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## Research on the Constructivism Application in College Undergraduate Classroom

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### Abstract:

*The report of the 20th National Congress of the Communist Party of China pointed out that education, technology, and talent are the fundamental and strategic support for the comprehensive construction of a socialist modernized country, and it is necessary to accelerate the construction of a high-quality higher education system. Starting from the two main bodies of teachers and students, this paper conducts a questionnaire survey on the application of constructivism in undergraduate classes in colleges and universities, analyzes the challenges faced by the implementation of high-quality development of undergraduate classes in colleges and universities, and provides some constructive thinking and suggestions for undergraduate classes in colleges and universities to closely follow the requirements to modernization education and talents.*

**Key words:** Application of Constructivism; Undergraduate Education; Classroom

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### 1. Introduction

At the second collective study session of the Political Bureau of the 20th CPC Central Committee, Xi Jinping has proposed to effectively coordinate the strategy of China rejuvenating through science and education, the strategy of strengthening China through human resources and innovation-driven development, and promoted the integration of education development, scientific and technological innovation and personnel training, forming a virtuous circle. In the relationship among education, science, technology and talents, colleges and universities play a pivotal role. As a platform of higher education, colleges and universities impart professional knowledge and skill, and carry out ideological and political education and scientific research education at the same time. Its unique academic atmosphere and conditions provide favorable environment for the birth and growth of scientific research achievements and talents. Colleges and universities should follow the national policy and demands of the time, starting from the classroom reform, explore creative teaching methods such as constructivism to cultivate students, improve talent

competitiveness, creativity and innovation, establish the construction of high quality education system, cultivate internationally competitive young talent reserve, promote China to speed up the "neck" key core technology breakthrough with the support of talent, realize effective linkage and a virtuous circle among education, talent, scientific research.

In fact, developing students' innovation potential and enhancing their innovation ability has always been a key and difficult point in the exploration and reform of higher education classrooms. Constructivism is a teaching method that focuses on cultivating students' independent and comprehensive use of knowledge to analyze and solve problems, practice hands-on and innovative thinking. This article combines the results of a questionnaire survey on the current situation of undergraduate classrooms in universities, and conducts some exchanges and discussions on the challenges and implementation of applying constructivism in university classrooms.

## 2. The Significance of Constructivism Application in College Classroom

Constructivism is an educational theory proposed by the Swiss psychologist Piaget. The four elements of constructivism are scenario, collaboration, conversation and meaning construction. The application process of constructivism in the classroom is shown in Figure 1. Teachers should create learning necessary teaching situation and provide with necessary help for students, and students cooperate to explore the problem and teaching objectives in the form of individual or group. Students collaborate between group learning, conversation communication, mutual assistance. Also students can combine with their own experience in the process of learning, and internalize existing resources to their own knowledge, and complete the meaning of new knowledge construction. Constructivism education emphasizes student-centered, the self-study ability and creative ability that are highly same to the goals required by education in Chinese new era.

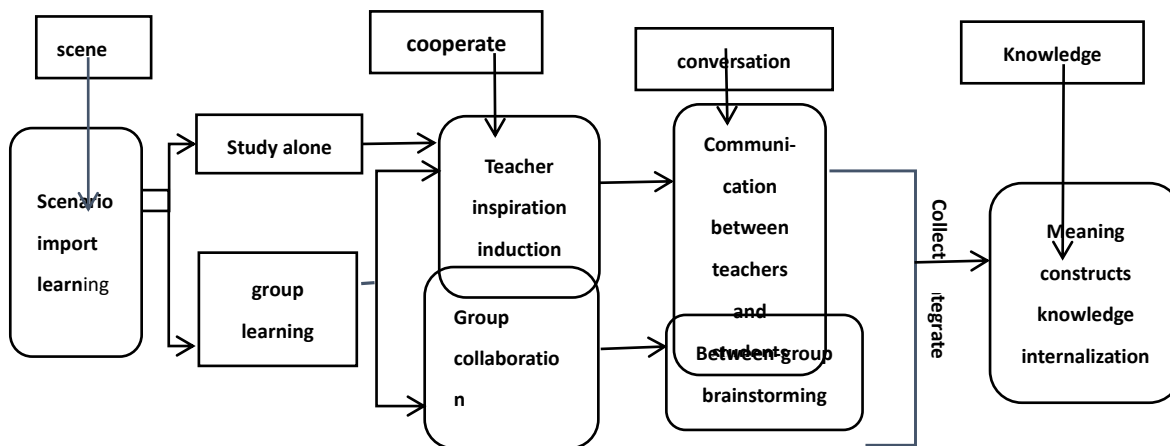


Figure 1: The application process of constructivism in the classroom

### 2.1. Constructivism is more conducive to the Implementation of Quality-oriented Education

《Xi Jinping talks about governance》 in the third volume about quality-oriented education mentioned: " The baton of quality-oriented education in colleges and universities is mainly scientific research papers, the status and scientific evaluation system of moral education, quality-oriented education is not really established... we should resolutely overcome stubborn ills only score, entrance, diploma, thesis, hat , fundamentally solve the problem of education evaluation baton, reverse the tendency of utilitarian education." Most of the traditional undergraduate education in colleges and universities evaluate the quality of students in terms of" results " such as scores and papers, but it does not really evaluate students from a multi-dimensional perspective. Students' observation, concentration, collaboration ability and even character

cultivation in the learning process are easily covered by the halo of the final result. Constructivism advocates evaluating students from the learning process, and students' comprehensive quality is easier to be considered, which is more conducive to the implementation of quality-oriented education.

## **2.2. Constructivism arouses students' enthusiasm, highlights students' uniqueness, and stimulates students' creativity**

In the traditional "cramming" education classroom, teachers, as the leader of the classroom, have high authority. The teaching contents knowledge points, teaching process and evaluation forms of students are basically decided by the teachers, while in most cases, students only assume the role of "follower" in the classroom, with little or no initiative. Students' creativity and imagination can only follow the rhythm of the teacher, to adapt to the teacher's teaching, independent thinking space is not large, just learn how to correctly and quickly to deal with the exam, and most knowledge is forgotten soon after the exams, swallowed learning does not let the students to complete independent meaning of knowledge construction.

The Chinese modernization of education requires "to speed up the construction of education suitable for everyone, and students with different personality endowments, different interests and specialties, different qualities-oriented and potential can receive education that meets their own growth needs." Constructivism class pays more attention on the subject status of students, according to the character of students to explore the potential of students, mobilize the enthusiasm of students. Based on the educational and cognitive level of most students, teachers create a teaching situation suitable for most students. The teaching situation pays attention to "white space", gives students free space to play. Students can use their imagination and creativity to connect knowledge, and their self-study ability is fully mobilized. Teachers act as the role of the "guide" of knowledge, after showing the teaching objectives, pay close attention to students' autonomous learning process, understand problems students' face and try to help what they need, when necessary to provide targeted guidance, teachers focus on each student's character interest and uniqueness, stimulate students' creativity from the whole to the individual.

## **2.3. Constructivism exercises students' character**

In the traditional undergraduate classroom, teachers divide students into several groups to complete tasks or problems. But as discussed earlier, teachers lead the class in the traditional classroom, the freedom of students is relatively low, based on the theme of teachers and complete form of group task, there is less communication and thought collision between group members, it's easy to appear that a few students speak actively, shy and inactive students like stealth, without any participation. In the constructivism classroom, students are the main body of education, and the teaching is carried out around students. Teachers will not almost or completely interfere with students' group tasks, and students will not speculate and flatter the tasks out of fear of the majesty of teachers. Team task is more open and inclusive in constructivism classroom and brainstorming among students whether good or bad students who can take part in discussion. In the process of discussion, students freely distribute group task, each team members can fully play their enthusiasm and creativity which improve students sense of responsibility, ambition, confidence and empathy, and improve the students' communication ability and teamwork ability, exercise the students perseverance, students' character in imperceptible exercise. Colleges and universities can also form a higher level of talent training system with the real integration of strengthening moral education and cultivate people really into the undergraduate education.

### 3. Analysis of the current situation of college undergraduate classroom constructivism application analysis

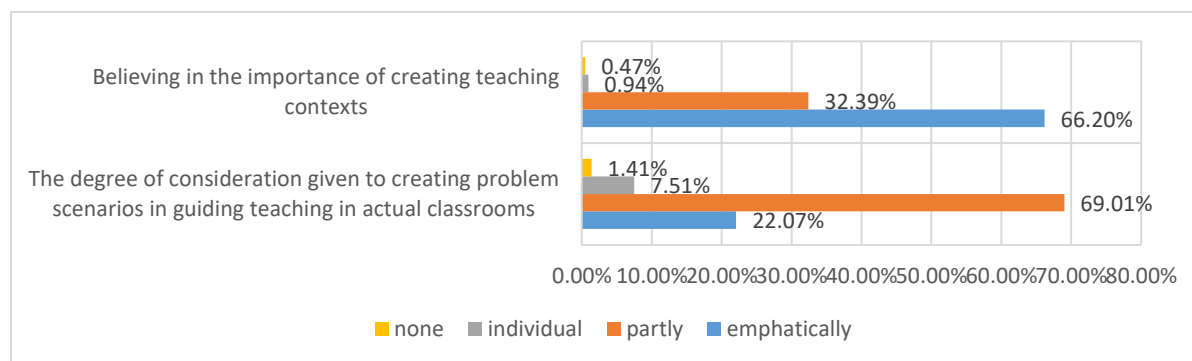
Based on constructivism, the teacher and student versions were designed, and 213 teacher questionnaires and 506 student questionnaires were collected to understand the application status of constructivism in undergraduate classroom. The questionnaire survey is mainly based on three aspects: pre-class, classroom and views on constructivism.

#### 3.1. Teacher's perspective

In this questionnaire survey, 70.89% of the teachers have been engaged in undergraduate teaching for more than 10 years, which can ensure that most teachers have rich teaching experience. Among them, 43.19% are associate professors, 29.58% are professors, 26.69% are lecturers, most of them are above lecturers, and more than 90% are in the front teaching line. The proportion of teachers teaching professional courses to undergraduates is the highest accounting for 81.22%, followed by professional elective courses accounting for 54.46%, public basic courses and public elective courses account for about 15%. Teachers are responsible for teaching the professional courses with professional pertinence and uniqueness, which can understand the application of professional constructivism in teaching and analyze the differences of majors. At the same time, it can understand the accuracy, reliability and authenticity of constructivism applied by front-line teachers in the teaching process.

##### (1) Pre-class

Teachers' pre-class lesson preparation and the design of teaching scenarios are important links in the constructivism classroom. Figure 2 shows teachers' views on the creation of teaching situations in the lesson preparation link.



**Figure 2 Teachers' views on the creation of teaching situations in the lesson preparation link**

By figure 2, on the attitude of the importance of creating teaching situation, 66.2% of teachers think it is particularly important. But in the actual classroom, only 22.07% of teachers mainly consider to creating teaching situation, 69.01% of the teachers consider to creating a part of teaching situation to stimulate students' interest in learning, which reflects the teachers think creating situation is very important, but there are certain difficulties in actual teaching, cause teachers cannot do priority.

##### (2) Classroom

The questionnaire examines the application of classroom constructivism from four aspects: teaching method, evaluation of students, role positioning and teacher-student interaction. Figure 3 reflects the current situation of teaching methods, and Table 2 reflects the current status of constructivist classroom in three other aspects.

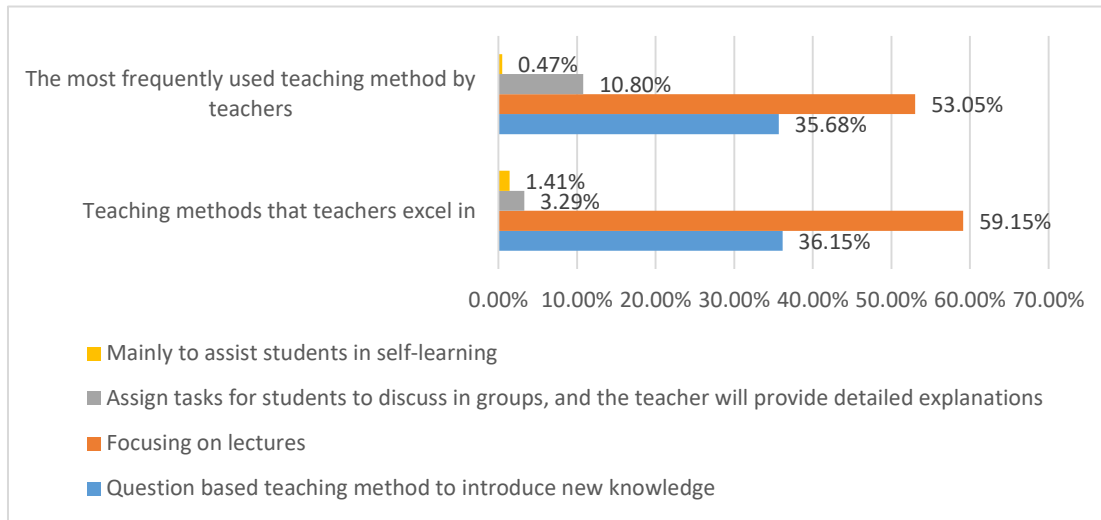


Figure 3 Current Status of teachers' teaching methods

Table 2 Analysis of constructivism in college classroom application

question	option	scale
Whether to use "right", "wrong", "yes", "no" to evaluate students	A.frequently use	10.33%
	B. Occasionally use	39.44%
	C. Rarely or hardly ever	50.23%
Teachers define their roles in the classroom	A.a person of imparting knowledge	37.09%
	B.co-worker	17.37%
	C. Classroom leader and organizer	45.54%
Teachers consider the importance of teacher-student interaction to the classroom	A.very important	67.14%
	B. More important	26.76%
	C. Generally important	4.69%
	D. Not too important	1.41%
The type of interaction most often used by teachers in the classroom	A. Teacher-the individual student interaction type	27.23%
	B.Teacher-group interaction type	16.9%
	C. Teacher-the whole class of student interaction type	54.93%
	D. Student-student interaction type	0.94%

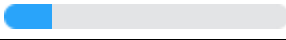




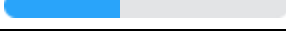
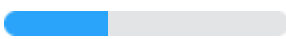

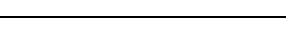

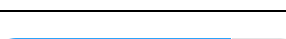
As can be seen from Figure 3, 59.15% of teachers are best at teaching methods, while 36.15% of teachers are good at creating problem situations to let students find and ask questions. The teaching methods that teachers use the most frequently are basically the same as the teaching methods they are best at. This reflects that most teachers are best at using the traditional teaching method. And the other three teaching methods, which mainly assist students in self-learning, assign tasks for students to discuss in groups, teachers' precise lectures, and problem-based teaching methods to explain new knowledge, are typical teaching methods applied in constructivist teaching. The method of creating problem scenarios to guide teaching occupies a certain proportion, while the other two are relatively few. This fully demonstrates that there are still some teachers who intentionally or unintentionally apply constructivist teaching methods in actual university classrooms. And the application of constructivist teaching methods is not completely without reference basis and space.

By table 2 reflects 49.77% of teachers will use "right", "wrong", "yes", "no", these judgment words to evaluate students, and "little" or "not use" evaluation words teachers were equally divided. It can be seen

that with the development of educational psychology, teachers also pay more and more attention to students' mental health. Teaching is not just focus on how to impart knowledge to students, also pay attention to the healthy growth of students. In the role positioning, the proportion of teachers as the classroom leader and the organizer, account for 45.54%, followed by the knowledge teacher, account for 37.09%, and finally the partner, account for 17.37%. Teachers are common as the classroom leader. More than 90% of the teachers believe that the classroom interaction between teachers and students is very important. 54.93% adopt the teacher-whole class student interaction, 27.23% adopt the teacher-single student interaction, and 16.9% adopt the teacher-group interaction. It can be seen that teachers prefer to interact with the whole class and attach importance to mobilizing the overall learning atmosphere of the classroom.

**(3) Teachers' views on the application of constructivism**

**Table 3: Teachers' views on the application of constructivism**

question	option	scale
Whether constructivism is suitable for the undergraduate classroom	A. Fit perfectly	 17.37%
	B. Fit	 36.15%
	C. Not very suitable	 7.98%
	D. Unclear	 38.5%
Whether the constructivism will be adopted in the classroom practice	A. Yes	 22.07%
	B. Deny	 40.85%
	C. Once in a while	 37.09%
The shortcomings of teachers think completely letting students study independently (multiple choices)	A. Students have a one-sided understanding of the knowledge	 69.48%
	B. It is more difficult for teachers to master the learning progress	 57.75%
	C. Students have poor self-control ability, and the effect is not ideal	 79.81%
	D. It is difficult to carry out the course	 29.11%

From table 3, in the question of constructivism is suitable for application in undergraduate classroom, 53.52% of teachers think "fit", the teachers of in the classroom practice will adopt constructivism have 22.07%, 37.09% of teachers occasionally adopt constructivism, it can be seen that although constructivism application is not common, it is a minority teaching concept, but the recognition in the college classroom recognition is not low, the prospect of application of constructivism is considerable. Students 'autonomous learning is an important part of constructivism, in the survey teachers think completely let the students of autonomous learning, more than half of the options will lead to students understand knowledge one-sided, teachers is difficult to master learning progress and students have poor self-control ability etc. It shows that most teachers think students' self-control ability is limited, the effect of autonomous learning is difficult to guarantee. If constructivism is applied in college classroom, teacher distributes autonomous learning task to students and must consider the students' actual ability level. But it also facilitate for teachers to master the course progress, timely adjustment and guide the classroom.

**3.2. Students' perspective**

97% of the students who participated in the questionnaire survey are students above the freshman year. The senior 3 students contacted with and learned more courses, which can ensure the effectiveness of the questionnaire.

**(1) Pre- class**

More than 90% of the students choose that teachers will set enough time before class to design a learning situation with a sense of substitution for students, which reflects that the reason for the poor application of constructivism in universities is not that teachers do not adopt the teaching situation but may be related to the quality of the teaching situation designed by teachers.

**(2) In Classroom**

The current situation of college and university classroom from the perspective of students is investigated from the two aspects of classroom interaction and the evaluation method of students. Table 4 reflects the current situation of the classroom.

**Table 4 Current situation of college classroom from students' perspective**




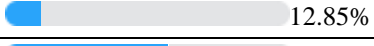
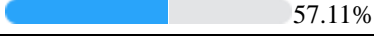

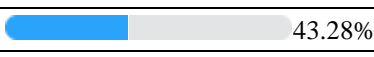

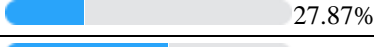

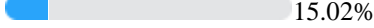
question	option	scale
Frequency of interaction with the teachers	A.Always	8.3%
	B.Often	26.88%
	C.Seldom	63.24%
	D.Never	1.58%
Reasons for being willing to interact with teachers (multiple choices)	A. Interactive content is interesting to yourself	84.39%
	B. The teacher's classroom interactive atmosphere is active	77.47%
	C. Interactive content is good for you	61.86%
	D. Interactive content is related to real life	54.55%
The most interaction between teachers and students	A. The teacher explains the theoretical knowledge	32.81%
	B. Students answer questions and raise questions	37.15%
	C. Group cooperation exercises	22.73%
	D. Summary and evaluation link	7.31%
The way of teachers evaluate students' learning outcomes	A. Personal report	11.26%
	B. Team report	41.9%
	C. Examination paper, paper	46.84%

As can be seen from Table 4, in terms of classroom interaction, 64.82% of students rarely or never interact with teachers. Among the reasons why students are willing to interact with teachers, the three reasons of interest in content, active interactive atmosphere and beneficial interactive content account for the highest proportion, with more than 60%. The most interaction between teachers and students, summary evaluation link time accounted for the least, 7.31%, the most is students answer questions and question, 37.15%, from the above data, teachers should increase the classroom interest, rich the content of contact life, attract students' attention, mobilize the classroom atmosphere and increase interaction with students. When evaluating students 'learning results, 46.84% are evaluated in the form of test papers and papers, and 41.9% are evaluated by group team reports. It can be seen that test papers, papers and group reports are the main ways for teachers to evaluate students' learning results.

**(3) View on constructivism**

**Table 5: Students' views on constructivism**

question	option	scale
Have heard of or learned about constructivism	A.Yes	26.88%
	B.Deny	32.21%

	C. Unclear	 40.91%
The teaching methods of students like	A. The teacher teaches in the whole process	 20.55%
	B. Study on one's own	 9.49%
	C. Discuss and study together in small groups	 12.85%
	D. Teacher guidance, self-inquiry learning	 57.11%
The effect of the group cooperation discussions	A. The effect is good, to grasp the problem is very clear	 53.95%
	B. The effect is general, with little help	 43.28%
	C. Have no effect	 2.77%
The key to improving students' comprehensive performance	A. Need a special help from the teacher	 27.87%
	B. It takes time to think independently	 57.11%
	C. Need time to discuss with your classmates	 15.02%

As can be seen from Table 5, only 26.88% chose "yes", and 73.12% of the students never heard about or understood constructivism. Based on most students do not know constructivism, design the questions about teaching methods, 57.11% of students prefer teacher guide, self-exploration learning, 12.85% of students hope group discussion, 9.49% of students like self-study, students' preference for autonomous learning method reflects the possibility of constructivism application, although students know little about constructivism, but in a sense advocating similar to constructivism teaching methods. 53.95% of the students think that the effect of group cooperation is good, and 46.05% of the students think that the effect is mediocre or ineffective. This shows that the existing group cooperation is not good on improving students' learning ability, and there is still a lot of room for development in promoting students' independent learning through group cooperation. Among the key problems that promote the improvement of students' comprehensive performance, more than half of the students think that they need time to think independently, need special help from teachers and have time to discuss with classmates, indicating that teachers can start from these three aspects to improve students' comprehensive performance.

#### 4. The challenge of application of constructivism in college classroom

##### 4.1 Teachers' perspective

###### (1) The breadth and depth of teaching situations created by teachers

In a college classroom, a teacher needs to be responsible for multiple courses at the same time. In order to save time and energy, most teachers choose the most "efficient" teaching method, that is the teacher only designs the course content designated by the university and repeats the designed knowledge points in common ways such as PPT and writing on the board. The problems that students need to master are condensed into mathematical formulas and scientific theorems. Constructivism requires teachers to spend more time preparing lessons and design teaching scenarios that are related to knowledge points. It can guide students and stimulate students' self-study ability. From the previous questionnaire survey, it is found that the teacher did not create the situation, but the breadth and depth of the problem situation is not enough. The problem situation created by teachers cannot effectively combine with the existing knowledge and experience of students to form new knowledge. The existing problem situation is polarized, some too esoteric, divorced from the students' actual ability and life, some too simple, students can get the answer without a little thinking. There are two main challenges for teachers to create scenarios. The first is that the workload of teaching scenarios is very large. Teachers have to spend a lot of time and energy on lesson preparation, and the teaching scenario creation in the whole process is not realistic. Second, it is difficult to ensure the quality of the teaching situation. There are a lot of knowledge points to create the situation in a course. If the whole process of creating the situation, it will be difficult to ensure the expected effect of the

situation and stimulate students' interest in learning.

## **(2) The problem of educational baton and the utilitarian tendency**

College classroom has been advocating "quality education", although the requirements to improve is "quality", but the actual improvement is "results" indeed, undergraduate classroom evaluation of students is regular grade and the final points of the two parts, of which the proportion of the final points, the final assessment is generally examination and paper. The phenomenon of "education baton" of only scores and papers is very common, and the problem of education utilitarianism is serious. In undergraduate class, there is often such a phenomenon: after the teacher raises a question, the student speaks to answer, the teacher divides the student's answer into "correct" and "error" two categories, student's inaccurate answer is attributed to "error". This kind of evaluation method of evaluating students' learning performance by test results and paper quality, and judging students' answers by "whether right or wrong", is actually quite different from the teaching theory of evaluating students from multiple perspectives advocated by constructivism. When students' performance is not excellent or outstanding enough, then we often judge the student's answer with the wrong and with low scores, students' self-confidence and enthusiasm will be blown, long-term hit is not conducive to students' mental health. In class, students must answer the pressure of standard answers, so that students dare not raise their hands to speak, or deliberately to the direction of the teachers' "correct answer" answer, without independently thinking about other possibilities of problems, to inhibit students' creativity and imagination.

In the constructivism classroom, after teachers assign tasks to students, the result of students' task completion is no longer the only assessment index of evaluation, and the process of independent learning and discussion such as students' thinking on the problem, the meaning construction of knowledge and group cooperation all become the evaluation content. At present, after teachers assign tasks in undergraduate classes, they do not comment on the process of students completing the tasks and don't emphasize the results more than the process. It is undeniable that for teachers, direct evaluation results can save a lot of time and energy, but obviously this utilitarian traditional assessment will make teachers ignore the valuable characteristics of students, which is not conducive to the discovery of students' potential and talent, and the liberation of students' thought and nature. How teachers break through the shackles of traditional assessment methods, establish a diversified evaluation system for students, and allow the classroom to have creativity, vitality and different voices and ideas is the challenge of constructivism in undergraduate classroom application.

## **(3) Difficulties in the transformation of teaching tasks and teachers' position and transformation**

Traditional education attaches great importance to teaching, while constructivism emphasizes learning. Questionnaire survey shows that students prefer the learning mode of "teacher-guided and independent inquiry", which highlights the role and importance of teachers as "collaborators" and "guides". College teachers face heavy teaching tasks, from "give priority to with knowledge" to "give priority to with meaning construction", from "leader" to "partners", "guide" concept change, need policy, institutional arrangement and support, but the current university education policy, system support of constructivism application is not big, teacher transformation and the space to change is very small. At the same time, constructivism has higher requirements for teachers. It should not only be specialized and versatile, but also be able to grasp students' psychology and do it freely when organizing students to discuss. Otherwise, it is easy to tangle on some detailed issues, affect the teaching progress and cause difficulties to teachers' positioning transformation. The four elements of constructivism are "scenario", "collaboration", "conversation", "knowledge construction". Teachers need to apply constructivism in the classroom and accumulate teaching experience, and the application of constructivism in the college classroom will become mature.

## **4.2. Student's perspective: It takes time to adapt and prepare**

First, China's current education status, and participate in the questionnaire survey of the most commonly teaching methods teachers used, mainly dominant teaching methods, constructivism classroom application extremely rare, students from the teachers, the classroom progress, most of the learning problems by the teachers solution classroom followers into the explorer, solution provider, in a short period of time also can't adapt. Second, from the perspective of students, the "success" in learning, which many students understand, is the score on the transcripts, the excellent papers, and the teachers' oral evaluation and affirmation. Chinese-style modern education advocates "breaking the four only ones" and developing students in an all-round way. However, the current education system still discusses success or failure by examination, selects and screens students through examination. Students grow up in an educational environment that emphasizes performance and scores, overall picture, and mystery of knowledge, far from excellent learning skills, strong memory, and good compliance with rules. Therefore, students' deep-rooted inherent learning thinking is also a challenge facing the application of constructivism in undergraduate classroom. Thirdly, the difference of national conditions and folk customs are also the challenges of applying constructivism in universities. Constructivism was first applied and valued in the West, in a large part because of the relatively open, inclusive and different social atmosphere in the West, the West advocates encouraging education, and students are more willing to show themselves and actively in class. Nearly seventy percent involved in the questionnaire survey students rarely or never interact with teachers, Chinese students compared with western students personality is inside collect, stand up in class to ask questions or answer questions for most Chinese students need courage, stand up means will become the focus of the class, to accept the attention of teachers and evaluation, students are not enough confident and don't like publicity, afraid to make a fool in class, afraid of failure. Constructivism attaches great importance to classroom interaction. Even if teachers are prepared, students are not prepared to participate in classroom interaction and show themselves. To sum up, it takes a gradual process to apply constructivism in undergraduate classrooms.

## **5. Application countermeasures of constructivism in college undergraduate classroom**

### **5.1. Focus on training, closely around the classroom, and gradually promote the constructivism classroom**

Teachers' quality plays a great and decisive role in the classroom effect. Colleges and universities should pay attention to the training of teachers' constructivist literacy, and gradually promote the constructivist applied classroom from the three links of lesson preparation, classroom and after-class, closely around the classroom.

#### **(1) Create high-quality teaching situations**

Lesson preparation is the first step for teachers to construct a constructivist classroom. Teachers should organize problems and construct classrooms according to the basic concepts of textbook knowledge. On this basis, extend students' learning space expanded outward. The quality of scenario creation is also the part that needs to be focused on in lesson preparation. Teachers can select knowledge points that are convenient for the situation to create scenarios, which can not only carry out constructivism teaching effectively. But also ensure the quality and effect of teaching. College education should be connected with the hot spots of The Times and the requirements of The Times. However, due to the limited level of students' knowledge and ability, teachers need to seek the balance among modernization, innovation and adaptation to students' ability. At this balance point, teachers should create a teaching situation with strong timeliness, closely related to knowledge points, arouse students' resonance and attract students' interest.

## **(2) Do a good job in the positioning and transformation of "guide" and "partner"**

In the classroom, teachers, to set up the "guide" and "partners" consciousness, teachers guide students to take the initiative to find problems, analysis, thinking, promote curriculum knowledge and multimedia technology deep fusion, using hybrid teaching, virtual simulation teaching methods, gradually let go of classroom initiative, make students independent discussion, teachers auxiliary participatory and experiential teaching mode. Only when teachers first change, and create a relaxed and harmonious classroom atmosphere, can students open their hearts, dare to speak and question on the initiative. Teachers should also grasp the psychology of students, encourage students to interact in class, understand students' difficulties and confusion, and give appropriate guidance.

## **(3) Improve the quality of group cooperation**

Group cooperation of constructivism in classroom is a common form of teaching, but combined with the results of the questionnaire, the undergraduate classroom group cooperation effect, teachers should be arranged to make students hypothesis, question, rhetorical thinking group homework, let each student in group cooperation, develop their own thinking and imagination, the essence of the question, to construct the meaning of the concept. Teachers should also be able to control the teaching process freely, timely follow up the progress of group cooperation, and ensure that the original class plan can be completed normally after group cooperation.

## **(4) Pay attention to student feedback and improve students' classroom experience**

Teachers should pay attention to students' feedback in time. Whether the reaction of students in class or students' learning situation after class, they can directly reflect the effect of class. The classroom response can be divided into the following three aspects: the thinking process of guided problems, the group cooperation, and the desire to express in class. Teachers adjust their teaching methods in time according to students' feedback, then have a benign and positive classroom interaction with students. Teachers can investigate the students' learning situation after the end of the class, and they can ask questions and take exams, or understand the students' feelings about the class by issuing anonymous classroom evaluation questionnaires. After listening to students' demands and feedback, teachers should also do reflection, from the scene design before class, classroom learning, interaction, evaluation of teaching reflection, combined with feedback to need to improve link, can replace the new method, change the original teaching mode, or redesign.

## **5.2. Integrate constructivism into the scope of academic research, improve the top-level design and basic services, and drive the development of scientific research and talents with education**

Report of the twentieth Congress discusses scientific research with talents and education, the education and scientific research practice activities of colleges and universities are the key to connect these three subjects. Western constructivism teaching started early, cases carried out the constructivism with achievements and rich experience in colleges and universities have been formed already, teachers should be organized to learn how to apply constructivism at home and abroad, teachers study constructivism teaching theory, improve their teaching level.

Colleges and universities are also to help teachers in constructivism teaching practice, students understand scientific research knowledge besides in the classroom, they must also be fully guaranteed scientific research practice. Students actively carry out scientific research project and large activities. In the constructivism classroom and practice, students' independent learning ability, dialectical thinking and creative thinking are cultivated, while creative students continue to study scientific research practice.

Colleges and universities should start to pilot the application from a small range, and can try out constructivism classroom from public courses and some knowledge points, so as to give teachers and students time to adapt and transform. And then colleges and universities organize various teaching and research activities after the pilot application, carry out teaching and research activities such as teaching experience meeting, teaching salon and skills workshop. To guide professional teachers to dig deep into the constructivism teaching space contained in each course, Teachers of different majors learn from each other, learn teaching experience, and cases promote teachers to further enhance their own awareness and constructivist teaching skills. Universities can better fulfill the mission and task given by the new era, construct a new teaching syllabus consisting of constructivism, professional knowledge and teaching methods, To realize the organic integration of value guidance, knowledge transmission and ability cultivation, universities can establish a modern higher education system with distinctive characteristics, first-class quality and keeping up with the times.

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