

# An Exploration of a New Relationship Between Teaching and Learning and Its Application to Classroom Teaching in China

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## Abstract:

China is currently in the stage of compulsory education reform, where primary education has been developing rapidly and leading the way in academic achievement over the decade. However, the application of different pedagogies to classroom teaching has been regarded as a controversial issue in the related field over the years. The teacher-centered pedagogy evolved from behaviorism proposed by Skinner emphasizes students benefit more from the behavior of external stimulation while constructivism advocates learners-centered pedagogy that stresses children's internal cognitive process based on the theories of the more knowledgeable other (MKO) and zone of proximal development (ZPD). The purpose of this paper is to explore a new relationship that strives to balance the proportion of the two teaching methods through an extensive review of literature related to the context of the current status and problems of primary school education in China.

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## Keywords:

Behaviorism  
Constructivism  
Teacher-centered pedagogy  
Learner-centered pedagogy

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## 1. Introduction

Tam *et al.* <sup>[1]</sup> claimed that “students have traditionally been viewed as passive recipients of knowledge,” since classroom teaching is an activity in which teachers lead classroom content and students are less willing to take the initiative in the learning process in Chinese classrooms. According to Lak *et al.* <sup>[2]</sup>, teacher-centered pedagogy is the most common method which is used by schools in the world. Hancock *et al.* <sup>[3]</sup> concluded the teacher is the

dominant leader who establishes and enforces rules in the classroom under this mode, which puts more emphasis on the performance of the instructors. Cox <sup>[4]</sup> discussed that this kind of education system is not teaching learners to learn but to conform because this system neglects their individuality and productivity. However, there has gradually been more and more research on student-centered mode, which provides a new perspective for teaching relationships. This paper explores the new

teaching and learning relationship, the advantages and challenges of the “student-centered” mode, and how teachers can effectively “serve” students in this mode. This study offers an analysis of the method that refers to classroom teaching in China.

As a student in the past ten years, the author has always been taught in a teacher-centered mode from primary school to high school in China. The schools adopt the form of standard exams to evaluate students. While considerable knowledge is mastered under this mode, the understanding is not deep enough and cannot be truly put into practice. Most importantly, the ability in language expression, independent thinking, and critical thinking has not been improved, which is experienced by most Chinese students. According to Bamber<sup>[5]</sup>, from the social perspective, with economic growth and the arrival of the information age, employability is more relevant to creativity and innovation. School education indeed plays a vital role in the cultivation of creativity and innovation. Although the common mode “teacher-centered, textbook-centered” still dominates, whether this kind of teaching mode is the most effective for the cultivation of talents still needs further exploration. The aim of this paper is to identify the distinction between the two modes and find a way to combine them in classroom teaching through the learning theory of behaviorism, constructivism, and social-constructivism.

## 2. Literature review

### 2.1. Behaviorism

According to Skinner<sup>[6]</sup>, behaviorism refers to stimulus-response behavior. Watson<sup>[7]</sup> stated that humans learn behavior from the environment and behavior is the product of stimulus-response. Skinner<sup>[8]</sup> conducted the experiment in a “Skinner Box,” which was about operant conditioning. Inside the box, there is a bar for the rat to press in order to gain a reward. Through constant repetition, the rat gradually knows how to avoid getting pain<sup>[9]</sup>. The experiment reveals that the formation of the behavior is affected by reinforcement and punishment<sup>[10]</sup>. In addition, Kain<sup>[11]</sup> suggested that teacher-centered pedagogy derives from behaviorism of education, in which students can be trained to respond to certain stimuli to produce certain behavior. The more

frequent the stimuli, the stronger the training. McLeod further provided specific examples that combine the learning process of students. Students can be rewarded if they finish the homework, thus they tend to repeat and strengthen this behavior, which is reinforcement. By contrast, students will be punished if they do not finish the homework, thus they will finish the homework to avoid being punished. McLeod concluded that reinforcement tells people what should be done, but punishment tells people what should not be done<sup>[10]</sup>.

Skinner<sup>[8]</sup> supported that behaviorism is often used by school teachers to reward or punish students’ behavior and behaviorists believe that school learning is promoted when the learner makes active and repeated responses to the stimuli. Brophy<sup>[12]</sup> stated that in teacher-centered education, teachers retain full control over students’ behavior and strengthen it through reward or positive punishment. According to Corpuz<sup>[13]</sup>, teacher-centered pedagogy is based on the notion of stimulus and response. In other words, teacher-centered pedagogy is a process, which uses formative assessment to select the right stimuli that will result in changed student behavior. Children are exposed to stimuli in the environment and their repeated responses to these stimuli will lead to correction.

The disadvantages and limitations of behaviorism exist. Collier<sup>[14]</sup> criticized behaviorism and claimed that physiological and psychological structures between humans and animals are different. The ability to observe and analyze animals is relatively simple. However, human beings have complex psychological structures, which are quite different from animals. Similarly, Genovese<sup>[15]</sup> stated that the teaching conclusions drawn from animal experiments are inappropriate. Peel<sup>[16]</sup> suggested that cognitive processes, such as “perception” and “reflection,” are neglected by behaviorists, which play an important role in the learning process. Fosnot<sup>[17]</sup> claimed that behaviorism is merely knowledge acquisition during the learning process and more emphasis should be put on the process of understanding. To be more specific, these scholars argue that behaviorism pays too much attention to external stimuli but ignores the internal processes that produce the behavior. From the author’s own learning experience, it is believed that learning is not only the acquisition of skills under the teacher-centered approach, but a process of perception. The stimulation

of the external environment and the internal perception comprise a complete learning system.

## 2.2. Constructivism

Piaget<sup>[18]</sup> proposed four stages of cognitive development, which demonstrate the change of cognitive structures in interaction with the environment during the development of individuals from birth to maturity.

- (1) Sensorimotor stage (birth to age 2): According to Meyer and Dusek<sup>[19]</sup>, children experience the world through sense and actions during this stage. Simatwa<sup>[20]</sup> stated that one of the characteristics of children at this stage is to connect the senses with the environment. For example, children learn about the external environment by watching, grasping, or hearing. Another characteristic is that children have the ability to know “object permanence.” With the development of their intelligence, children understand although things are not in sight, things still exist.
- (2) Preoperational stage (age 2 to age 7): According to Ojose<sup>[21]</sup>, children in this stage think that everything is alive. They are so self-centered that they will only think about things from their own perspective. Their thinking is irreversible and stereotyped.
- (3) Concrete operational stage (age 7 to age 11): Burns and Silbey<sup>[22]</sup> suggested that children can perform abstract thinking operations at this stage, but thinking operations must be supported by specific things, such as jigsaw puzzles, counters, etc. At this stage, their thinking begins to become reversible.
- (4) Formal operational stage (age 11 to adulthood): Piaget<sup>[23]</sup> suggested that during this time, children’s thinking matures; they have abstract thinking and they can think rationally. Children have logical reasoning skills and their thinking becomes more flexible<sup>[24]</sup>. Therefore, teachers should educate the children at this stage in a way that encourages them to explore the answers to the questions by themselves, rather than telling them the answers directly.

It can be seen that children’s cognitive structures

are constantly changing and enriching with age. Piaget’s cognition theory shows that if humans want to develop their cognitive levels, they need to “build” their knowledge through previous personal experience<sup>[25]</sup>. Therefore, based on the theory of cognitive development, Piaget proposed the theory of constructivism. Kain claimed that student-centered pedagogy derives from constructivist views of education. According to Bada<sup>[26]</sup>, students are not passive recipients of information, but active constructors of information. Oliver<sup>[27]</sup> stated that the implementation of constructivist learning theory is that teachers should motivate students to use their previous experience to create knowledge when they encounter new external information. Therefore, the teacher’s role in the classroom is to create a “collaborative problem-solving environment” that allows students to build their own knowledge<sup>[26]</sup>.

According to Akpan and Beard<sup>[28]</sup>, students can improve critical thinking skills under this pedagogy since every student’s experience is different, therefore the meaning of constructing knowledge is different. Bada<sup>[26]</sup> stated that in such an environment, students’ enthusiasm can easily be mobilized rather than passive knowledge recipients. They can express their thoughts based on their explorations with peers, which improves their social and language skills. McLeskey *et al.*<sup>[29]</sup> suggested that students become independent in the process of learning, instead of relying on the teacher to give them the correct answer.

## 2.3. Social-constructivism

According to Vygotsky<sup>[30]</sup>, before children construct internal cognition, they will first be in a social context. Roth<sup>[31]</sup> stated that knowledge is established through interaction with people around you. Rummel<sup>[32]</sup> further claimed children’s cognitive levels are improved through interaction with more knowledgeable people. Therefore, according to Weegar and Pacis<sup>[25]</sup>, Vygotsky’s theory of the child’s cognitive process is similar to that of Piaget. Both of them think that children’s cognition requires internal processes, and cognitive ability is based on children’s previous personal experience; however, Vygotsky focused on the social environment. McLeod<sup>[33]</sup> claimed that the environment to which children are exposed can affect how their minds work.

Vygotsky proposed two theories of cognitive development: one is the more knowledgeable other (MKO), and the other is the zone of proximal development (ZPD). In order to better understand the social-constructivism, we need to know the two theories. In terms of the MKO, Moalosi<sup>[34]</sup> suggested that nobody can succeed on his own in the process of learning. Students need to communicate with people who have better skills or understand a task better than students themselves. Kumar<sup>[35]</sup> claimed that a more knowledgeable person can be a tutor or a parent. However, Kumar<sup>[36]</sup> argued that the key to the MKO is more knowledge rather than the learner himself. In other words, if peers have more knowledge or experience than students, they can influence the construction of knowledge and are included in the scope of the MKO.

From the perspective of the ZPD, Vygotsky stated that the ZPD refers to the distance between a child's ability to solve problems independently and the ability to get help from an adult or a competent member to complete a task. Freund<sup>[37]</sup> conducted an experiment where he observed two groups of children, one group working with their mother to complete a task, and the other group doing the same task on their own. He found that the group of children who worked with their mother were able to complete the task with good performance. McLeod claimed that "guided learning within the ZPD led to greater understanding/performance than working alone." In other words, when discussing problems with experienced people, the cognitive process will be smoother and building knowledge will become more efficient. From the author's point of view, in the social context of classroom teaching and learning, learners will improve problem-solving skills and they tend to be more active participants in classroom activities. Moalosi suggested that the ZPD can contribute to effective teaching and learning. According to Amineh and Asl<sup>[38]</sup>, social constructivism suggests that in classroom teaching, students should be more emphasized than instructors. The communication and cooperation between students and their peers or tutors are very important, which is related to their establishment of knowledge. Mishra<sup>[39]</sup> stated that teachers should encourage students to learn cooperatively and discuss together by using "interactive methods" such as group work. In addition, Moalosi stated that teachers

should increase the challenges of learning tasks, otherwise there will be no progress.

In short, through the analysis of behaviorism, constructivism, and social-constructivism and their characteristics in classroom teaching and learning, compared to constructivism and social-constructivism, behaviorism is relatively passive and mechanical. It is stimulus-response behavior that the teacher acts on the student. According to Weegar and Pacis<sup>[25]</sup>, "the teacher would provide hints or cues to guide students to a desired behavior, and then use consequences to reinforce the desired behavior." Therefore, unlike constructivism, it ignores the children's internal cognitive process and they can only learn as a result of teachers' experiences, which is an incomplete learning process. From the author's own experience, the student who is in a "teacher-centered" classroom does not have the tendency to think actively and they are more willing to wait for the teacher to give the answer. However, the practice of constructivism makes up for these problems. Barker<sup>[40]</sup> suggested that the theory of constructivism does not regard learning as an isolated skill. To be more specific, constructivists focus on the development of internal cognition, so they encourage teachers to set more open-ended questions for their students to build cognition through their previous experiences<sup>[41]</sup>. The distinction between constructivism and social-constructivism is the "social context." Fosnot suggested that students are able to learn more effectively through cooperative learning with more knowledgeable peers. Above all, it is believed that social constructivism more scientifically and fully demonstrates the process of constructing knowledge. Therefore, the inclusion of student-centered methods in classroom teaching and learning should be advocated.

### 3. Comparison between "teacher-centered" and "learner-centered" modes

There are many differences between the two modes of teaching and learning, which are manifested in many aspects. First and foremost, the role of teachers should be emphasized. In a teacher-centered mode, Liu<sup>[42]</sup> stated "the teacher is actively involved in teaching while the learners are in a passive, receptive mode listening as the teacher teaches." According to a recent educational survey, about

62% to 67% of primary and secondary schools use this teaching mode in a certain city in China <sup>[43]</sup>. However, McCabe and O'Connor <sup>[44]</sup> claimed that student-centered pedagogy is to encourage students to acquire knowledge by themselves. The knowledge is explained in detail by the teacher under teacher-centered pedagogy, while students are guided by their teachers through asking questions and leading the learners under learner-centered pedagogy.

Students learn in different ways. According to Huba and Freed <sup>[45]</sup>, under the teacher-centered mode, students receive the information passively and they tend to study alone. There are few opportunities for students to discuss problems with each other in class. From the author's own experience, in some experimental classes, the teachers complete the experiment by themselves and tell the students the results of the experiment directly. As Skinner mentioned, this kind of behavior of "stimuli-response" leads to reinforcement, which repeats and strengthens this behavior. In contrast, Brown <sup>[46]</sup> suggested under the student-centered mode, learners are given the ownership to design their answers by working in groups and discovering knowledge by themselves. In that case, learners are in a social context to construct knowledge on their own.

From the perspective of evaluating academic achievement, under the teacher-centered teaching mode, the evaluation system is single <sup>[47]</sup>. To be more specific, examination-oriented education is usually adopted to judge the degree of students' knowledge mastery and the quality of teaching according to the score. By contrast, under the student-centered mode, there are multiple evaluation systems. In addition to formal examinations, students are usually asked to conduct a project to examine their ability to use knowledge comprehensively, which fully reflects the integration of theory with practice.

In terms of teaching achievement, under the teacher-centered mode, students have a good command of theoretical knowledge. According to literature <sup>[48]</sup>, "because teachers direct all classroom activities, they do not have to worry that students will miss an important topic." On the other hand, under the student-centered mode, students can acquire diversified skills. Ellis <sup>[49]</sup> suggested they tend to take part in learning activities when they realize they can communicate with group

members and participate actively. Through the group activities assigned by teachers, students know the importance of communication and cooperation and how to think independently and search for answers.

## 4. Student-centered pedagogy

### 4.1. Methods to create the environment

To create such an environment, we should first define the student-centered teaching mode. In brief, in a student-centered teaching mode or learning environment, the attention of teaching is transferred from teachers to students and the ultimate goal is to develop autonomous and independent students <sup>[50]</sup>. In such an environment, students stand in the center of the stage and play an active role, while teachers provide students with choice and voice.

#### 4.1.1. Earlier stage: Preliminary preparation

Brown <sup>[51]</sup> suggested that "Get your student's input before changing the classroom environment." He further gave an example that at the beginning of one semester, teachers can ask the students how they want to arrange their desks. The questions include: Which seat arrangements are most suitable for group work? Should we put our seats in circles or in rows? The form of group work is to enable students to express their views on a certain problem, and to cultivate their ability to think actively. The form of the class should be clear so that students themselves can participate in arranging the class, and make them more aware of how they should treat the course. Harvard President Eliot believed that the course selection process itself has educational value, which can cultivate students' sense of self-responsibility, which is one of the aims of education <sup>[47]</sup>.

#### 4.1.2. Middle stage: Specific implementation

An open and trusting classroom should be built. Loveless <sup>[50]</sup> stated in order to create trusting and open communication between teachers and students, teachers ought to be fair with their students, listen to them, and allow them to speak. Fu <sup>[52]</sup> claimed it is essential for instructors to actively create a democratic and harmonious teaching atmosphere so that students can think positively, speak boldly, and speak out without

fear in class. However, sometimes students' speeches are often fragmented, incoherent, and even biased, teachers do not need to deny the students but praise their participation <sup>[53]</sup>. Every student wants to be heard, seen, valued, and respected, so teachers should properly encourage and motivate students. This kind of motivation can be linguistic or non-verbal, including a hearty smile, a glanced gaze, a warm reminder, and so on. These may have an incentive effect on students. Over time, students will be able to develop the learning habits that they are good at thinking, dare to ask questions, and are willing to solve problems.

Group cooperative learning should be implemented. Cooperative learning increases the opportunities for students to share ideas with each other, which puts students in a social context <sup>[47]</sup>. In the cooperative study group, students work together with their peers to identify the questions raised by their teacher, put forward opinions, collect data and analyze them, and finally find answers or conclusions. MacKenzie <sup>[54]</sup> stated one of the characteristics of student-centered classrooms is to keep the students thinking and seeking their own answers. In this mode, students' potential for creativity could be achieved, which greatly improves the efficiency of teaching, and the subjective position of students is more prominent.

Homework should be replaced with project-based learning activities. Project-based learning is "learning through identifying real-world programs and developing real-world solutions" <sup>[50]</sup>. Mackenzie <sup>[51]</sup> gave a specific example. In a high school in Vancouver, teachers asked students to design a solution to bring clean drinking water to rural areas where water is scarce. The first group of students designed an affordable handheld water purification system, the second group of students designed a community wastewater treatment facility, and the third group of students created a water use plan for the community. Although many students did not give practical solutions in the end, this is not our goal. The significance of this process is that students can understand how to solve practical problems, and teachers can see the social and emotional skills of students at work.

#### 4.1.3. Late stage: Teaching evaluation

In China, teaching evaluations done by students at the

end of each semester have not been popularized. Wang <sup>[47]</sup> claimed that in some schools, the indicators of evaluation pay less attention to students' learning effect and their satisfaction with the teaching methods, and thus students' further learning cannot be promoted. In the author's opinion, the evaluation of student-centered teaching evaluation should be scientific and comprehensive. Indicators should include the cultivation of students' abilities, interaction with students, students' mastery of knowledge, students' learning enthusiasm, and the teaching methods that students think need to be improved. In this way, teachers can understand the students' ideas and requirements, know the students' shortcomings, and then modify teaching strategies in time.

#### 4.2. The dilemmas: Problems and challenges

Although the student-centered teaching mode has many advantages and cultivates students in an all-round way, there are still many obstacles in the implementation, which are limited by many factors. Under different backgrounds, many educators discuss different influencing factors through research and their own teaching experience.

Dr. Kumar conducted a study at Agazi Preparatory School in Adigrat Ethiopia. The school found some problems in the implementation of student-centered teaching in the English teaching classroom. Kumar stated, "Most of the students were not interested in learning through student-centered method due to different factors, such as sense of fear, lack of interest and confidence, and mother tongue influence." At present, in most schools in China, English teachers are required to adopt the whole English teaching method. Therefore, in some of these student-centered activities, students will be encouraged to participate and have the autonomy to express their opinions in English. From the author's own teaching experience, some students are afraid to express their ideas because of their shyness. In addition, they are afraid of making mistakes and lack confidence. There is also a fundamental difference between the student's native language and English, and it is difficult for them to adapt to such teaching activities. Tian <sup>[43]</sup> also suggested that some school education reforms in China did not take long, and students have not fully adapted to this teaching mode.

Jabbour <sup>[55]</sup> suggested many schools consider small classes to be the cornerstone of student-centered teaching. Small classes are more beneficial for teachers to supervise students' performance and learning, so the student-centered mode can be better implemented. Plus, it is convenient for teachers to manage classroom discipline, and most importantly, teachers ask questions in class or ask learners to work in groups, providing students with more opportunities to speak and express themselves. Small-class teaching is regarded as providing a better learning experience for students, thus improving the quality of education. Jabbour did a survey at Lebanon University, which shows the majority of the teachers (96%) agree that one reason that inhibits school teachers from adopting the student-centered method is the enormous number of students in a classroom. Thus, teachers in Lebanon usually keep their classrooms teacher-centered. This is similar to most primary and secondary schools in China. It is common to see over 40 learners in a classroom. Teachers need to discipline students, thus it is difficult to carry out certain classroom activities, which greatly hinders the student-centered mode.

Some teachers confirm that the student assessment system is also one of the factors that affect the application of student-centered teaching mode. In China, almost all courses adopt the closed-book form to assess the degree of students' mastery of knowledge at the end of the semester, and to measure the teaching level of teachers. Some teachers think that the student-centered teaching mode consumes too much time in class. In order to let students acquire the course knowledge in a short time, teachers still choose the traditional teaching method. As Jabbour suggested, teachers feel that time is their biggest challenge in completing teaching tasks, they lack sufficient time to meet the needs of all learners.

Finally, school leadership is also an important factor. There is no doubt that the school leadership manages rules and regulations, develops curriculum plans, and urges the quality of teaching. School leaders have direct and indirect effects on teachers' effectiveness <sup>[56]</sup>. Therefore, in order to promote this teaching system, teachers need the support of the school leaders. With their support, teachers can organize meetings to discuss how to effectively use the classroom time, so that students can learn knowledge

happily. They have cultivated their ability to think independently, theoretically, and practically. However, according to a survey, 52% of school leaders, in a middle school in Hainan Province in China, are reluctant to accept such teaching methods.

## 5. Application of a new relationship to classroom teaching in China

### 5.1. Current status and problems of primary school education

According to Zhou <sup>[57]</sup>, China's primary education has been developing rapidly and leading the way in academic achievement over the decade from the aspects of the educational environment, the issue of educational equity, and the quality of teachers. However, the teaching methods in the classroom have not changed significantly. It is claimed that "a classroom full of students obediently taking notes and only breaking their silence for a prompted chorus of repetition" <sup>[58]</sup>. This phenomenon represents the classroom of an elementary school in China. Reville <sup>[59]</sup> suggested through his observation that the teachers in China tend to stand at the platform and teach children well-organized knowledge, which forms a disciplined classroom environment. In other words, the whole classroom is led by the instructors, who retain full control over children's behavior <sup>[12]</sup>. The reasons why teacher-centered pedagogy plays a leading role in the basic education stage in China can largely be attributed to exam-oriented education <sup>[60]</sup>. Kirkpatrick and Zang <sup>[61]</sup> suggested the Chinese educational system is more inclined to "highly exam-centric" education. To be more specific, what instructors teach in classes is closely related to what learners are examined in the tests <sup>[62]</sup>. As a result, the "established body of knowledge" is transmitted from instructor to learners, and then it will be reinforced through homework and exams <sup>[59]</sup>. This is the typical stimuli-response in behaviorism, which emphasizes learning is the connection in a stimuli-response relationship <sup>[25]</sup>. Therefore, many teachers believe that the teacher-centered mode is an effective pedagogy for students to gain knowledge, thereby achieving good academic performance <sup>[61]</sup>.

The problems and limitations of teacher-centered pedagogy exist. Since teacher-centered pedagogy

derives from behaviorism of education, the problems of behaviorism will inevitably occur in teacher-centered pedagogy. Peel <sup>[16]</sup> suggested that cognitive processes are neglected by behaviorists. Similarly, Fosnot <sup>[63]</sup> claimed that behaviorism puts more emphasis on knowledge acquisition during the learning process, however, the process of understanding and constructing are ignored. Therefore, it is clear that behaviorism pays too much attention to external stimuli but ignores the internal processes that produce the behavior. The stimulation of the external environment and the internal perception comprise a completed learning system. From the perspective of teacher-centered pedagogy, the process instructors transmit well-organized knowledge to children and then, the knowledge is reinforced through tests, and rewards are the external stimuli to children. Tursunov <sup>[64]</sup> suggested that under this pedagogy, the biggest problem is that children will only be able to do rote memorization in order to cope with exams. According to Mpho <sup>[65]</sup>, “rote memorization reinforces children’s passive learning, which hinders the development of the higher cognitive abilities.” The knowledge mastered by rote memorization is not constructed through the internal “perception” and “reflection,” however, it is used to deal with the tests to obtain high marks. Therefore, the teacher-centered pedagogy under the examination-oriented education system contradicts the knowledge construction theory proposed by Piaget. Furthermore, Dahling <sup>[66]</sup> stated that Chinese teacher-centered pedagogy does not make students form effective study habits and higher modes of learning, such as evaluation, analysis, and synthesis. This will be detrimental to their access to higher education in the future because they lack the ability to solve practical problems.

However, China has been carrying out educational reform in the past 30 years and new educational policies have been constantly put forward. Mo <sup>[67]</sup> claimed that one of the hotspots in the discussion of educational reform is the transformation of examination-oriented education to quality-oriented education. The concept of quality-oriented education is highly extensive, but the core of it is to respect students’ individuality and encourage them to learn independently <sup>[68]</sup>. Zhou <sup>[69]</sup> stated that quality-oriented education was first proposed in the 1980s, but the State Education Commission organized

the “National Primary and Secondary School Education Quality Meeting” in 1997, which laid the foundation for implementation. According to Jing <sup>[70]</sup>, the reason quality-oriented education has become a heated discussion is that educators in China have found the drawbacks of our basic education in the new era: students are bound to the examination, which results in their lack of creativity. Thus, in different eras, China has different requirements for education. To be more specific, Mo suggested that with the rapid development of science and technology and the challenge of an increasing amount of knowledge, it is impossible and unnecessary for schools to teach all knowledge to students. What important is to develop their ability to acquire and construct knowledge by themselves. In this era, technological innovation and economic competition are becoming more and more fierce, so schools should focus on students’ innovative spirit and ability. Guan and Meng <sup>[71]</sup> claimed that student-centered pedagogy produced under quality-oriented education pays attention to the cognitive process of children and the cultivation of their problem-solving skills.

## 5.2. Application of student-centered pedagogy to primary school

White <sup>[72]</sup> stated that context is a key factor when we discuss education programs. The context should avoid being too generalized since education issues vary from place to place. Therefore, in this section, the context is limited to the basic education stage in China, especially in the primary school stage to explore how to integrate student-centered pedagogy into classroom teaching. As mentioned in the section of the literature review, student-centered pedagogy derives from constructivism and social-constructivism of education. Thus, the teaching method should be based on these theories. Piaget <sup>[18]</sup> proposed that environment and previous personal experience play a leading role in the development of cognitive structures among children, thereby forming four stages of cognitive development. Simatwa <sup>[20]</sup> stated that the “learning environment should be rich in physical (concrete) experiences because growth in any one stage depends upon activity.” Piaget <sup>[18]</sup> also claimed the key to a child’s cognitive development depends on the direct physical and mental perception of a particular environment. In the author’s understanding, if these



theories are linked to the actual classroom teaching in primary school, teachers should adopt different situational teaching approaches to create an immersive experience for children so that they are able to develop the cognitive level, which lays the foundation for the internal establishment of knowledge in the future. Subsequently, Piaget stated when children are in the stage of a formal operational stage, they can think rationally and they are able to find answers by themselves through previous personal experience. As a result, instructors should prepare materials that are relevant to the children's current cognitive abilities<sup>[21]</sup> and then they motivate students to use their previous experience to create new knowledge when they encounter new external information<sup>[27]</sup>. From the perspective of the theories proposed by Vygotsky, McLeod claimed that "guided learning within the ZPD led to greater understanding/performance than working alone"<sup>[33]</sup>. In other words, the new cognition is a cooperative achievement, not an individual effort. Vygotsky's theories emphasize the importance of social context in the teaching and learning process. So according to literature<sup>[73]</sup>, the practical application of ZPD and MKO is to design collaborative learning activities to develop cooperative spirit, such as group discussion. Vygotsky<sup>[74]</sup> stated if a child has the ability of cooperative learning now, he will be able to think creatively and independently in the future. In summary, cooperative learning and joint discussion with peers in the classroom are indispensable links under student-centered pedagogy.

However, Zhang<sup>[75]</sup> stated that China is a huge country and every region has various education problems. It is not easy to implement student-centered pedagogy throughout the country in a short time. In addition, Huang and He<sup>[76]</sup> suggested in terms of the national conditions of China, which is a country with a large population, the most effective way to select talent at present is through exams. Therefore, as long as these two situations exist, student-centered pedagogy is challenging to implement. However, it cannot be denied that compared with teacher-centered pedagogy, student-centered pedagogy is an effective way to produce innovative talents. Therefore,

as a teacher, we should consider both the general environment in which the students live and the value of student-centered pedagogy, then strive to balance the proportion of the two teaching methods in the classroom.

## 6. Conclusion

The overall aim of this paper was to compare the differences between two pedagogies in classroom teaching under the theories of behaviorism, constructivism, and social-constructivism. From the perspective of behaviorism proposed by Skinner, it puts more emphasis on the behavior of stimuli-response between teachers and learners and behaviorists believe that children are exposed to stimuli in classroom teaching and their repeated responses to these stimuli will lead to correction. However, Piaget and Vygotsky focused on children's cognitive ability and the social context. To be more specific, constructivists think that learners can construct their own cognition through previous personal experience and the learning process will become more effective if the learners work cooperatively with the MKO. Therefore, the main difference between them was that behaviorism stresses the importance of external stimulation in the learning process while the other two focused on internal perception and reflection of the learners.

China is currently in the stage of basic education reform. The aim is to improve students' active participation and independent thinking in the classroom. However, at present, most classrooms still use the teacher-centered pedagogy under exam-oriented education, which leads to a lack of innovative and creative talents. The student-centered pedagogy should be considered in our classroom teaching despite its limitations. Zhao *et al.*<sup>[77]</sup> claimed that student-centered pedagogy does not apply to all courses and some courses will be more effective using the teacher-centered pedagogy. From the author's point of view, one of the challenges that teachers in China face is to balance the proportion of the two teaching methods in the classroom by considering the general environment in which the students live and analyzing the value of student-centered pedagogy in a certain course.

### Disclosure statement

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