

Study of Behaviors of Teachers' Evaluation Based on Algebra Classrooms¹

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Through quantitative video analysis of four algebra classes and statistical analysis of various types of teacher evaluation behavior in the classroom teaching, we get:

- (1) Teacher evaluation behavior in classroom is close to take 1/5 of the total time of the classroom teaching, and it appears most frequently in class exercises and take the longest time;
- (2) There are many forms of teacher evaluation behavior in classroom, and most of the behaviors are positive assessment;
- (3) Recognition evaluation is relatively conservative in a single form without losing fairness;
- (4) Classroom assessments of teachers' behaviors are primarily concerned about students' knowledge and skills mastery, and it is less involved in student feelings, attitudes and behaviors;
- (5) The correct teacher evaluation behavior in classroom will inspire students to create internal motivations; and
- (6) The correct teacher evaluation behavior in classroom can stimulate the potential of students.

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1. INTRODUCTION

Classroom evaluation behavior is carried out to collect, analyze, and use students' learning information, in order to judge students' learning situation, get to know teaching result and promote effective learning of students. Positive evaluation behavior plays an important guidance and incentive effect on teaching activities; It will make the teaching process more perfect and promote the development of students more effectively. Bloom, Hastings & Madaus (1971) proposed three evaluations of formative, summative and diagnostic assessment. In the teaching process, making assessments of the students' learning behavior is an essential ingredient in the classroom instruction. The teacher evaluation behavior occurs in the teaching process and it refers to making language judge about the learning performance of students in classroom, such as answering questions, finishing assignments, obeying the rule and developing learning habits. The evaluation languages consist of verbal language and posture language.

From the recent situation of a lot of classroom teaching, we learn that many teachers pay little attention to the evaluation on students' classroom learning behavior in blind and optional state. Although teacher's assessment is occurring throughout each link and every step of teaching in classroom instruction, teachers are used to considering how to implement the teaching contents and adopting what kind of teaching means to achieve teaching goals instead of thinking about choosing which evaluation methods and using what kind of evaluation strategies to make positive effects in class when they prepare lessons. Therefore, it is necessary to study the teachers' evaluation behaviors in classroom teaching.

Ye & Si (2011) studied the teachers' language of instruction based on a video of the algebra classrooms. And in this paper, we will study behaviors of teachers' evaluation based on algebra classrooms.

2. OBJECTIVE

Through analysis of four video algebra classes, the research generalizes the basic types of teachers' evaluation behaviors on students' study in algebra class of middle school and the proportion of various evaluation behaviors in classroom teaching in order to summarize if the evaluation behaviors on the student's learning are effective so as to improve teaching quality.

3. METHOD

3.1. Participants

We did the experiment with taking lessons, evaluating lessons and taking videos for three years in two middle schools in Hang Zhou. We chose four teachers and their two different lessons for analysis. There are two teachers from middle school A of Hang Zhou: teacher A and B. Their teaching contents both are the Basic properties of Inequality (in section two of chapter five, first volume of eighth-grade, Zhejiang Publishing Houses edition). The other two are from middle school B of Hang Zhou: teacher C and D. Their teaching contents both are the Multiplication and Division of Fraction (in section two of chapter seven, second volume of seventh-grade, Zhejiang Publishing Houses edition).

They are both young teachers with three to four years' teaching experience; they have new teaching ideas and work hard. The performances of their students are in general levels in their schools. Teachers and students are both adapted to the video environment due to they have participated in the activities for a long time, and our research can keep a normal teaching state and have a certain research significance.

3.2. Method

The TIMSS Video Study and Video Case Study (*cf.* Leung, 2005) will be used for reference in this study. This subject adopts the video analysis method. Through field observation and video shooting, we record four classroom instructions. Teachers' evaluation behaviors on students' study are done code analysis and teachers' evaluation behaviors are classified by watching video repeatedly. Here are some conclusions and enlightenments. Specific procedures are as follows:

- Step 1: Attend a class and make video, then communicate with teachers and collect relevant materials;
- Step 2: Record the whole class, including all activities of the teachers and students; record corresponding time when each activity behavior happened.
- Step 3: Classify the teacher evaluation behaviors; calculate the corresponding time and frequency of teachers' every evaluation behavior.

3.3. Data collection

We use quantification analysis on the four lessons after taking videos and statistics. The statistics and comparison apply to each evaluation behavior of teachers in every lesson, including the participant time and in total percentage of classroom teaching time.

3.4. Coding and analyzing

Teachers often use evaluation to control the teaching process. There are different classifications in evaluation behavior, for example, evaluation can be divided into positive evaluation and negative evaluation.

In this paper, there are two main categories of teachers' evaluation behavior: dominant evaluation and recessive evaluation. Dominant evaluation refers to the behavior which can be found directly by observation, while recessive evaluation refers to that teachers keep his assessment and turn to the next study task, and the following task is very similar to the previous one. Sometimes teachers use the student responses to re-form a subsequent question. This is an obvious kind of strategy and it makes teacher control class structure continually.

According to the performance of evaluation, we divide dominant evaluation into:

- Written evaluation: This is an important evaluation mode that teacher uses in class. When students answer correctly, a teacher will write it on the blackboard.
- Positive evaluation: Teacher applies praising words and postures to evaluate.
- Oral-repeated evaluation: It depends on teachers' tone that a teacher repeats a student's answer and the evaluation is positive or negative.

It depends on the content that a teacher explains the response and the evaluation is positive or negative. A teacher explains the answer further after praising students, which is a praising evaluation, because teacher has made a positive evaluation. In the same way, oral-repeated evaluation is a positive evaluation, too. Here we won't evaluate the questions which a teacher and students both respond to together, for teacher attend it too.

4. RESULTS AND DISCUSSION

4.1. Teachers' evaluation behavior in classroom is close to take 1/5 of the total time of the classroom teaching, and it appears most frequently in class exercises and take the longest time.

The teachers' evaluation behavior on students' behavior in the teaching activities is a timely feedback, and the appropriate classroom evaluation not only can help students get to know their knowledge mastery in time, but also can encourage them take part in class teaching activities. Though teachers pay little attention to evaluation behavior, table 1 tells us that classroom teaching evaluation behaviors are from the beginning to the end from introduction to summary. In the segment of class practice, evaluation behavior appears the most times and takes the longest time of a lesson. In each class, evaluation be-

havior happens about 89.25 times, which takes 18.88% of the total time about one fifth of a lesson. And what we can see from Figure 1 is that the time evaluation behavior takes ranges from 15% to 25% in the four classes.

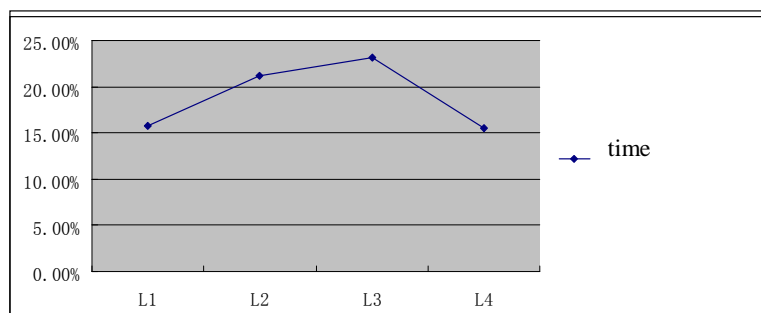


Figure 1. Time percentage comparison of a teacher's evaluation used in four classes (L1–L4 represent the four classes)

Table 1. Time and times of every sector of teachers' evaluation behavior in four classes

Teaching segments	Evaluation styles		Teachers' evaluation					Time	Percentage of time
	Positive	Negative	Recessive	Dominant					
				Written evaluation	Positive evaluation	Oral-repeated evaluation			
Introduce	3.25	0.25	2	0	0.75	0.75	20.5	0.83%	
Explaining new knowledge	16.5	1.25	9	1	4.25	3.5	99	3.95%	
Explain examples	21.25	1.25	7.25	5.25	5.5	4.5	94.5	3.85%	
Practice	35.25	5.75	19.25	2	11.75	8	241.25	9.72%	
Summarize	3.25	1.25	2	0	1	1.5	13.25	0.54%	
Total	79.5	9.75	39.5	8.25	23.25	18.25	468.5	18.88%	

Table 1 shows that teachers are favor of positive evaluation, and use all kinds of dominant evaluation and recessive evaluation at the same time. Teachers' evaluation behavior has become an indispensable part of class teaching activity. The new curriculum evaluation concept believes that: "That evaluation is as important as the teaching process is a main and essential part of teaching-learning activity in every step teaching activity." If teachers make good use of evaluation and optimize class teaching evaluation behavior, students will love to participate in lesson.

4.2. Teachers' evaluation behavior in class is relatively objective. There are many forms of teacher evaluation behavior in classroom, and most of the behaviors are positive assessment.

In the research process, we divide evaluation behavior into positive evaluation and negative evaluation. Even if teachers don't point out that the answers are right or wrong, students can judge it from teacher's posture, tone and following contents. Figure 2 shows us that positive evaluation behaviors are much more compared with negative ones.

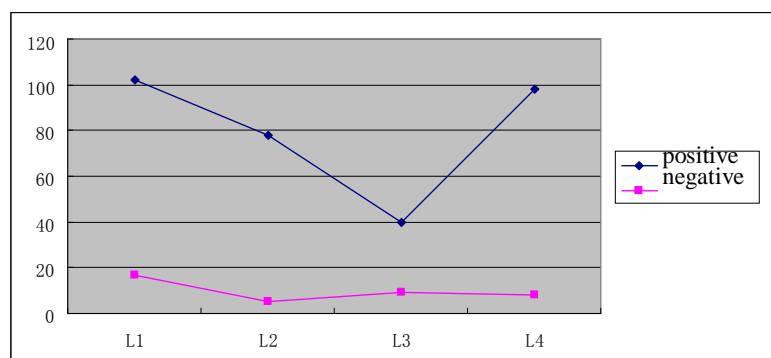


Figure 2. The comparison t of positive evaluation and negative evaluation in four classes

Positive evaluation can be divided into recessive evaluation and dominant evaluation. As is shown in figure 3, teachers use recessive evaluation and dominant evaluation at the same time in class, and the recessive ones are as many as the dominant ones.

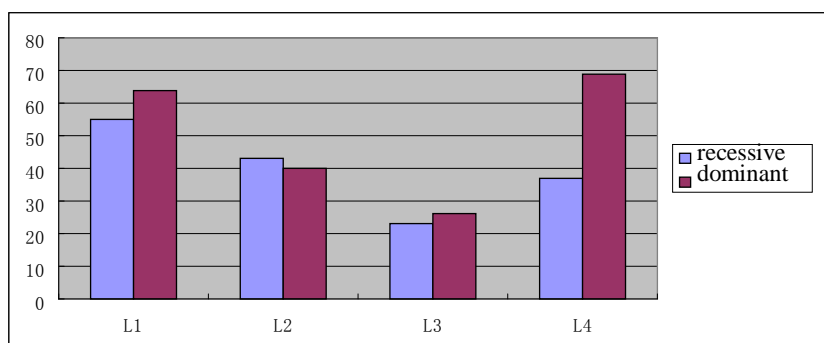


Figure 3. The comparison t of recessive evaluation and dominant evaluation in four classes

Teachers always evaluate them recessively instead of making comments on them directly regarding to student's answers, for example, teachers enquire students on the basis

of their answers, or ask them in reply, etc. By extending contents, teachers inspire and enlighten students and arouse students' learning interest. In the interaction of teachers and students, students get a deep comprehension of knowledge. Diesterweg, a German educator, said: "The essence of education is not the ability to teach, but to inspire, awaken and inspire." And the recessive evaluation is a good way for teachers to inspire students exploring knowledge itself.

As is shown in Figure 4, positive evaluation is the most one in dominant evaluation, but not the most dominant one. Furthermore, teachers should often put down student's answers on the blackboard and reiterates the answers orally, especially the last method that not only can confirm their answers but also can play act on emphasize knowledge.

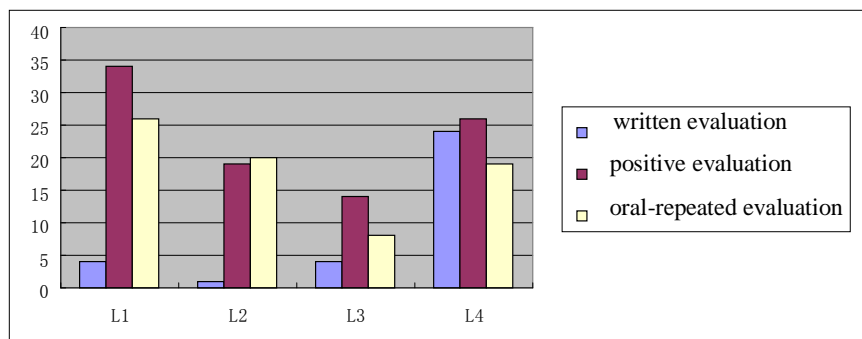


Figure 4. The comparison chart about dominant evaluation in four classes

Negative evaluation mainly appears in recessive evaluation and dominant evaluation which reiterates students' answers orally. When students answer the questions incorrectly, teachers usually point out the mistake by means of recessive evaluation to help students find errors instead of speaking it directly which guides students to fill a vacancy for the leak findings. Moreover, teachers reiterate student's answers with different intonation that give students an opportunity to think again.

4.3. Teachers' recognition evaluation is relatively conservative in a single form without losing fairness.

As an old saying goes, goodwill speeches are as warm as clothes. Teacher's personalized positive evaluation can stimulate intrinsic motivation of students and arouse students' activity in thinking effectively. But statistics show that teachers are used to giving single positive evaluation. As is shown in the figure 5, each kind of positive evaluation can only be found a few times. Most teachers often use "good" or "very good" to praise students shortly. After that, teacher brings students into the next question and with the same step,

which can make the teaching process compact. If teachers point out the desirable places of students' answers when they make comment on them and give them some time to think about, we perhaps will find more effective positive evaluation. Of course, the single form of presentational evaluation also reflects that teacher's evaluation is relatively objective.

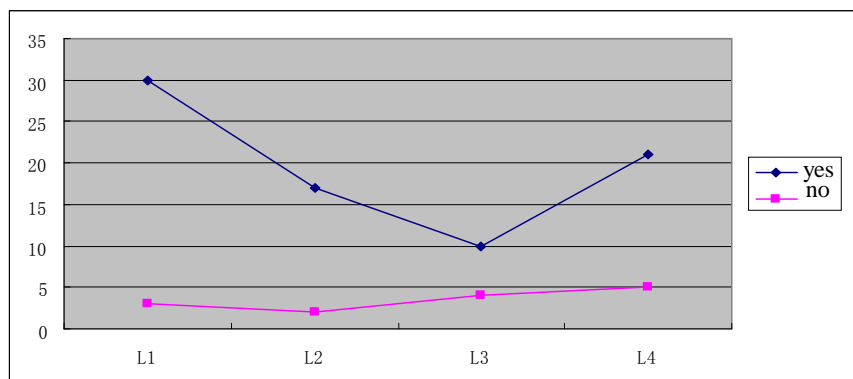


Figure 5. The comparison of positive evaluation forms in four classes

4.4. Classroom assessments of teachers' behaviors are primarily concerned about students' knowledge and skills mastery, and it is less involved in student feelings, attitudes and behaviors.

Mathematical curriculum standards (Ministry of Education of People's Republic of China Ministry of Education, 2001) point out that teachers should pay attention to students' learning results, process, as well as emotion and attitudes that students show in mathematical activities when they teach mathematics. As is shown in figure 6, teachers are in the influence of the traditional teaching and examination system, whose evaluation behavior aim at the knowledge and skills. In the classroom, Teachers are used to evaluating about students' answers and assignments. Few evaluations are aiming at the mental states or learning habits of students, such as teachers evaluate the tone and sound when students reply the questions.

Teachers use the way of asking students questions to dominate the whole class and analyze students' class behaviors by evaluating students' questions and homework, which can help students to fill a vacancy leak and develop the new knowledge. However, teachers always ignore the training for emotions, attitudes and values when they put eyes on the specific knowledge itself.

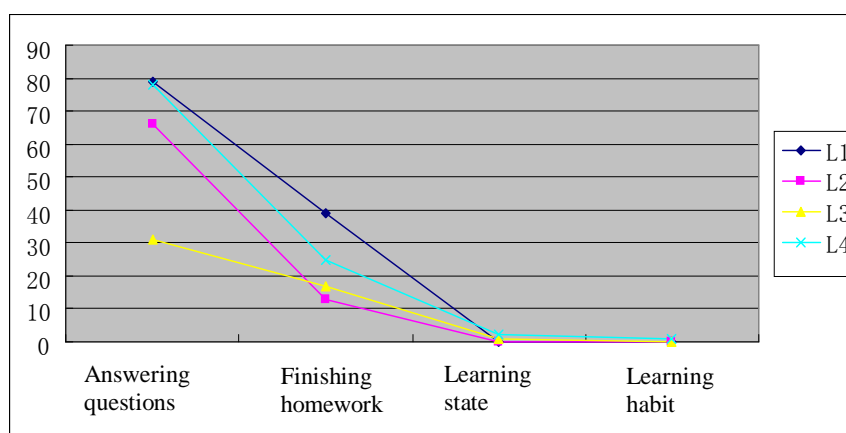


Figure 6. The comparison of evaluation reasons in four classes

4.5. The correct teacher evaluation behavior in algebra class will inspire students to create internal motivation.

In algebra class, teachers always take about a fifth of time in evaluation. We find that, correct evaluation can inspire students' psychological motivation, help them open a window of thinking, improve their learning interest and confidence, and encourage them. Correct evaluation can meet the needs of students' self-esteem, rouse their positive emotional experience, and promote them to put plans into operation. What's more, correct evaluations optimize the teaching process as well as create more lively class.

At the same time, teachers should respect and understand students and keep their proper pride. Self-esteem is important for student, which is one of the main features of personality. However, incorrect evaluations make students feel self-abased apathy, even pessimism and rebellious reactions.

4.6. The correct teacher evaluation behavior in classroom can stimulate the potential of students.

Teachers use correct evaluation to express their expectations to students that teachers look forward to students and believe them. Teachers build a motivational climate by praising students in proper time, and it also can stimulate them produce new study pursuits continually. In this research, we find the positive evaluations are always composed by recessive evaluations and all kinds of dominant evaluations. Recognizing evaluations are in single styles. There is less emotion or faith encouragement except for encouraging students from internal knowledge inquiry. If teachers can grasp the cognitive characteristics and personality traits of every student accurately, and take proper expectations, there

may be good self fulfilled effects. The experiments show that, high expectations are concerned with outstanding achievements, while low expectations are concerned with underachievement. The high expectations showed by teachers are giving students encourage so that they can take good use of their potential in taking success.

Teachers not only should speak with their mouths, but should use their eyes, hands, and hearts. Teacher's gestures, facial expressions and action can transfer information. When teachers change different information transmission channels, it can assist enhance the role of language.

There are a lot of emotional messages in the evaluation tone of teachers in the class. So teachers should pay attention to the evaluation language with appropriate contents and distinctive voice, which enables students to obtain the most sincere and direct feelings, in order to encourage and inspire them.

In short, the teaching evaluation in class is one of the most common ways to evaluate, which can be used in arousing students' spirits and energy. At the same time, teachers should pay attention to not only the results, but the process. The practice shows that if teachers give positive and objective evaluation to students with cultivating their interest and strengthening their self-understanding, it can encourage students to put it into action. At the same time, we can find our evaluation has achieved a perfect realm.

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