

# Analysis of Ideological and Political Teaching Behavior of Quality Course based on Video Analysis

Ge Chen, Jianqiang Ji

National University of Defense Technology; Hunan Changsha, 410000, China.

---

## Abstract

The integration of information technology and classroom teaching has become increasingly close. As the knowledge necessary for teachers to use technology for effective teaching, TPACK has become a new and operable mode that can integrate information technology into the teaching process of various subjects. This article takes curriculum ideological and political teaching practice as the research object, and conducts an exploratory research on teachers' teaching behavior, TPACK structure and teaching behavior sequence. In classroom teaching, teachers should pay attention to the "dominant-subject" teaching structure, pay attention to students' learning activities, and enhance teachers' technical and subject teaching knowledge, subject and integrated technical teaching method knowledge, and integrated technical subject teaching knowledge ability, so as to improve teaching efficiency. The research found that the question-response-feedback-explanation mode, explanation-exercise/demonstration-display work-explanation mode, and silence-guidance-response mode are several more significant behavioral sequences, which are based on teacher behavior and teacher knowledge level. Angle puts forward relevant suggestions.

## Keywords

Video Analysis; Ideological and Political Teaching; Analysis of Teaching Behavior.

---

## 1. Introduction

The research of information technology on classroom teaching behavior has attracted the attention of academic circles [1]. The deep integration of information technology and classroom puts forward new requirements for teachers' ability. TPACK [2], necessary for effective teaching using technology as a teacher. Increasingly, it has become a new operational mode that can integrate information technology into the teaching process of various disciplines [3]. Has attracted the attention of researchers in the field of educational technology and applied it to the study of learning behavior analysis [4-6]. Through combing the research on classroom teaching behavior and TPACK structure at home and abroad, this paper probes into the classroom teaching behavior structure of ideological and political teachers in colleges and universities, the TPACK structure [7] presented in the teaching behavior and the correlation between them, and analyzes the lag sequence characteristics of teachers' teaching behavior [8,9]. This paper provides the self-analysis mechanism of classroom behavior [10] and TPACK structure for teachers according to the actual situation of curriculum ideological and political in China, and puts forward the development strategy TPACK curriculum ideological and political teachers.

## 2. Status

At present, there are many problems in the classroom teaching of ideological and political courses in colleges and universities, such as insufficient attraction, weak pertinence, single teaching method and insufficient interaction. The national big data strategy provides a better solution for improving the effectiveness of ideological and political teaching in colleges and universities in the new era [11]. By

combing the relevant literature and policies, it is found that the research results of evaluating the ideological and political effect of college curriculum based on TPACK structure are basically blank. Based on this, this paper analyzes the value advantages of TPACK structure to promote the reform and practice of ideological and political teaching in colleges and universities, and adopts TPACK structure to construct the intelligent classroom teaching mode of ideological and political courses in colleges and universities, and applies it in teaching practice. In order to better promote the reform and innovation of curriculum ideological and political.

### 3. Issues

In the context of the epidemic, The influence of education globalization and information network on curriculum teaching is more and more profound, The contradiction between the unified dominant teaching mode, the single dimension teaching content, the scattered practice place and the diversity of college students' cognition and the singularity of teaching evaluation means, Is the current curriculum ideological and political facing the main dilemma. To achieve the deep integration of information technology and classroom, First of all, to build a knowledge framework that can help teachers integrate information technology with the classroom, Guide teachers to use information technology effectively and reasonably in teaching and improve teaching effect. Currently, TPACK theory has also become one of the important research directions in the field of international educational technology, As an auxiliary means of TPACK measurement, Is a qualitative study, The results are objective [12]. By using the video analysis method [13], this study explores the characteristics of the behavior [14] of teachers and students in the classroom, the frequency and duration of each element in the TPACK framework [15], and the lag sequence of teachers' behavior.

Table 1. TPACK - Based Teaching Behavior Analysis System

| Dimensions                  | Classification codes | Classification content                                    | Type                                     |
|-----------------------------|----------------------|---|--|
| Teaching Behavior Dimension | 1                    | Acceptance and positive feelings                          | Teacher control behavior                 |
|                             | 2                    | Praise or encouragement                                   |  |
|                             | 3                    | Acceptance or use of student claims                       |  |
|                             | 4                    | Questions   |  |
|                             | 5                    | Explanation   |  |
|                             | 6                    | Give instruction or instruction                           |  |
|                             | 7                    | Criticize or uphold authority                             |  |
|                             | 8                    | Practical activities with media or teaching aids          |  |
|                             | 9                    | Interaction, promotion or emphasis                        | Teachers and students act simultaneously |
|                             | 10                   | Passive statements by students                            | Student control behavior                 |
|                             | 11                   | Students' initiative                                      |  |
|                             | 12                   | Students give speeches or presentations                   |  |
|                             | 13                   | Student collaboration                                     |  |
|                             | 14                   | Students' self-help use of educational resources          |  |
|                             | 15                   | Student Creation  |  |
|                             | 16                   | Student Thinking  | Uncontrolled behavior                    |
| 17                          | Silence or confusion |   |  |
| TPACK dimensions            | CK                   | Subject Teaching Contents                                 | Core elements                            |
|                             | PK                   | Knowledge of teacher teaching methodology                 |  |
|                             | TK                   | Technical knowledge                                       |  |
|                             | PCK                  | Knowledge of subject teaching                             | Composite elements                       |
|                             | TCK                  | Integration of technological knowledge of subject content |  |
|                             | TPK                  | Pedagogical knowledge of integrated technologies          |  |
|                             | TPACK                | Teaching knowledge of integrated technology               |  |

### 4. Design and implementation of research

The teaching classroom video selected in this study comes from the excellent classroom video of educational department level in the national educational resources public service platform —— the "one teacher, one excellent course" platform. Selected 6 courses of ideological and political quality

classroom video analysis. The six selected classes are taught in new classes and are distributed in three grades, with teachers aged 28-35. Each class teacher uses the digital media, the teaching environment is the modern information technology classroom, each class time is about 40 minutes, the concrete time allocation is decided by the teaching teacher.

According to the classification and coding of classroom behavior teaching media and the analysis system developed by Yang Zhu, this study finally forms the classroom teaching behavior analysis system. Then according to the developed coding table, the selected high-quality classroom teaching video is coded and analyzed. With the help of Excel and Echarts, the recorded data are sorted and visualized to obtain the characteristics of classroom teaching behavior and TPACK elements. The lag sequence characteristics of classroom behavior are obtained by using GSEQ software. Finally, the research results are analyzed and discussed, and the characteristics of ideological and political classroom in high-quality courses are obtained.

#### 4.1 Research tool development

The classroom behavior dimension in classroom behavior teaching media classification coding and the TPACK dimension in ETIAS are merged into table 1, so the coding scale of this study is divided into two dimensions: teaching behavior dimension and TPACK dimension. This study adopts the recording method of continuous state unit to make the teaching behavior complete and more convenient to record and analyze.

The classroom behavior dimension includes four types of behavior, which are teacher control behavior, teacher-student control behavior, student control behavior and uncontrolled behavior. There are 17 kinds of behavior codes, which can cover the teaching and learning behavior that occurs in the whole classroom. The behavior coding table can be applied to the analysis of mathematics classroom.

##### Design of Record Form of Classroom Teaching Behavior

This study used classroom teaching behavior coding standard to analyze classroom video, and recorded the data in each line of the table in the video recording table (Table 2), which recorded the start time, duration, class behavior classification coding, TPACK element classification coding and remarks. The class behavior and TPACK can be clearly and concisely recorded. Through the table record can clearly and quickly understand the process, method, state and so on of classroom teaching practice.

Table 2. Video Continuity Unit Record

| Continuous state unit serial number | Duration | Classification and coding of classroom behavior | TPACK Element Classification Code | Remarks |
|-------------------------------------|----------|---|-----------------------------------|---------|
| 1                                   |          |   |                                   |         |
| 2                                   |          |   |                                   |         |
| 3                                   |          |   |                                   |         |
| ...                                 |          |   |                                   |         |

#### 4.2 Data collection and collation

In order to ensure the reliability and validity of the study, the researchers selected two coding sources to encode all the selected samples twice. After analyzing, coding and recording all sample videos for the first time, check the consistency of coding, deeply explore the controversial teaching units and ask experts to carry out authoritative evaluation. After obtaining the consistency results, enter the second coding, get the consistent data results, and ensure the reliability and validity of the research.

#### 4.3 Hysteresis analysis tools

The teaching behavior and the sequence of TPACK elements in the classroom are analyzed GSEQ using the lag sequence analysis tool after encoding and analyzing the classroom video. according to the lag sequence analysis theory, if the Z-score > in the residual table (Table 3) is 1.96, it shows that the behavior path is significant. accordingly, the values with Z-score value greater than 1.96 are

screened in the resulting residual table for highlighting, as shown in table 3, and the behavior transformation diagram is drawn. and the analysis results are obtained according to the final transformation diagram.

Table 3. Residual tables after behavior conversion adjustment (Z -scores)

|    | 1     | 2     | 3     | 4     | 5     | 6     | 7 | 8     | 9     | 10    | 11    | 12 | 13    | 14 | 15    | 16    | 17 |
|----|-------|-------|-------|-------|-------|-------|---|-------|-------|-------|-------|----|-------|----|-------|-------|----|
| 1  | -0.11 | -0.13 | -0.66 | 0.86  | -0.49 | 1.54  | 0 | -0.2  | -0.15 | -0.43 | -0.66 | 0  | -0.07 | 0  | -0.21 | -0.15 | 0  |
| 2  | -0.13 | -0.16 | -0.81 | 0.38  | 1.27  | 1.03  | 0 | -0.24 | -0.18 | -0.52 | -0.81 | 0  | -0.09 | 0  | -0.26 | -0.18 | 0  |
| 3  | -0.66 | -0.81 | -4.09 | 8.26  | 2.27  | -1.42 | 0 | -1.24 | -0.93 | 0.35  | -4.12 | 0  | -0.46 | 0  | -1.33 | -0.93 | 0  |
| 4  | -0.8  | 0.38  | -4.96 | -6.02 | -3.32 | -1.65 | 0 | -1.5  | 1.22  | 2.14  | 14.54 | 0  | -0.56 | 0  | -1.61 | 2.4   | 0  |
| 5  | -0.5  | -0.61 | -3.11 | 4.08  | -1.79 | 5.29  | 0 | 1.49  | -0.71 | -2.02 | -2.7  | 0  | -0.35 | 0  | -1.01 | -0.71 | 0  |
| 6  | 3.67  | 1.05  | -3.41 | -3.04 | 5.52  | -2.87 | 0 | 0.1   | -0.78 | 4.6   | -2.22 | 0  | 2.59  | 0  | 6.34  | 0.72  | 0  |
| 7  | 0     | 0     | 0     | 0     | 0     | 0     | 0 | 0     | 0     | 0     | 0     | 0  | 0     | 0  | 0     | 0     | 0  |
| 8  | -0.2  | -0.24 | -1.24 | -1.5  | 1.53  | 3.46  | 0 | -0.38 | -0.28 | -0.8  | -1.25 | 0  | -0.14 | 0  | 2.19  | -0.28 | 0  |
| 9  | -0.15 | -0.18 | -0.93 | 1.22  | 2.54  | -0.79 | 0 | -0.28 | -0.21 | -0.6  | -0.94 | 0  | -0.11 | 0  | -0.3  | -0.21 | 0  |
| 10 | -0.43 | -0.52 | 8.84  | -1.88 | -1.37 | -0.55 | 0 | -0.8  | -0.6  | -1.72 | -2.68 | 0  | -0.3  | 0  | -0.86 | -0.6  | 0  |

### 5. Analysis of findings

According to the above analysis, several behavioral sequences with high significance in the six classes are as follows:

#### 5.1 Question - answer - feedback - explanation mode

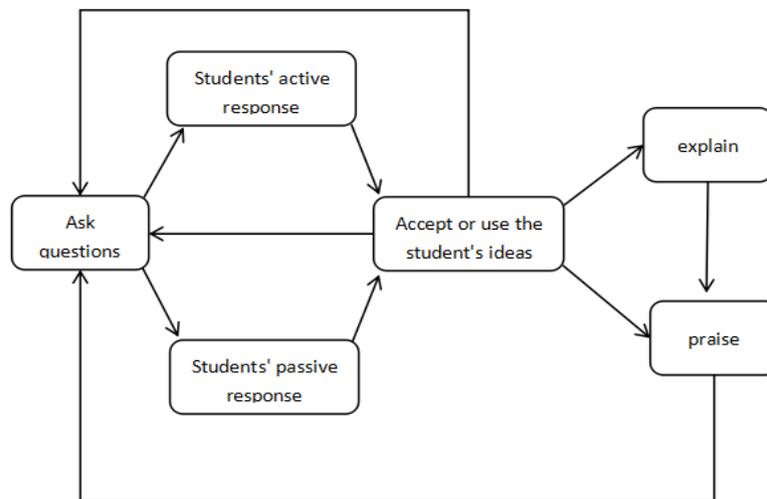


Figure 1. Question-response-feedback-interpretation pattern

This model is the main behavior model in classroom teaching. After the teacher asks the question, the student raises the hand to answer or the teacher calls a student to answer, after the student answers, the teacher will give the student feedback, namely accepts or uses the student's opinion; after the teacher gives the feedback, generally has three kinds of behavior, praises the student, continues to ask the student, explains the knowledge point to continue to ask the question, until the student has mastered this teaching knowledge.

#### 5.2 Presentation - practice / presentation - presentation - presentation

This model is the main behavior model in classroom teaching. After the teacher asks questions, the student raises his hand to answer or the teacher calls a student to answer, and after the student answers, the teacher gives the student feedback, that is, to accept or use learning after the teacher gives feedback, there are generally three kinds of behavior: praise the student, continue to ask the student, know continue to ask questions until the students have mastered this teaching knowledge.

### 5.3 Presentation - Practice / Presentation - Presentation - Presentation

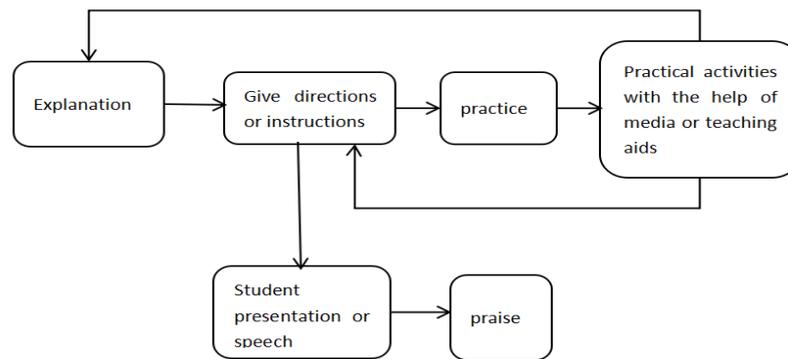


Figure 2. Explanation - Practice / Demonstration – Presentation

This model mainly describes the learning of students after the teacher explains a certain knowledge point in the teaching process to test the situation, students will be instructed to conduct classroom exercises and present the exercise questions on the screen or use them multimedia is distributed to each student iPad, After the student exercises, the teacher usually selects one or two schools students' results are displayed and students explain their problem-solving process and ideas, and finally teachers praise.

In the classroom, students' subjectivity is more embodied, and more teaching time and activities are given to students through learning student exercises and student presentations teachers can also understand the students' learning situation and adjust it in time according to the learning situation follow-up teaching activities.

### 5.4 Silence - Guidance - Response Mode

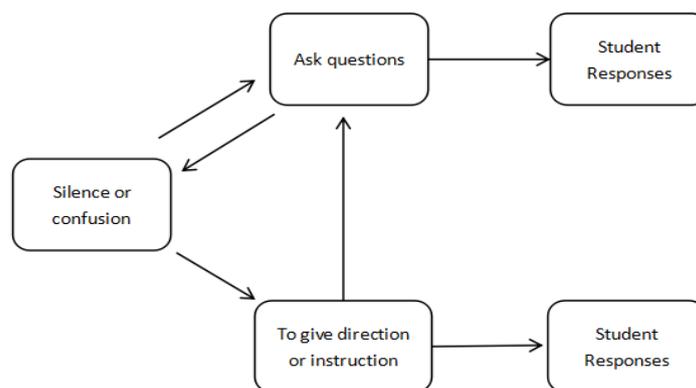


Figure 3. Silence -Guidance /Question -Response Mode

Silence and confusion in the classroom are allowed, and teachers should be able to deal with them in time. The behavior pattern is that when silence arises because the teacher is too difficult to ask questions, the teacher will first continue to ask questions, guide students to think, or guide students. If the student is still silent, ask another student to answer.

## 6. Findings and prospects

### 6.1 Findings

This study based on video analysis, developed a TPACK based classroom teaching behavior analysis system, the classroom teaching behavior coding, from the classroom teaching behavior, TPACK,

classroom teaching behavior sequence of three aspects of the selected junior high school high quality mathematics teaching video analysis. According to the analysis results, the following main analysis conclusions are obtained.

First, the most important teaching behavior in the classroom is the teacher's question, the student's response, the teacher's explanation embodies the teacher's leading role, is very important in the classroom teaching. The combination of traditional technology and digital technology and the comprehensive use of other teaching aids will make the explanation more vivid. The experiment proves that teachers' questioning and explaining behavior, if involved TPACK, means that teachers can skillfully use TK, PK and CK, and then help teachers to better realize the main behavior in teaching.

Secondly, in the teacher-led and student-oriented teaching structure, the initiative of learning is from teacher to student, which must rely on the teacher's instruction behavior. According to the research results, the instruction behavior in the classroom can make the classroom teaching more smooth, compact and smooth, thus reflecting the teacher's solid TPACK knowledge structure. The high level of this index helps to promote the students to become the main body of teaching.

Third, the classroom environment in this study is modern multimedia classroom, teachers can use modern technology to assist teaching reasonably and flexibly. Efficient statistics and analysis of students' answers to classroom questions, and timely feedback and adjustment of teachers' teaching behavior can make students better perceive their learning performance. Therefore, with the help of digital technology to assist teaching, can improve the efficiency of classroom teaching and learning, so teachers should constantly improve the level of TK use, as well as the ability to integrate TK into general teaching behavior.

Fourth, the application of technology in the classroom is not as extensive as expected, some classroom teaching is still carried out by oral expression, in which teachers' PK, PCK, such as teacher praise students, oral questioning students, issuing instructions, etc. These behaviors are also very important in classroom teaching, so it is also very important to improve teachers' PK, PCK.

Fifth, silence and confusion are accidental and allowed in class, and teachers generally take silence and corresponding measures. In this study, the silent or chaotic behavior in the classroom is guided by the teachers from easy to difficult. If the students are still silent, please ask other students to answer and try to ensure the classroom fluency.

Sixth, in ideological and political courses, teachers should guide students through (circular) questioning, teachers should grasp the difficulty of the problem and the relationship between multiple problems should be progressive, with certain difficulties can cause students to think, but the knowledge involved should be in the students' proximal development area, students can get more room for progress after thinking, which requires teachers to have enough CK, PK and PCK.

to sum up, this study takes the course ideological and political teaching practice as the research object, and makes an exploratory study on teachers' teaching behavior, TPACK structure and teaching behavior sequence. In classroom teaching, teachers should pay attention to the teaching structure of "leading-subject", attach importance to students' learning activities, improve teachers' technical and subject teaching knowledge, subject and ability of integrating technical teaching method knowledge and integrating technology teaching knowledge, so as to improve teaching efficiency.

## **6.2 Teacher Development Strategy Recommendations**

### **6.2.1. Advice from the perspective of teaching behaviour**

Through data analysis, we can see that the classroom of information technology integration presents the teaching structure of "teacher leading, student main body". Teachers should carefully design the teaching structure before class and arrange the technical assistant teaching reasonably in the teaching link. Do not advocate "full hall irrigation", in addition to leading to new knowledge points, teachers should also assist students to learn. Advocate question-answer, instruction-response and interactive teaching behavior, and give feedback and praise in time, strengthen the response behavior, for difficult problems, we can use the method of circular questioning, from shallow to deep to guide students to

think; At the same time, teachers should pay attention to students demonstrate active behavior and make it become the main body of the classroom.

### 6.2.2. Suggestions from the perspective of teachers' knowledge level

The use of digital technology can not only make the classroom more vivid, improve students' interest in learning, but also assist teachers in teaching and students' learning, and save time cost. However, this technology requires teachers to have higher information literacy, including teaching, technical and teaching knowledge and integration, to optimize the teaching effect. Therefore, teachers should constantly improve TPACK knowledge structure and apply it flexibly to teaching behavior.

## References

- [1] Part II Development Tasks. Ten-year Development Plan of Educational Informatization (2011-2020)[J]. China Educational Informatization, 2012(8):57-66.
- [2] Koehler, M. J., & Mishra, P. (2016). What happens when teachers design educational technology? the development of technological pedagogical content knowledge. *Journal of Educational Computing Research*, 32(2), 131-152.
- [3] Ho Ke Kang. (2012). Tpack —— the new development of the research on the ways and methods of information technology and curriculum integration in the United States (below). *Audio-visual education research* (6), 47-56.
- [4] Yang Xianmin, Wang Huibo, Li Jihong. Application of lag sequence analysis in learning behavior analysis [J]. *China Audio-visual Education*, 2016(2):17-23.
- [5] Sackett G. P. (Ed.). *Observing Behavior: Theory and applications in mental retardation* (Vol.1)[M]. Baltimore: University Park Press, 1978.
- [6] Bakeman R. *Observing interaction: An introduction to sequential analysis*[M]. Cambridge: Cambridge university press, 1997.
- [7] Koehler M, Mishra P. What is technological pedagogical content knowledge (TPACK)? [J]. *Contemporary issues in technology and teacher education*, 2009, 9(1): 60-70.
- [8] Getzels J W, Thelen H A. A conceptual framework for the study of the classroom group as a social system [J]. *The social psychology of teaching*, 1972: 17-34.
- [9] Hansen, J. *Teachers' Organizational Behavior* [M]. Cambridge: Cambridge University Press, 1993.
- [10] Zhang Zhe, Zhang Hai, Wang Yining. International TPACK theory research review: 2005-2014[J]. *Modern distance education*, 2015(6):10-15.
- [11] Chen Shi, Luo Fang. Analysis and Research on Teachers and Students' Classroom Behavior Supported by Computer -- Taking Quantitative Analysis of Classroom Teaching in Primary and Secondary Schools in A District as an Example [J]. *China Electronic Education*, 2011(10):103-107.
- [12] Xu Peng, Liu Yanhua, Wang Yining, Research Status and Enlightenment of Measurement Methods of Subject Teaching Knowledge (TPACK) in et al. *Integration Technology Audio-visual education research*, 2013(12):98-101.
- [13] Savola L T . *Video-Based Analysis of Mathematics Classroom Practice: Examples from Finland and Iceland* [J]. *Dissertations & Theses - Gradworks*, 2008.
- [14] Yang Xianmin, Wang Huaibo, Li Jihong. The application of lag sequence analysis in learning behavior analysis [J]. *China Video Education*, 2016(2):17-23.
- [15] Li Meifeng, Li Yi. TPACK: A New Framework for Integrating Technical Teachers' Professional Knowledge [J]. *Heilongjiang Higher Education Research*, 2008(4):74-77.