

# The Application and Exploration of "Bidirectional Invitational" Teaching from the Perspective of Subject Core Literacy

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**Abstract:** In the new round of curriculum reform, the cultivation of core competencies has become the standard of education. This article proposes a "two-way invitation" teaching model, which is different from traditional teaching models by creating an interactive teaching environment between teachers and students. The two-way invitation between teachers and students allows different perspectives to collide and blend, stimulating students' initiative and exploration, thereby improving the effectiveness of classroom teaching and better carrying out education and teaching work to cultivate students' core literacy.

## 1. Introduction

The cultivation of students' core competencies has received high attention from the domestic and international education community, and the implementation of core competencies needs to be achieved through scientific classroom teaching methods. Currently, the "two-way invitation style" teaching perfectly matches the needs of cultivating core competencies in the subject, solving problems such as insufficient classroom communication between teachers and students, students' lack of initiative and in-depth thinking, and lack of opportunities to raise their own questions and insights on knowledge points. Therefore, it is necessary to explore the teaching mode of "two-way invitation".

## 2. Core competencies are closely related to classroom teaching

The expression of core competencies in foreign countries is Key Competencies (Key Competences), while in China it is translated as core competencies. On March 30, 2014, the Ministry of Education issued the "Opinions on Comprehensively Deepening Curriculum Reform and Implementing the Fundamental Task of Cultivating Virtue and Cultivating People", which proposed the important concept of "core literacy".<sup>[1]</sup> The core competencies of student development mainly refer to the essential qualities and key abilities that students possess to adapt to the needs of lifelong development and social development.<sup>[2]</sup>

Each subject has its own core competencies, and the new curriculum standard has specific instructions for course content and teaching modules. Each teaching module corresponds to one or more subject core competencies. So the cultivation of core competencies should be implemented in the classroom and closely

linked to teaching. And traditional teaching methods can no longer adapt to the trend of ability cultivation; Simple knowledge transfer cannot meet the requirements of improving literacy, so the reform of teaching methods is becoming increasingly urgent.

## 3. Bidirectional Invitational Teaching

Professor Ye Lan of our country has long proposed the "Origin of Educational Form Communication" theory, which provides a detailed analysis of the basic types used in school educational activities and teachers' teaching activities. Based on this, he proposed the "special communication activities between teachers and students", believing that "teaching activities cannot be called teaching activities without shared teaching experience and achievements between teachers and students. The "two-way invitation style" teaching refers to the process in which both teaching and learning parties can exert their subjective initiative in teaching activities. Teachers or students who experience meaning, value, and joy in subject teaching will convey a strong invitation to each other, making students believe in the inherent value of learning knowledge, which is to balance traditional teaching models and complete the learning process through student-centered active learning strategies. Therefore, the "two-way invitation" teaching model is not only in line with China's national conditions but also able to adapt to the characteristics of the core competencies of the subject.

Dewey proposed the educational theory of "learning by doing", which is actually "learning by doing", and this activity is a teaching process that teachers and students participate in together. In the "two-way invitation" teaching method, students raise effective questions based on practice and thinking, and throughout the teaching process, teachers and students fully communicate and actively share knowledge and information. The "two-way

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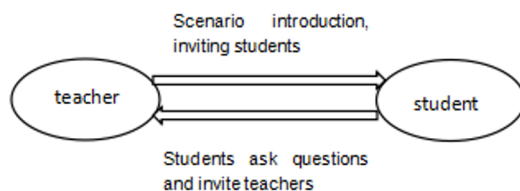
invitation" teaching conforms to Dewey's "learning by doing" approach.

Sukhomlinsky believes that a harmonious relationship between educators and learners is the key to achieving harmonious education. The "two-way invitation style" teaching requires the reconstruction of democratic relationships between teachers and students, harmonious emotions between teachers and students, and respect for students' subjectivity, which is very similar to the harmonious coexistence relationship proposed by Sukhomirinsky.

Herbart divided the teaching process into four aspects: clarity, association, system, and method. In this teaching process, there are students' self-learning under the guidance of teachers, inspiration and comprehension under teacher-student interaction, knowledge generation under the guidance of teachers, and feedback exercises based on the learned knowledge. The "two-way invitation" teaching method highlights the interaction between teachers and students, where students understand and construct knowledge based on their own methods.

#### 4. Issues and Countermeasures on Cultivating Core Literacy through "Bidirectional Invitation" Teaching

"Education is not indoctrination, but the lighting of the flame"<sup>[3]</sup>, said German educator Titoway: "The art of teaching is not to teach skills, but to inspire, awaken and encourage,<sup>[4]</sup>The relationship between teachers and students is shown in the figure 1.



**Figure 1** Invitation Relationship between Teachers and Students

#### 4.1 Constructing Teaching Scenarios and Conducting Invitational Teaching

The implementation of invitation based teaching must rely on a certain educational environment, in which students can be invited to enter a learning state and gain more knowledge. Teachers can combine life knowledge with the knowledge in textbooks to stimulate students' exploratory psychology, strengthen classroom interaction, and break through traditional educational concepts.<sup>[5]</sup> This process is equivalent to the teacher inviting students to explore together.

#### 4.2 Promote experimental exploration and carry out invitation teaching

During the learning process, students can gain more knowledge through experiments. By observing and analyzing experimental phenomena, one can validate theory, experience the joy of it, and feel the inherent value of knowledge. During the experimental process, student student communication is the most important. Through student student communication, students provide feedback on their doubts and conclusions to the teacher.<sup>[6]</sup> This process is equivalent to inviting the teacher to answer and discuss based on their own enjoyment.

#### 4.3 Invited teaching based on Cooperative learning

In the new curriculum reform, the new curriculum standards advocate for "collaboration",<sup>[7]</sup> but in reality, teachers need to guide students to carry out and establish a good atmosphere of mutual communication, inspiration, and mutual "invitation" for common progress<sup>[8]</sup>. This process can be an invitation between teachers and students or between students.

### 5. Teaching Design Case of "Avoiding Obstacles"

#### 5.1 Background

##### 5.1.1 Textbook background

Avoiding obstacles is the second part of Volume II of Primary School Programming. The first lesson of the "smart" car in the second unit of Open-source hardware. The previous unit has learned the five basic motion methods of controlling the car to move forward, backward, stop, and turn left and right. This lesson is the first lesson to make a small car "smart". The content is: After the car reads the analog values detected by the ultrasonic sensor (output), it calculates (calculates) through the Meow Bit main controller, and based on the calculation results, the car can comprehensively use five basic motion methods to avoid obstacles (output).

##### 5.1.2 Student background

The teaching object of this lesson is primary school 6th grade students, who have strong hands-on practical skills and a desire to share, and are more active in thinking. During the teaching process, ultrasonic construction will be involved, which meets the requirements of students' hands-on abilities.

### 5.2 Teaching objectives as shown in Table 1

**Table 1** Teaching objectives

Objective Level	Objective Requirements
Course knowledge	understanding of the three typical stages of input, calculation, and output
Calculation	Mastering to adjust program

ability	parameters, judgment values, and motor speed values
Learning strategies	learning to collaborate and communicate, learning to ask questions to teachers, and daring to question teachers' questions
Emotional attitude	belief in the intrinsic value of learning, and establishment of traffic safety awareness

### 5.3 Teaching process as shown in Table2

**Table 2** Teaching process

	Teacher's Activities	Student activities
Exciting Import (Teacher invites students)	In the early stage, students mastered the ability to make small cars run amok, which is very unsafe in reality! How can a small car "see" obstacles in front of it in order to ensure safe autonomous driving?	Students discuss in groups of four under the guidance of the teacher; Connect the sensor correctly to the Meow Bit expansion board; The sensor is firmly installed;
Experimental exploration	Guide students to analyze how using ultrasonic sensors can serve as the eyes of a small car; Guide students to install the ultrasonic sensor in a suitable position on the car .	Connect the sensor correctly to the Meow Bit expansion board; The sensor is firmly installed;
Cooperative learning (Students invite teachers)	Although the car can see the obstacles ahead, how can it tell the "seeing" information to the "brain"? How does the 'brain' process this information? 1. Provide basic routines that at least include controlling the motor to move forward, stop, reverse, turn left, and turn right; 2. Use Kittenblock's ultrasonic building blocks to read out the values of the ultrasonic sensor, and the teacher should clearly indicate that the sensor data should be input into the main controller;	1. Use judgment blocks to compare and calculate the collected data; 2. Input the results of the calculation into the motor and control the car to stop. 3.Can a small car definitely avoid obstacles? If the speed of the car is 100 and the detection distance is 8, can the car still stop safely? If the speed is 100 and the detection distance is what, it is safe to stop?
summarize	1. Teachers provide classroom problem-solving and summarize sublimation themes. 2. Find a safe stopping distance at a speed of 100 through testing; 2 .Determine the relationship between speed and detection distance through experiments, and establish traffic safety awareness.	Students share the gains from this lesson

### 5.4 Reflective analysis

By adopting a "two-way invitation" teaching method, the teacher provides clear discussion questions to guide students to think, and concludes that ultrasonic sensors can serve as the "eyes" of small cars; The questions discussed in the group can refer to 1. What functional sensors do cars need to use? 2. Is this sensor outputting analog or digital quantities?

For complex hardware courses like 'Avoiding Obstacles', there is a high demand for teachers' personal

abilities, not only requiring excellent teaching skills but also the possibility of many uncertain unexpected situations occurring at any time in the classroom. This requires teachers to make significant improvements in programming, hardware knowledge, and hands-on skills. Otherwise, if they encounter problems and are unable to answer them in a timely manner, it will seriously affect the teaching progress and teacher image.

Teachers should continuously improve their professional literacy and strengthen their knowledge reserves in other subjects. During class, they should not

be overwhelmed by students' questions, which will damage their image and reduce their charm in the minds of students. As a result, students will gradually lose interest in the subject taught by the teacher. Teachers should appropriately apply pre set texts and combine them with new examples in the "two-way invitation" teaching, Extend the depth of the entire course<sup>[11]</sup>.

## 6. Strategy and Summary

### 6.1 Clarify the direction of invitation teaching and strengthen mutual invitation between teachers, students, and students

In the process of conducting invitation based teaching, teachers need to have a comprehensive understanding of the teaching content, and invite students to teach based on the teaching content to ensure the effectiveness of the invitation, in order to fully leverage the advantages of teacher student invitation.

### 6.2 Enhance the innovation of invitations and enable students to develop new perspectives on thinking

Innovative ability is a necessary ability for students in the new era, and inviting innovative development can effectively enhance the thinking ability of the classroom. Teachers should fully respect students' ideas, encourage them to express their ideas bravely in the classroom, express their ideas, and give every student the space to speak freely.

In summary, the "two-way invitation style" teaching between teachers and students is very important in the teaching process. Teachers should actively improve their professional literacy,<sup>[9]</sup> attach importance to the significance of "invitation style" teaching, reduce the emphasis on the preset and single nature of "two-way invitation style", and focus on the comprehensive development of students. By conducting "two-way invitation style" teaching, creating good teacher-student interaction scenarios, and establishing good teacher-student relationships, students can truly become the center of the classroom, actively learn in a relaxed state, recognizing the intrinsic value of learning and achieve true quality education. At the same time, emotional and psychological intervention should be carried out according to the specific situation of students to avoid negative learning emotions, and timely guidance and encouragement should be provided to help students regain confidence and actively participate in the classroom, thereby improving teaching effectiveness.<sup>[10]</sup>

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stages and two platforms "

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