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On Cognitive Conflict in the College Classroom Teaching

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Abstract

This paper focuses on cognitive conflicts in college classroom teaching. It elaborates on the significance of cognitive conflicts based on cognitive development theories, especially Piaget's theory. By analyzing the classical conditioning and operant conditioning theories, it explores methods to promote and resolve cognitive conflict. The research provides valuable guidance for enhancing teaching effectiveness and fostering students' cognitive development.

Keywords

cognitive conflict, college classroom teaching, cognitive development

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1. Introduction

In modern universities, stylized designs for classes are usually taken seriously. In order to make the classroom teaching accord with the rational expectation, the classroom teaching rule and discipline of excessive rigidness have become the legal responsibility for teachers and the important norm for teaching quality. In front of such a teaching ideology, "intention" and "random", which are taken as an abnormal phenomenon, are usually avoided on purpose. Excessively pursuing routinization and formalization, and completely depending on the certainty and subjective expectations, many important educational values are ignored in the classroom teaching. People are keen on planned performances with styles only, or accustomed with the boring atmosphere without any accident, which has become one of crises for international college education with Chinese characteristics.

The cognitive conflict in classroom teaching, discussed by the paper, refers to a status of students feeling for “thinking tension”, “conscious discomfort” at random. The feeling subject of such tension should be students other than teachers. Students feel beyond their subjective expectations for knowledge taught directly by teachers or designed indirectly. Cognitive conflicts are derived from teachers’ conscientious guidance or planed design, or even beyond teachers’ rational expectations. According to modern cognitive psychology, the classroom cognitive conflict actually is key chance for integrating the cognitive construction, adapting for the outside atmosphere and improving students’ rational critical spirits and creative capabilities. If teachers don’t catch and control such kind of “intention” and “random”, chances are missed at once. Therefore, an excellent college teacher should teach students based on the philosophy of promoting expected accidents, catching unexpected conflicts at random, solving expected accidents on purpose and controlling unexpected accidents at random.

2. Jean Piaget's Theory of Cognitive Development and the Educational Value of Classroom Cognitive Conflicts

In the theory of classical psychology for human being’s learning process, the classical conditioning theory and operant learning theory belong to the behaviorism tradition of “stimulus and response” (S→R) model. Behaviorism has an obvious “dehumanization” tendency: a person is described as a simple receptor without any knowledge structure or cognitive schemata. It doesn’t exist subjective structure or intermediary of subjective integration with environments between “stimulus and response”. It cannot be explained that different action tendencies are obtained from the same environmental stimulus and operation.

Changing behaviorism “S-R” model to “S (A) R” model through the introduction of “A” scheme, Swiss psychologist Jean Piaget made himself become the chief representative of cognitive processing theory. It is thought that people's behaviors or reactions are not mechanical movements but active construction; people have the subjective schema or meaningful space beyond the animal, through which people select, screen and interpret to the environment as well as participate in constructing environmental stimulation to the significance of men.

Piaget describes and explains the evolution of human being’s learning and cognitive process with four core categories.

Schema. It refers to the cognitive structure given by people, including representation, action (logical) and knowledge structure, etc. Schema is the established interpretation and classification system, and people's ability for learning depends on the nature and status of the schema. The development of intelligence and accumulation of knowledge are performed as the change and transformation of schema.

Equilibrium. It refers to the subjective cognitive coordinating state between the internal schema and external environmental stimulus. From the view of individual psychology, the pursuit of cognitive equilibrium and coordination, no matter adopting conservative or positive way, is the nature of

individual learning activities, similar to the biological impulse with benefit-tending and harm-avoiding. Individual meaningful learning process is also the coordinating process from imbalance to balance and disharmony to harmony. Equilibrium is the purpose of intellectual activities; disequilibrium is the internal impulse of intellectual activities.

In reality, through two kinds of learning actions named as assimilating and accommodating, an individual realizes the cognitive coordination or equilibrium.

Assimilating. It refers to a learning process that puts or integrates the environmental stimulus into the existing schema; is the behavior of interpretation and classification without changing the established schema. Assimilating is the most basic and spontaneous cognitive tendency for an individual, through which environmental stimulus into the established meaningful world of main body.

For example, when facing a stimulus that has never seen before but has some typical features (within the established subjective schema), the cognitive spontaneous tendency for an individual is putting it "into" the established subjective schema, making it "understandable", "normal", "expected", "coordinating" or "conflict-free". Assimilating makes the environment intelligible on the one hand, shows a distortion of certain degree to the object on the other hand. For the individual with strong assimilating tendency hence very rigid and dogmatic in cognizance, there is no "accident" or thing which cannot be understood; this means the individual has a high "cognitive conflict threshold".

Accommodating. It refers to the learning process of adjusting the established schema to adapting to the environmental stimulus. The established schema of an individual is always limited, which means in the fluctuant environment, the individual feels "accidental" or "weird" that the established schema assimilation cannot be finished. If the established schema cannot assimilate new stimulus and feels about the strong "accident" or cognitive conflict, the individual will actively modify the original schema or create new schema to integrate new stimulus, dissolve cognitive conflict, conform to the environment, make environment become the understandable object, bring imbalance to balance. Accommodating means that learners actively explore, construct and integrate, showing a kind of development or transformation of the cognitive schemata.

Piaget thinks that the intermediary between "stimulus and response" is the cognitive schemata of learning subject. The learning integration of stimulus by the subject to object has two basic tendencies named assimilating and accommodating. The first tendency is assimilating, which enriches the established schema without any structural change to main body's schema; however, the structural change is just the mark for thinking progress and intelligence promotion. In the assimilating, there is no "accident" or "conflict", no power from unbalanced tend to balanced one in cognition or no "hard" thinking. As more and more new stimulus gradually or suddenly composing for schema can't assimilate into "accidents", learners feel about cognitive conflicts or disequilibrium, the intention of balancing promotes learners to change or replace existing schema, to comply with environmental stimulation and to make cognitive tend to new balance through the more positive creative intellectual activity. The individual's internal cognitive schema changes, grows and develops, which is accurately learning or

knowing.

The above analysis contains two significant conclusions:

Firstly, the substantial learning doesn't exist in assimilating. Assimilating is the cognitive tendency with individual existent other than deliberate enlightenment. However, accommodating is the cognitive tendency with the individual's conscious, sedulous induction and cultivation. Only when the individual feels some cognitive dissonance to create harmonious mental consciousness, the active learning behavior happens. Without any "accident" from cognitive disequilibrium, there in not any motivation for realizing equilibrium by overcoming "accidents", the substantial learning could not actually take place. Generally speaking, assimilating can only enrich or full the established cognitive structure, make the established schema change a little, without causing any structure transformation for the main body's schema. For purposes of the modern quality-oriented education with characteristics of creative cognition, rational and critical thinking as well as structural change, the significance of assimilating learning is limited. Besides, the excessive assimilating tendency is an adverse psychological trait needed to be induced and corrected deliberately.

Secondly, a number of "cognitive conflicts" caused by new traits from environmental stimulus is the key link for promoting the individual thinking and intelligence. Therefore, in the education activity especially the direct classroom teaching situation, the cognitive conflicts has the important educational value: based on the "accidental" cognitive imbalance, for active learning, critical thinking and creative intellectual activity, it provides the most important endogenous power (Note 1). If the interest coefficient more than zero is introduced, the size of power is proportional to the product of "accident" strength and interest coefficient. Intention of eliminating and avoiding cognitive conflicts will cause the integration of positive thinking. Finally it will achieve the structural adjustment of subjective schema. Different types of cognitive conflicts influence or decide the thinking path for learners to solve different problems.

3. The Classical (Response) Conditioning Theory and Inspiring Promotion of Cognitive Conflicts

Classroom cognitive conflicts have the important educational value. The key is: how to acquire this kind of value?

Classroom cognitive conflicts are derived from two ways: firstly, the "conflict" is produced in an accident (Note 2), so it should be captured at random. Secondly, the "conflict" is produced in the controller's consciousness or deliberation, so it should be designed and built. Therefore, the capture for unintended cognitive conflicts at random and promotion for expected cognitive conflicts deliberately, are two basic ability and quality for a teacher.

In reality, most of cognitive conflicts are not derived from accidents, but produced in teachers' deliberate design and conscious domain. For teachers, the first kind of accident may be difficult to capture. Therefore, through the consciousness of class leading, designing and building the teaching situation and atmosphere which can effectively contribute to the appearance of the second type of

accident, is the key to the class teaching goal, and also one of important links for class teaching.

Through the cognitive structure, learning concepts such as schema for students' main consciousness and education value of cognitive conflicts in the process of teaching, the modern cognitive psychology provides an important theoretical interpretation. And the classical behaviorism psychology (classical conditioning theory and operant learning theory, etc.) is to contribute to the formation of the students' cognitive conflicts, and to provide an important operation mechanism.

According to the classical (response) conditioning theory, learning is essential to a given stimulus response association, namely conditioning. Stimulus and deterministic response responsiveness (by mobility) is its basic features. Complicated psychological experience, such as the senior conditioned stimulus and language stimulation reaction, conditioned stimulus in the reaction of generalization and recognition, etc., are primary conditioned stimulus based on the original reaction.

Three stages built by conditioning response can be shown in the Table 1.

Table 1. Construction of Conditioning Response

Stage	**（Certain）Stimulation**		**（Passive）Response**
Stage I：The unlearned junction of "stimulus - response"	Unconditioned stimulus		Unconditioned response
Stage II：The introduction of new neutral stimulus	Conditioned stimulus	Unconditioned stimulus	Unconditioned response
Stage III：Unconditioned stimulus abandonment	Conditioned stimulus		Conditioned response

According to the classical conditioning theory, the realization of learning depends on two conditions: (a) the new characteristics of a teacher's language stimulation. One of the conditions for learning is the introduction of a new neutral stimulus (conditioned stimulus) into stage II. The knowledge structure of students before classes could be regarded as an unconditioned contact or fixed match between stimulus and response. Given a particular familiar stimulus, students will memorize the previous reaction or understanding (stage I). At this moment, there is no learning but only the reappearance of existed knowledge. The establishment of the new condition contact (the acquisition of knowledge or learning implementation), the first condition is new characteristics of environment conditioned stimulus, which is showed as new characteristics of teachers' language in the teaching process. (b) The comprehensibility of stimulation of teachers' language. The establishment of the new condition contact cannot surpass the stage II, and new stimulus must be accomplished with students' established knowledge structures to produce all sorts of conditioned contacts (nearby, similar, cause and effect, contrast, etc.), to induce students have significant associations, acquiring meaningful understand and learning realization.

In the context of the classical conditioning theory, teaching is the process of students' psychological changes through systematic language stimuli (process of "infusion-acceptance"). A teacher is a controller to make stimulus, while a student is a passive responding body. The mobility of a student is exaggerated as the essence of learning behavior, while the positive significance is ignored. However, the classical conditioning theory contains the relationship of "inspiring - acceptance", infiltrating or tolerating in all other basic relationships, with the basic meaning which cannot be taken place by other relationships. Teachers' class behaviors, no matter how inductive, inspiring and indirective, always have the basic "atomic" meaning. Students' classroom behaviors, no matter how autonomous, independent and creative, always have basic accepting meaning. The design of the teaching method, could not forget the basic relationship and purpose of "inspiring - accept" as well as deliberately pursue formally inspiration and induction.

For students' promotion of cognitive conflicts, classical conditioning theory demands to put aside all kinds of indirect induced situations and direct presentations or "implant" conflicts, which means teachers directly repeat and introduce to meet the learning to realize two conditions of the neutral language stimulation, shown as the conflict and contraction straightly between the old and new knowledge. This is contributed to the most direct, basic way or method for promoting cognitive conflicts, named as the "inspiring promotion" mode of class cognitive conflicts.

The "inspiring promotion" mode of class cognitive conflicts has following characteristics:

Firstly, apart from indirect circuitous paths, teachers directly teach, demonstrate and implant facts between knowledge systems and conflict values to students. While students feel contradictive and weird in teachers' direct control, passively forming without operated such cognitive conflicts.

Its advantages contain: purpose is clear, means is direct, operation is simple, and time is saved, contributing to the low cost of conflicts. This is also why inspiring education is still retained as a tradition. This method is particularly suitable for those difficult contents hard to indirect induct and inspire independently to form cognitive conflicts. Its disadvantages contain: since "accidents" are generated completely from the "inspiring-accept" relationship between teachers and students, students' independency, creativity and learning subject consciousness are repressed; the process of conflict formation itself lacks enough room to promote intelligence value.

Secondly, teachers only demo or implant conflicts between knowledge systems, without directly giving methods and conclusions to solve conflicts. Otherwise, the method of infusing class conflict changes to be the whole process of mechanical infusion.

Thirdly, after the primary formation of class conflicts, teachers set aside some time for students' problem solving and conflict situation. Although the promotion of conflicts is direct, the conflict solving should partly by the initiative of students' thinking, which means the intelligence essence can only be formed in the operation or "action" (Piaget). Students in the whole situation of indulging education find it difficult to obtain the key capability of independent thinking and autonomous problem solving. If it does not give students' some time for accommodating delay, the direct inspiring or demo

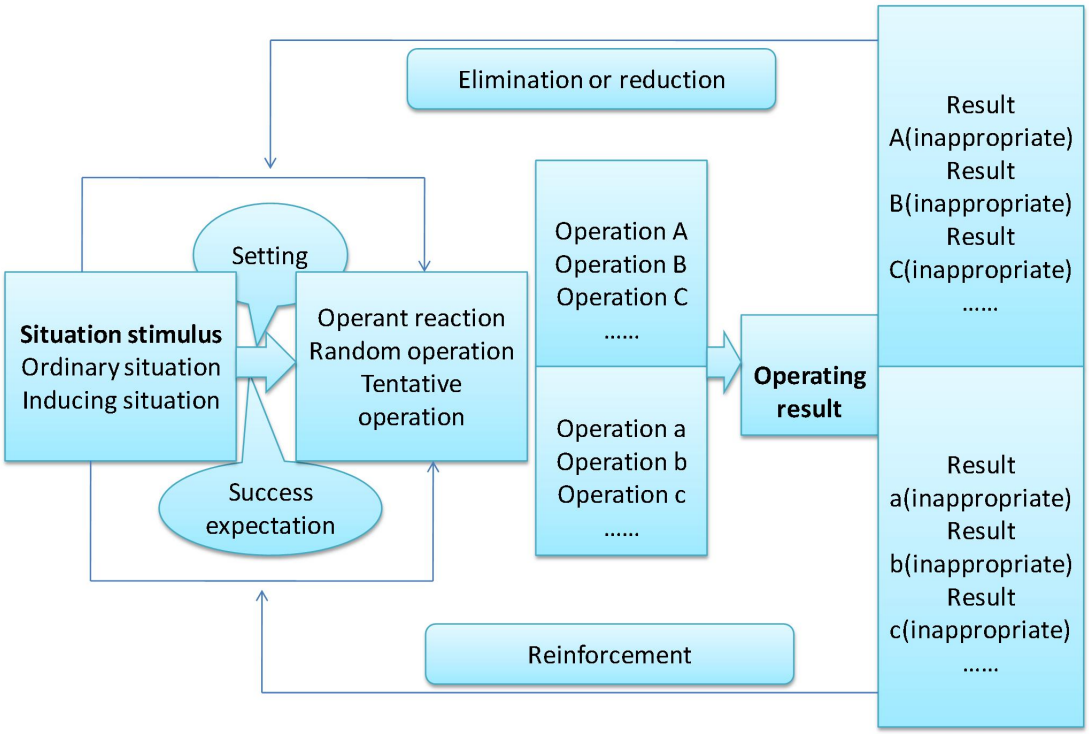
on students' cognition of accidents could not remain the educational value it should be.

4. The Operant Conditioning Theory and Inducing Promotion of Classroom Cognitive Conflicts

Except for the method of indulging promotion, the other ideal method of promoting classroom accidents is indirect induce or enlightenment. The method of inducing promotion is based on the psychology named behavioral operant conditioning theory.

It is thought that learning is the active operating behavior strengthened by the effect under some given or certain situations. Characteristics contain: firstly, the environmental stimulus (situation) is indirect and persuasive, which is quite different from the indulging or presenting stimulus in essence. Secondly, response is operant. People are learned in the active operation other than passive acceptance. Thirdly, the operation by response is uncertain. Operant responses of students are quite different in subject. Fourthly, the fixed link of "stimulation (situation)-response (operation)" is not from the repeating association but from reinforcement or reduction. Edward Thorndike thinks that, "Any action causing satisfaction in a given situation is gradually associated with the scene. Whenever the scene is appeared again, this action is easier to happen than before. On the other hand, any action causing dissatisfaction in a given situation will gradually be separated from the situation, so that separate once the scene appears again, this action cannot be taken place as easy as before."

In the classical conditioning theory, learning is the dynamic behavior decided by the direct (adjacent) and repeat stimulation; a student's task is to accept, and a teacher's responsibility is to infuse. However, in the operant conditioning theory, learning is the active operant behavior under the situation of indirect induction; a student's behavior becomes the integration of active thinking from passive accepting. Students become positive activists of independent problem solving and hungering for teachers' evaluation. The subjectivity of students is raised up greatly. Teachers become the observer of setting indirect inducing situations and the evaluator of students' operant results.



Graph 1: Operant Conditioning

For students' promotion of cognitive conflicts, the operant conditioning theory requires teachers to deliberately and skillfully provide indirect inducing information, and constantly inspire and encourage students to engage in the active thinking integration (operant reaction), forming cognitive conflicts independently. As mentioned above, the subjective "weird" and pursuit of cognitive balance can make students form strong interests for integrating further thinking and energetic power, meanwhile, students have strong expectation for teachers' further information induction and response evaluation. Cognitive conflicts are formed in the independent thinking rather than passive accepting, so that it has great significance for students' creativity, critical thinking ability and the comprehensive quality. If a student receives a long-term indirect induced situation training by teachers, he/she will gradually form a keen to spontaneous and habitual level problem capture ability, so even when there is no teacher present, under the ordinary situation of consciousness induction, he/she can still do positive identification, problem capturing and thinking integration. He/she has the problem consciousness beyond normal people, which belongs to the important unit of creativity, critical thinking and overall quality.

The inducing promotion of classroom conflicts has the following features:

Firstly, through various background alternate information, induction and inspiring to students, by their independent thinking integration (assimilating and accommodating), students actively acquire conflict cognition between knowledge systems, forming conflicts in operant reactions rather than passive

feeling. The bilateral interactive sequence of teaching is: deriving conflict cognitive indirect scene settings (teacher) →forming the preliminary cognitive conflict operant reaction (student) → further deepening the conflict cognitive inducing information (teacher) · · · → forming the independent conflict cognition (weird, unbalanced) (students). For complex and deep knowledge understanding, from conflicts of independent forming rather than passive feeling accidents, students will generate more interests, more kinetic energies and higher intelligence promotion values.

Secondly, it opposes any direct infusion and presentation of any forms of relevant conflict conclusions. As mentioned above, the direct infusion will reduce conflict education value, while indirect induction and inspiration could promote the outward “creative learning” and inward “logic intelligence development”.

Thirdly, the appropriateness of a teacher’s class inducing behavior is key to the success of the mode of “inducing promotion”. In chronology, a teacher's inducing behavior includes the following ways or steps: (a) problem introduction: through methods including the conditioning stimulus, scene setting or direct questioning, etc, a teacher introduces some “problems” difficult to assimilate by students’ established cognitive structures, creates students’ preliminary thought tension and problem solving impulse, so as to build a kind of learning situation of positive thinking. (b) Showing inducing information: according to students' matching and correlation between previous knowledge structures and that of achieving “target cognitive” (Note 3), a teacher indicates the key induction and auxiliary information, making the old and new knowledge appear both condition correlations and conditioning conflicts. (c) Persuasive questions and examinations: according to the logic need for building “target cognitive conflict”, a teacher chooses questions of both correlation and indirection to ask students. Students try to answer questions, hence answers are hard to be complete and make it certain, and sometimes answers are even towards the directional deviation. At this time, the teacher should control and adjust the continuous inducing question. These problems mentioned above seem casual and random, actually they are conscious and deliberate behaviors. (d) Additional inducing information: according to the need for students' response and forming “target cognitive conflicts”, teachers should select appropriate auxiliary information to further instruct and induce students to think questions through. This process can be deliberate, also may be random. (e) Delaying evaluation: for students’ answers, teachers should not react with reinforcement or elimination immediately, but deliberately set some time aside for students. And at this moment, teachers should observe the situation of students’ continuous thinking. The purpose of delaying assessment is to build a kind of tension atmosphere to promote more interests and energies of students so as to realize their independent thinking (operant reaction) by keeping and extending students' state of subjective uncertainty. (f) Reinforcement and elimination of conflicts: teachers should carefully observe students each step of the operational reaction and closing or deviating state of “target cognitive conflict”, and form “class accidents” in the control of consciousness feedback.

Fourthly, in humanities and social science teaching concluding the moral belief and value judgment, the

most effective induction information contributing to a “class accident”, is selectively introducing the theory inconsistent with “target theory” (Note 4) but of great influence and social identity. If it lacks of competitive test from opposing views, once a kind of subjective belief cannot win the explanation from opposite views, it would be fragile and changeable. Depending on single positive information, once the “target theory” face the “enemy”, it would doubt what to do, and even collapses and aborts. In information opening times of explosive knowledge and complex values, any established subjective belief and knowledge system will be “passively” opposed by other views in competitive tests. Since the situation could not be avoided, it would be better to promote rational cognitive conflicts independently, set up subjective beliefs with high immunity which could come through the competitive test in the opening environment. The function of this way for students’ promoting the “target theory” is similar to that of injection infectious disease vaccine for health promotion; we can call it “vaccination”. In order to prevent infection, doctors often prefer to inject a small amount of pathogenic bacteria (vaccine), causing it to germs of immunity. McGrew thinks that, a similar method can be used to make a person a kind of resistance power for those inappropriate social ideological trends opposing the “objective theory”. He says, “As a disease, the most effective way of improving immunity is to build defenses.” If a certain opinion is never attacked, there would be no established defense around it. Then the opinion would be very fragile. When such ideas are suddenly under persuade pressures, this view could not immediately use a defensive measure, but often easy to change original views. However, if this opinion had been attacked, it had successfully defended itself, then the opinion could build a relatively strong defense system, it can fight against subsequent attacks well.

5. Conclusion

Classroom cognitive conflicts have important education values; however, unless skepticism adopts it as the “target theory”, otherwise the class conflict value is always instrumental. Only when the pressure of classroom cognitive conflicts becomes students' integrated power of creative thinking and promotes the structural adjustment of students' subjective cognitive schemata, successfully adapting to the environmental stimulus or resolving cognitive conflicts. Otherwise, the educational value of classroom cognitive conflicts isn’t realized accurately. The target value of resolving cognitive conflicts concludes five points: (a) Adjusting and improving students' subjective schema and cognitive structure; (b) Cultivating the scientific spirit of suspicion with characteristics of independent thinking and rational analysis; (c) Increasing creative cognitive ability; (d)Enhancing the identification capacity for various social ideological trends and immunity against various anti-rationalism; (e) Feeling and experiencing the outside world, human’s rational complexity and the objectivity of conflicts between different knowledge and value systems, which makes students go through difficult roads to the state of “divergence and civilization”, reaching an improving capacity and state imperceptibly.

As mentioned above, classroom cognitive conflicts include accidents of being deliberately and unintended contributed two types. In order to obtain the operant value of cognitive conflicts, a teacher's

behavior is also divided into two types: expected conflicts by deliberately planning and unintended conflicts by randomly captured. In order to solve “class accidents” and realize the ultimate goal of teaching, a teacher's behavior is divided into two types: solving expected conflicts by deliberate planning and solving unintended conflicts at random. Things including deliberate and random, necessary and accidental, planning and straining, constitute a teacher’s behavior into two stages. In college classes, the successful resolving students' cognitive conflicts depends on the teachers’ two leading class behaviors, which are precise and accurate deliberately resolving as well as agile and appropriate controlling.

Firstly, precise and accurate deliberately resolving. Deliberate resolving classroom cognitive conflicts contains two basic forms logically including “inspiring resolving” and “inducing resolving”. The former refers to directly showing students the method and conclusion of conflict resolution, straight to the point and purpose, which is a common way to solve problems with low cost and fast speed. Inspiring resolving” is based on the indirect induction as the prerequisite in the former phase to promote class accidents. Generally speaking, if the acquiring method of classroom conflicts is induced, the best choice for resolving problems is the direct inspiring. Conversely, if the way is infused, the best choice is the indirect induction. A kind of equilibrium is reached between the time cost of teaching and the long-time effect. The so-called “inducing resolving”, similar to the “inducing promotion” in the operant route in essence, refers to show conclusions indirectly, only indirectly give inductions and auxiliary information for students to inspire and encourage themselves to carry on the integration of active thinking (operant reaction), then they solve problems and make conclusions themselves, which means solve “accidents and conflicts” independently.

In time chronology, for those established classroom cognitive conflicts, especially for those complicated cognitive conflicts concerning fields such as humanities and social sciences, the key method to resolve inductively includes three points:

(A) Questioning from different angles, sides and levels. We should rationally blame and logically reason for those opposite ideas or theories against the “target theory”. As mentioned above, the direct introduction of the abhorrent theory against target theory, similar to injecting vaccine to the human body, lies in the formation of some immunity. “Questioning from several sides” is similar to the human body resistance, of which the purpose is to resolve the cognitive accident and conflict after the formation of “vaccination” so as to enhance immunity.

(B) Advising key points. At the right time, in the right way (such as key graphics, keywords or key judgments and key tests, etc.), teachers should give directions of key information to students in a state of positive thinking. The purpose is to build a kind of situation portraying the mystery is solved immediately. And the ideal state is to let students acquire fruits of thinking and resolving under teachers’ leading independently, which is the ideal state of heuristic teaching.

(C) Strengthening and eliminating. Teachers carefully observe students’ every step of operant reaction and their state of approaching or deviating the “target theory”. Through their evaluation and repeat

reinforcing approaching behaviors and eliminating deviating ones, teachers promote the formation of teachers' "target theory" in the consciousness control of feedback. Designing for the behavior of evaluating reaction is an art, possible patterns of behavior may consist of: recognition, praise, denying, criticizing, confirmatory interpretation, negative interpretation, neutral comment, repeat problem, asking, supplementing information, inducing or implying, correcting answer, developing answer, transferring response object, delaying response, etc.

Secondly, flexible and appropriate controlling at random. In modern college classrooms, teaching in essence is the process of "teaching-accepting" knowledge step by step led by teachers and under their rational expectations. However, unless students are not learning subjects having life sensibility and cognitive initiative, unless students' positions of learning subjects are depressed by arbitrary rules and discipline situations excessively; otherwise, the occurring of unexpected class accidents could be unavoidable. Even if promoting class accidents deliberately, uncertainties could be occurred beyond teachers' rational expectations in contents, types and details, hence it needs teachers to capture at random and control them to resolve such accidents. Therefore, as a kind of controlling and reaction for educational opportunities, teachers should take accidents in some quality of random in classes.

The capability for controlling classes at random, is not only a measure for a teacher's teaching ability, but also an important indicator of the teacher's professional knowledge, comprehensive quality and even personality characteristics. A teacher lacking of ability for capturing class accidents and resolve cognitive conflicts flexibly, a teacher totally performed by the whole plan designed overall and in every detail, would never become a "master". The most important is: it will never cultivate a "master"!

Unfortunately, a teacher's ability of random controlling, because of its characteristics with random, is difficult to be described in deliberation or rationalization. Even so, in accordance with the experience and common sense as well as the intuition, behind teachers' super random controlling ability, some basic influential factors always can be discovered from teachers, such as keen observation abilities, profound professional qualities, and comprehensive interdisciplinary perspectives unbounded by limitation of subjects. Conflict consciousness, random consciousness and professional responsibility is the random capture and control for class accidents. Taking the idea that "first impressions are strongest" as conditions, behind conflicts and random consciousness, teachers must have conscious responsibility and bearing as well as the strong fear for the mission. Finally, class teaching, according to its nature, is the association between subjects rather than objectification production; is the "interaction" rather than "moving alone"; is the repeated game between teachers and students rather than one-time decision of producers. Therefore, the modern university management system, especially the teaching evaluation mechanism, should take the basic encourage and respect for teachers' behavior of autonomy and independence and creative work in the classroom teaching.

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Notes

Note 1. The reason that the cognitive conflict is the endogenous power for integrating activities of creative thinking is different from the prior set based on some practical purpose of learning tasks and research plans. The "accident" or "cognitive conflict" is a special link in the process of endogenous learning or researching. People pursue cognitive coordinating, avoiding and eliminating the subjective uncertainty "nature", which makes it an important value for the cognitive power.

Note 2. Students' cognitive conflicts in classes are beyond teachers' rational expectations.

Note 3. Teachers plan to promote the cognitive conflict, which means teachers wish students form cognitive conflicts autonomously and independently in classes.

Note 4. Teachers plan to promote students understand and trust the knowledge system in classes.