

Research on the Realization Path from “PAD Class” to “Generative Classroom Instruction” in College Classroom Teaching*

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Abstract—The introduction of generative thinking has brought great inspiration to the reform of classroom teaching when the shortcomings of traditional teaching paradigm are becoming more and more obvious in China's Colleges and universities. However, from the existing studies, it can be found that the research focus of generative classroom teaching is mostly on the analysis of “teaching”, but less on its occurrence mechanism and implementation path. This paper takes “PAD Class” as the formal framework, starts from the basic principles and leading ideas, changes the classroom form, strengthens the internal dynamic mechanism of “Guidance, Inspiration and Competition”, and adopts the life-oriented teaching content and diversified, multi-dimensional teaching evaluation system, in order to ultimately realize the “Generative Classroom Instruction”.

Keywords—PAD class; generative classroom instruction; teaching reform

I. INTRODUCTION

From the "teacher-centered, textbook-centered and classroom-centered" emphasized by the J. F. Herbart School of "five-stage teaching method" [2] in the 19th century to the "Taylorism" advocated by the efficiency orientation in the early 20th century, until the educational thought of the N. A. Kaiipob [8], which was followed after the 1950s, the drawbacks of the traditional teaching paradigm have gradually emerged in the current Chinese college classrooms. The concrete manifestations are as follows: teaching and learning schizophrenia, teacher and student separation, teaching and research segmentation, teacher personal performance syndrome etc. Finally, in this teaching

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environment, such phenomenon as “Learning without understanding, knowing without comprehending” is becoming more and more popular in students.

Meanwhile, China's higher education is experiencing an important transition from elitism to popularization, and will soon enter the stage of popularization. The number of college students is increasing year by year, and the level of social education has been greatly improved. However, the expansion of university enrollment and the information age have also brought many new problems. Firstly, the enlargement of university enrollment brings about an increase in the number of students, so that, the individual differences in learning ability, efficiency and enthusiasm of students are becoming more significant. Secondly, for students growing up in the era of information fragmentation, it is difficult to maintain attention for a long time in the traditional classroom.

Therefore, in view of the new situation, in line with the development trend of the times, it is of great urgency and practical significance to be guided by generative thinking, strengthening the intrinsic motivation of teaching mode, exploring the reform path of classroom teaching in Colleges and universities in order to optimize the teaching effect.

II. RELEVANT THEORIES AND RESEARCHES

A. Generative Thinking

Generation is equivalent to change and transformation. In the category of ancient Greek philosophy, “Generation” means that things grow out of nothing or develop in a state of qualitative change. Heraclitus held in his philosophy of existence that things are essentially in constant formation and exist in a state of motion and change. Generative thinking mainly sprang up in the western philosophical circles after the mid-19th century. Philosophers such as K. H. Marx, K. T.

Jaspers and H. Bergson provided a broad platform and direction for future generative thinking understanding. In China, although scholars such as Li (2000), Yi (2005), Ye (2001, 2003), Luo (2006) and Yu (2012) have different starting points in defining generative thinking [5] [6] [11] [12] [15], they generally believe that generative thinking is a way of thinking that emphasizes creativity, innovation and process. It implies respect for the subjectivity of human and the dynamic and creative development of things.

B. Generative Classroom Instruction

The development of classroom teaching guided by generative thinking can be traced back to J. J. Rousseau's natural education in the West. Rousseau advocated that education should return to human's natural state, follow human's natural tendency and make human's body and mind develop freely. Since then, Dewey (1916), Jaspers & Zou (1991), K. T. Jaspers, Lstenhouse, L. Malaguzzi, Doll (2000), V. O. Sukhomlynsky and L. Vygotsky made the research of generative teaching more in-depth and systematic [1] [3] [10]. In particular, Doll (2000) proposed that the course teaching "is not a process of passing on what we know but of exploring knowledge that we do not know" and to realize the self-transformation and self-generation of teachers and students [10].

To observe and guide the development of classroom teaching by generative thinking is also reflected in Chinese traditional educational theory and classroom practice. The enlightening teaching put forward by Confucius during the Spring and Autumn period, the teaching thought of "Life is education" advocated by Xingzhi Tao [7] and Heqin Chen's "Living Education" during the Republic of China all reflect the characteristics of generative thinking. However, due to the long-term influence of examination-oriented education, the development of Generative classroom instruction in China has not been able to achieve satisfactory results. Until the turn of the century, Ye (1997, 2002) proposed to rebuild the vitality of classroom teaching by generative thinking [4][5]. Since then, Shan (2010), Wang & Zhang (2010), Yang & Li (2013) basically considered that generative classroom teaching is to lead students away from the mechanical monotonous and predetermined route [14], making classroom teaching a process of "vitality" and "creativity" in positive interaction.

C. The Intrinsic Relation Between PAD Class and Generative Classroom Instruction

Considering the feasibility of teaching process, the psychological mechanism of teacher-student interaction and the present situation of college classroom teaching, Zhang (2014) put forward the teaching mode of "PAD class" [13]. In practical operation, the teaching is divided into three procedures (Presentation, Assimilation and Discussion), and then half of the classroom time is allocated to the teacher for teaching, half to the students for discussion, emphasizing interaction and encouraging autonomous learning. However, there are very few theoretical researches in linking generative classroom teaching with PAD class. Only Chen (2016) pointed out that PAD class makes teachers and

students equal in power and responsibility [9], and makes classroom teaching changes in structure. Therefore, he believed that it is feasible to realize generative classroom instruction by adopting PAD class.

However, it should be noted that if just divide classroom teaching time simply according to the definition of "PAD class", there may be problems in practice. At the beginning, it is common for students to be more active because of novelty, which can not reflect the stability of the effect of the PAD class. With the passage of time, the phenomenon that the spontaneous response of the individual to the stimulus is weakened or disappeared due to the repeated occurrence of the stimulus will occur. Therefore, if ignore its inherent stable dynamic mechanism and let it become a mere formality, it is impossible to realize "Generation Classroom Instruction" from "PAD class".

III. SPECIFIC CONTENT OF TEACHING REFORM

In view of the intrinsic relationship between PAD class and Generative Classroom Instruction, This paper takes "PAD Class" as the formal framework, starting from the basic principles and leading ideas, changes the classroom form, strengthens the internal dynamic mechanism of "Guidance, Inspiration and Competition", adopts the life-oriented teaching content and diversified, multi-dimensional teaching evaluation system, and ultimately to realize the "Generative Classroom Instruction". The general design of teaching reform is as shown in "Fig. 1":

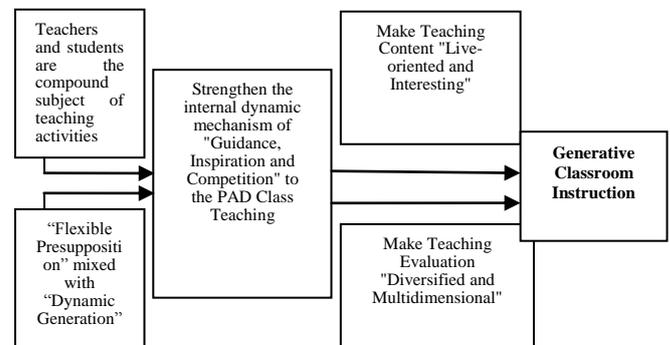


Fig. 1. General design of teaching reform.

A. The Basic Principles of Teaching Reform

To explore the way to realize generative classroom instruction in Colleges and universities, it is necessary to first give a rational answer to two key issues of "teacher-student status" and "the relationship between presupposition and generation" in Generative classroom instruction. The "teacher-oriented" and "hard presupposition" adhered to in traditional teaching mode cannot be overcorrected so that the teaching reform will not deviate seriously from the direction.

- Students should not be pointed as the teaching subject simply because of the irreplaceable premise of the students as the learning subject. From the standpoint of education as a special social practice activity of human beings, this paper analyses the particularity of

the composition of subject and object in educational practice activities. The guiding ideology of the teaching reform finally determined in this paper is that the content of education is pure object, teachers and students are the compound subject of teaching activities, and both sides are subject and object in their respective activities (i.e. “multi-repetition and integration of subject and object”).

- Presupposition and generation in classroom teaching are two stages which are necessary, connected, closely related and mutually constituted to complete the task of classroom teaching. They are indispensable to each other and are the two wings of an efficient classroom. The consistency of the above two basic aspects, such as purpose, elements, structure and process logic, should not be opposed. Meanwhile, there are differences between the two, that is, the former is the pre-planning for the development of classroom teaching, and the latter is the dynamic development of classroom teaching into the practical stage. The latter is more complex than the former, so it is impossible to achieve, nor necessary to pursue the complete consistency between the pre-design and the practice process.

B. The Leading Idea of Teaching Reform

This paper tries to change the “rigid presupposition” classroom teaching into the “dynamic generation” classroom teaching, and solve the external morbidity and internal weakness of the current college classroom to a certain extent. The main ideas of the reform are as follows: firstly, the presupposition and generation of curriculum objectives. Course objectives should be flexible presupposed. The goal of curriculum should be that students spontaneously internalize and absorb external learning objects and grow into their own use in the process of teaching; secondly, the classroom process itself is generated, is “out of nothing”. Every lesson is centered on the teaching content, which is created by the practice of “teaching-learning” in the communication between teachers and students. It is a process existence in dynamic generation; thirdly, the generative resources are implied in the presupposition, and the resources generated in the process of “teaching-learning” should be fully utilized. Every student grows up in different environments and backgrounds. They also have different cognitive bases and ways of thinking, different emotions, attitudes and values. Therefore, the same thing in teacher-student interaction can collide with many different results at the same time. Whether positive or negative, teachers can turn it into an active classroom process and an effective material for the generation of curriculum standards. This kind of classroom, which makes proper use of generative resources, is also an important form of generative classroom instruction.

C. Strengthening the Internal Dynamic Mechanism of the PAD Class

Theoretically, it is feasible of that “PAD class” mediates the “Generative Classroom Instruction”. However, if the

“PAD class” is simply done in formal terms, with the passage of time, there may be some negative classroom phenomena in practice, which are caused by the psychology that the individual spontaneous response to the stimulus weakens or disappears due to the repeated occurrence of stimulus. When this kind of phenomenon appears, Generative Classroom Instruction will never be realized. In order to solve the problem that the classroom is easy to be formalized, this paper intends to strengthen the internal motive mechanism of “Guidance, Inspiration and Competition”. The design and details of the dynamic mechanism see “Fig. 2”:

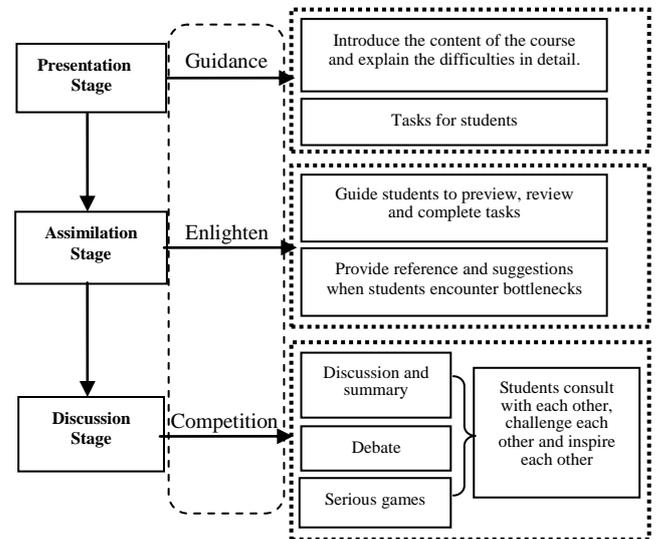


Fig. 2. Dynamic mechanism design of PAD class.

- The process of pre-class preparation, lecture and homework in traditional classroom should not be taken as a reference, but the process of transforming graphite into diamond should be taken as a reference. In Presentation, teachers introduce the course content in a guiding and framed way, explain the key and difficult points in detail, and put forward the requirements for the learning content of students in the next two stages, leaving a suitable space for generation.
- In the traditional sense, extracurricular preview and review have very high requirements for students’ own literacy. Most students will encounter learning bottlenecks in the Assimilation stage, and then begin to be weak and unable to understand. This requires teachers to have timely “Inspiration” for students in the Assimilation stage, to provide reference and suggestions when students encounter bottlenecks, and to encourage students when they are weak in action. In this way, in the Assimilation stage, students can fully mobilize all the favorable factors in their environment, interpret and compile them as their learning conditions and resources, and participate in the current learning.

- In the Discussion section, students return to the classroom, review important concepts, express personal understanding, and more importantly, internalize and absorb knowledge points through discussions and exhibitions, so that they can truly understand knowledge. At this time, appropriate “Competition Mechanism” can be introduced, such as debating contests and Serious Games, so that students can discuss with each other, challenge each other, inspire each other, understand each other deeply, overcome difficulties together, share cases and experiences, broaden their horizons, display their personality and exercise cooperation. In the view of students, Discussion is the stage of self-demonstration, experience and self-realization. Through the various satisfaction and development of their own, students will realize the charm of creation and generation. Strengthening the internal dynamic mechanism of “PAD class” enables students to discover the joy and charm of the curriculum in the above three stages, achieving a sense of pride and satisfaction, consciously seeking to become “explorers, experiencers, competitors, collaborators, performers” in the classroom, and becoming to know themselves, improve themselves and develop themselves.

D. Life-oriented Teaching Content

Textbooks are the main reference of teachers and students in classroom teaching. It comes from the human’s “life world” and is the crystallization of human’s survival experience and wisdom. Because of this, the textbooks also show the characteristics of high abstraction and generalization to a certain extent, which are often higher than the students’ thinking level and the recent development area of learning. In order to achieve generative classroom teaching by strengthening the dynamic mechanism better, teachers need to reprocess the text content and make it life-like. Following this idea and considering the adult and academic characteristics of college students, this study suggests that a set of “life-oriented but not shallow, interesting but not entertaining” teaching content needs to be developed, and integrate it into courseware and teaching plan, so that it can serve students’ learning and guide students to progress their professional exploration better. The specific principles and methods are as follows:

- Life-oriented teaching content is to connect the colorful “life world” with the static “book world”, and to make the abstract “book world” as real as possible as the students’ real life scene or the understandable and accessible real world, so as to continuously expand and integrate the teaching content and enhance the students’ intimacy and familiarity. It is also necessary to fully integrate students’ interest in learning, so that abstract text knowledge becomes vivid and interesting. This is not only conducive to the generation of teaching content, but also conducive to students’ understanding of knowledge.

- The organization and presentation of life-oriented teaching content should be diversified, flexible and vivid. The new curriculum reform of middle school clearly points out in the suggestion of the development and management of textbooks: “The content of textbooks should be diversified and vivid, which is conducive to students’ inquiry”, which is also applicable to the teaching in colleges and universities. Therefore, in order to make teaching content life-oriented, the connection between teaching materials and students’ life should be emphasized, give the teaching materials a broad realistic background, organize social information and students’ daily life information into teaching content, and make teaching content in line with the life of students.
- At the same time, it should be noted that most of the college students are adults, which are significantly different from the primary and secondary school students. The relevant teaching content can be life-oriented but not shallow, interesting but not entertaining, so that the teaching content can not only serve the students’ learning, but also better guide the students to carry out professional exploration.

E. Diversified and Multi-dimensional Teaching Evaluation Criteria

Evaluation is essentially a process of value judgment, and the determination of evaluation criteria is based on the needs of the subject of value. The current classroom teaching evaluation system in China is deeply influenced by Soviet pedagogical theory. Its evaluation criteria attach great importance to the achievement of predetermined teaching goals, especially knowledge goals, neglect the development of students’ practical ability, emotional attitude and values, neglect students’ differences and actual gains, and also neglect teachers’ own growth as well. From the perspective of generative thinking, the core of classroom teaching evaluation should promote equal communication and common development between teachers and students. In evaluating classroom teaching, teachers should not only confine themselves to the achievement of pre-determined teaching objectives, but also consider whether the implementation of individual teaching is effective and perfect, and whether it promotes the positive development of the teaching process. Therefore, by turning towards diversified and multi-dimensional teaching evaluation criteria, the needs of generative classroom instruction could be met.

Diversified evaluation criteria include:

Task-based evaluation: task-based evaluation is based on whether students can use their knowledge and skills to solve the corresponding tasks. It focuses on the ability of students to solve problems, and cultivates students’ enthusiasm and initiative in learning.

The construction of knowledge: knowledge construction usually includes three stages as accumulation, adjustment and reconstruction. It can not be completed in one time, but

acquired in the process of learning and application. Therefore, the evaluation should pay attention to the process of knowledge acquisition, not just the result, but also to the self-organization of knowledge, the integrity of knowledge acquisition and the development of ability of students.

The evaluation should be based on the common development of teachers and students. In the generative classroom, the interaction of teachers and students in multiple, multi-directional, multi-level and multi-mode runs through and forms the whole process. This is not only the generation of students' knowledge, ability and quality, but also the generation of teachers' professional quality and teaching ability.

Multidimensional evaluation strategies are as follows:

- The combination of individual evaluation and students' mutual evaluation. Modern educational psychology points out that students' understanding of knowledge is the result of self-construction through interaction between individual and environment and others. Therefore, besides the evaluation and guidance of teachers to each student, students should be guided to form a developmental evaluation mechanism of mutual exchange and mutual solution, so that students can achieve the cognitive construction of knowledge in the process of discussion and communication.
- The combination of process evaluation and summative evaluation. In this study, the evaluation concept has changed from solely focusing on the evaluation results to focusing on both the evaluation process and results. That reflects the idea of "human-oriented", which aims to promote the overall development of students.
- The combination of learning evaluation and teaching evaluation. While teachers evaluate students, students' evaluation of teachers and their teaching activities is also one of the necessary guarantee measures for teaching quality. Getting feedback and demands from students is not only conducive to the timely strengthening and adjustment of teaching arrangements, but also conducive to the personal development of teachers.

Based on the five aspects mentioned above, this paper takes "PAD Class" as the formal framework, starting from the basic principles and leading ideas, changes the classroom form, strengthens the internal dynamic mechanism of "Guidance, Inspiration and Competition", adopts the life-oriented teaching content and diversified, multi-dimensional teaching evaluation system, and ultimately to realize "Generative Classroom Instruction".

IV. CONCLUSION

The introduction of generative thinking has brought great inspiration to the reform of classroom teaching under the situation that the disadvantages of traditional teaching paradigm are becoming more and more obvious in China's

Colleges and universities. With the continuous exploration of many scholars, the theoretical basis of generative classroom teaching has been gradually enriched. However, most existing studies of generative classroom teaching focus on the analysis of "teaching" rather than its occurrence mechanism and implementation path. In addition, there are many disputes about the principled issues in Generative Classroom Teaching, such as the status of teachers and students, the relationship between presupposition and generation. This study starts with the internal relationship between "PAD class" and "Generative Classroom Teaching", clarifies the basic principles and leading ideas, integrates three elements of "Guidance", "Inspiration" and "Competition" into a complete dynamic mechanism system and organically integrates them into PAD Class. Its theoretical significance lies not only in exploring the principle direction and realization path of Generative Classroom Instruction in Colleges and universities by clarifying the key elements of the internal dynamic mechanism of PAD Class, but also in promoting the deepening and extension of generative education theory in the new era from the practical level of classroom teaching reform in Colleges and universities. At the practical level, the initiative and creativity of teachers and students should be liberated at the same time, so as to realize the simultaneous transformation and evolution of the roles of students from "Recipients" to "Activists" and teachers from "Craftsmen" to "Teachers".

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