independent-answering situation, modify the previous "guidance" to correct the problems that arise. Extensive cooperation and mutual exchange will be reflected here. At this time, the teacher can explain the knowledge itself, or even go deeper into it.

After the first problem is solved, the second problem is raised right away, and the second round of

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"small four steps" is adopted. The "knowledge structure" is used to connect the lessons.

In the "small four steps", Steps② and③ can be repeated, intersected or performed simultaneously, thus allowing for a variety of flexible variations according to teaching practice. This allows for a high degree of consistency between "strict adherence to procedures" and "flexibility" in teaching methods.

V. Teaching Conclusion

Teaching a topic, such as a text in the arts or a large chapter in the sciences, requires only one round of big four steps, i.e., "creating a teaching context - sketching the knowledge structure - asking a series of questions - solving problems separately". In the problem-solving step, multiple rounds of small steps, i.e., "asking questions - exploration and guidance - independent answers - correction and reinforcement" can be applied as necessary. After using one round of "big four steps" and several rounds of "small four steps" to solve the problem, the initial knowledge structure will be continuously enriched and modified, and a more complete knowledge structure will be formed. This complete knowledge structure is the final conclusion of teaching and also the "result" in the "cause-process-result".

This complete knowledge structure will be transformed into the cognitive structure of students and the new learning resources for students, and expand the original learning resources, which is more conducive to subsequent learning of new topics. This is how teaching enters a virtuous circle.

VI. The Emergence of "Guided Learning Scheme" and "Novel Textbooks"

a) The teaching content was written in accordance with the requirements of the "four-step procedure", which was called "guided learning scheme" for liberal arts and "novel textbook" for science. In fact, it is a synthesis of the original textbooks, teaching plans, homework, and examination papers. It will also serve and function more than the sum of the original textbooks, teaching plans, homework, and exam papers, while eliminating the need for repeated lectures, practice, and review. It must be clarified that normal exams are still conducted normally. However, since students' daily learning is similar to exams, the experience of exams will be the same as answering questions in daily learning process, and even easier, because the exams are mostly about the knowledge which has been learned!

b) An example of guided learning scheme in liberal arts

The Guided Learning Scheme of "The Golden Hat" in Junior High School Literature

Create a teaching context

Encourage students to verbally or in writing tell a short story they have heard, seen, or experienced at home. Compare and find which students can express most interestingly and characteristically. In addition, prepare the best stories to be published in the school newspaper!

Students can first prepare their own drafts - then speak in groups - finally each group will nominate a representative to speak to the class.

Let's hear one more speech from a "new student" on "The Big Golden Hat" (soundtrack recording).

Then ask the students to open the textbook and take a close look at how the text "The Golden Big Hat" is expressed. Where is its "interesting point"? Where are the characteristics? Ask the students to prepare to outline the knowledge structure of the full text.

Sketch the knowledge structure

Guide students to read the text, clarify the main idea, experience feelings, and outline the initial knowledge structure.

(The initial knowledge structure may be simple, but it can be enriched in subsequent learning)

Ask a series of questions – solve the problems separately

1. How does the shepherd picture depict the joy of life and the loveliness of the image?

[*Guide:* It is necessary to describe what people or things are being portrayed, how to portray these people or objects, and what the relationships between them are...] Students answer this question as follows: (enrich the knowledge structure accordingly)

2. How many shots can the storm picture be divided into? Why do you divide it like this?

[*Guide:* Read the text again, compare repeatedly, and experience the characteristics of each lens and their relationship...]

3. What is the composition of the picture of "Under the bucket hat"? What thoughts and affection are mostly expressed?

[*Guide:* Pay attention to the movement and stillness of the components, the details and abbreviations....]

4. Write (you may modify the original draft) or draw a picture of your own life. And rate the best ones for publication in the school newspaper.

[*Guide:* Be distinctive, have your own thought structure and affection...]

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Finally, the enriched knowledge structure is as follows (it can also be more detailed):

c) *An example of "novel textbook" in science teaching*

Novel Textbook for "Movement of Objects" in Junior High School Physics

Create a teaching context

Everyone knows that all objects in nature are in eternal motion, and motion is a universal phenomenon in the universe.

In physics, the change of the position of an object is called mechanical motion. This chapter specializes in relative motion in mechanical motion.

A question: Two trains A and B stopped side by side on the platform, and Xiao Huan and Xiao Xi were riding on the two trains, respectively. Only one bell was heard, and one of the trains started slowly. At this time, Xiao Huan and Xiao Xi looked at each other's train, and both said that the train they were riding in was moving. Which of them do you think is right? Why?

It can be seen that the motion and stillness of the object are relative.

Outline the knowledge structure

(The initial the knowledge structure might be simpler, and then the structure is enriched in the subsequent studies).

Ask a series of questions - solve the problems separately

1. *Fill in the blanks:* In a smoothly moving train, the items placed on the luggage rack are stationary relative to ____, and moving relative to ____.

[*Guide:* In addition to the item itself, choose another item as a reference...]

2. *Fill in the blanks:* From the above question, it can be seen that the motion and stillness of an object are _____, and it depends on which object is used as the standard. The object selected as the standard is called_____.

[*Guide:* The above two questions should be considered together, and the knowledge structure should be enriched after these questions are answered...]

3. Give an example that the motion and stillness of an object are relative.

[*Guide:* Show that an object is moving relative to some object and still relative to other object...]

4. When watching the TV broadcast of the 100-meter race, although the athletes are always on the TV screen, we can feel that they run very fast. Why?

[*Guide:* Focus on relative motion reference...]

5. Are the geostationary communication satellites moving or stationary? Why?

[*Guide:* Consider the problem comprehensively. It is moving relative to some objects (what objects) and still relative to some other objects (what objects)...]

6. Obviously, the geostationary satellite is rotating around the center of the earth, so how long does it take for it to make one full revolution?

[*Guide:* Other relevant factors can be associated, such as whether people on the earth are also rotating around the center of the earth. If so, how many hours does it take to make one revolution...]

7. ……

8. What conditions must be met in order for the aerial tanker to refuel the flying aircraft normally? Why?

[*Guide:* This problem is more difficult, but I believe that students can use the knowledge in the knowledge structure to solve it well. Note: There are two aircraft here, and the relationship between the two aircraft must be considered when discussing about the conditions...]

9. ……

VII. Synthesis of Various Aspects and its Comprehensive Effect

The teaching methods of various subjects must not only meet the inner needs of students, but also conform to the objective laws of the development of external things, This in itself is a high degree of integration. It can also bring a high degree of integration of "teaching" and "learning", a high degree of integration of lesson plan, textbooks, homework and examination papers, a high degree of integration of teaching methods in various subjects, and a high degree of integration of multiple teaching steps such as explanation, practice, consolidation, and review. In addition, the "low" and "high" in "seeking high in low" are highly unified, the "slow" and "fast" in "seeking fast in slow" are highly unified, the "strict adherence to procedures" and "flexibility" in teaching are highly unified, and the "educational theory" and "teaching method" are closely combined.

The efficiency and simplicity resulting from these "high degree of integration", "high levels of unification" and "close integration" All kinds of effects cannot be underestimated.

Take the "high degree of integration of teaching methods in various subjects" as an example. Teachers of all subjects serve every student according to the "four-step procedure", which is different than the traditional teaching method that students have to deal with the different requirements of different teachers. More importantly, if one subject has achieved progress, all subjects can benefit.

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VIII. Conclusions

From now on, teaching will no longer be a burden, but will become a need, a pleasure, an enjoyment, and an expression of self-worth for teachers and students.

The schematic diagram of the close integration of "educational theory" and "teaching method" is as follows:

← ← ← ← ← ← ← ← ← ← ← ← ←

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