

The Application of Constructivism in Physical Education

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Abstract—The application of constructivism in physical education is a major step in improving teaching quality. Through literature study and logical analysis, this paper interprets the concept of constructivism and analyzes the current situation of physical education. Based on the author's teaching practice, where students' dominance is brought into full play, this paper sums up the implications of applying constructivism to physical education and aims to improve teaching quality.

Keywords—constructivism; physical education; application

I. INTRODUCTION

After the establishment of development goals, theoretical research, and some pilot experiments, physical education reform is now in full swing. After years of practice and exploration of numerous educators, which have yielded fruitful research results of teaching reform, the fundamental position of constructivism as the reform theory in current teaching is established. However, a mass of the teaching reform researches are limited to classroom experiments and observations, and teaching reform in technique-related courses in physical education, which involves the study of muscle movements, various energy supply systems, interactions between tissues and organs, as well as sports knowledge and skills, is still focusing on theories. Therefore, the integration and rational application of constructivism to physical education is a significant step in enhancing teaching practice.

II. THE MEANING OF CONSTRUCTIVISM

A. The concept of constructivism

Constructivism is a learning theory that focuses on how learners make meaning in relation to the interaction between their experiences and their ideas. Constructivism places much value on learners' play and exploration which earlier learning theories like behaviorism and cognitivism tend to

see as aimless and of little importance. In the constructivist teaching model, students' autonomy is emphasized and they play an active role in constructing meaning in the learning process. Constructivism concerns a series of understanding and interpretations of the nature of knowledge, the acquisition of knowledge, and the nature of learning. Constructivism holds that knowledge is actively constructed by the cognitive subjects based on their prior experiences and knowledge. The theory of constructivism not only assumes that individuals have the capacity to construct knowledge, but also holds that knowledge should be actively built up by learners and closely related to their own experiences.

B. Elements of constructivism

The core idea of constructivism is "construction", and an ideal learning environment should involve the following four elements: context, collaboration, communication and meaning construction^[1].

Context: context refers to the teaching environment in traditional teaching. Constructivism holds that it is essential to create a learning environment which helps students to construct meaning out of what they have learned.

Collaboration: Learning is intimately associated with learners' connection with other human beings, especially their teachers and peers, thus students' collaboration as well as collaboration between teacher and students should be taken into account throughout the learning activity.

Communication: communication is an indispensable part of the whole collaborative teaching process which includes teacher-student communication and student-student communication^[2] "Fig. 1".

"Meaning construction": Meaning refers to the internal relations between things and their nature and rules. Meaning construction means helping students grasp the internal relations between things they are learning and other things as well as the relations between these certain things and their nature and rules.

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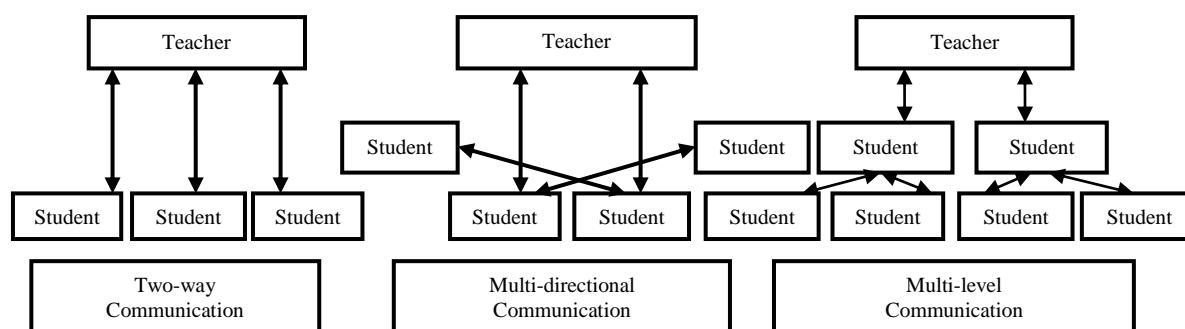


Fig. 1. Models of teacher-student communication and student-student communication.

C. Constructivist view of knowledge and learning

Constructivism emphasizes the role of implicit processing of individuals in the construction of knowledge and formation of cognitive structure; therefore it attaches importance to both the learner's initiative in learning and the feedback for learning^[3].

The constructivist view of knowledge holds that knowledge is not passively received, but is constructed by individuals through their interaction with the world and it is based on the interaction between the knowledge they are learning and their previous experiences.

The constructivist view of learning holds that instead of passively waiting for the delivery of knowledge, all learners should construct their own knowledge based on their unique experiences that can be related to the external world. Learners' understanding of the new knowledge is based on their prior background knowledge, so there is significant difference among individuals. The constructivist view of knowledge and learning provides a new perspective on learning, which is learning is not a one-way transmission of knowledge from teacher to students, but a process in which students construct their own knowledge and system of knowledge. Therefore, students' initiative and dominance as well as teachers' guidance should be taken into account in teaching and learning.

III. THE APPLICATION OF CONSTRUCTIVISM IN PHYSICAL EDUCATION

A. Analysis of current physical education

When it comes to the current situation of physical education, teachers still play the role of master and dominator in the teaching and learning process. Students are treated as simple receivers of knowledge and skills, which will undoubtedly hinder communication between the teacher and students, thus undermining teaching quality. The fact that teachers fail to understand the nature of teaching and attach much more importance to imparting knowledge while ignoring learning, combined with schools' ineffective evaluation system for physical education, has restrained teachers' minds, causing them to adopt the one-way teaching mode without taking into account the reality. Another problem with the current physical education is that students' dominant role is underestimated. Each and every student is

unique and has their unique outlooks. When learning new knowledge, students should be the center of the process, yet in most teaching practices, students' collaborative role in the teaching and learning activities is ignored.

In physical education, a teacher should be a loyal supporter of students while they try to construct their own knowledge^[5]. The role of teacher shifts from an authority source of knowledge to a guide, a superior partner and collaborator. The traditional teaching mode which focuses on teaching movement essentials should be transformed into a mode where priority is given to students' practice, and the teacher inspires and guides the students. Through practice, students are expected to identify the movement essentials and rules by themselves, and then the teacher enhances these knowledge by summarizing properly. Since students are participants of teaching and learning activities and constructors of knowledge, they need to adopt a new learning style and apply new strategies in order to process the new information. In a word, they need to adjust to their new role as the constructor of knowledge and meaning.

B. The application of Constructivism in Physical Education

In classroom teaching, teacher, students, teaching materials and equipment are connected as a whole only through structuring. The more reasonable the class structure is, and the more harmony there is between various elements, the more likely it is to optimize classroom teaching and to create favorable conditions for students to develop actively and comprehensively. Therefore, the construction of teaching mode should be based on the idea of optimizing the structure of classroom teaching. Moral education, intellectual education, aesthetic education and physical education should be combined and the knowledge structure should be built according to the whole-parts-whole pattern. Meanwhile, due attention should be paid to the combination of interdisciplinary knowledge. Taking the teaching of basketball passes for example, the teacher can ask the students to practice two-handed chest pass first so that they may be able to sum up some movement essentials after the practice. Then the teacher instructs students about their difficulties like the inaccuracy in direction and lack of strength when passing the ball and reminds them to pay attention to these problems in the next stage of learning. In the mean time, the teacher should try to arouse students' interest in the subject and increase their enthusiasm by

introducing other types of pass to them, such as single-hand pass, behind-the-back pass, bounce pass etc. During the practice, a student-centered approach, rather than a teacher-centered approach should be adopted. The teacher should give students individualized instruction instead of stopping students' practice on a large scale only to correct a few errors that are not common among the class. In order to guarantee the effectiveness of the practice, the continuity of practice should be maintained. Meanwhile, note that both classroom teaching and the learning process can be controlled. The teaching and learning of any class in any subject has its specific goals and objectives. Teachers transmit information to students and at the same time, they make proper evaluation and judgment based on students' feedback. They also need to identify the gap between reality and the teaching objectives, to find out the difficulties students encounter while learning, so that they can design individualized instruction, adjust the pace of teaching and improve the teaching method, thus boosting quality of teaching. Students' learning, on the other hand, involves the input and output of information. Besides, they learn to determine whether their understanding of the information is right or not by giving and receiving feedback and assessment. In this way, they can correct their own mistakes and update their knowledge and then decide where their efforts should be directed. Thus, it is essential to establish a proper control mechanism and strengthen the communication between teachers and students in terms of effectiveness and promptness. The teaching and learning process can be controlled effectively when feedback in advance, prompt feedback and delayed feedback are properly used.

For example, students can be asked to compare the capabilities and strength of each team and predict the result of the game while watching world basketball championship, which will help students better understand the skills and tactics of each team, the actual positions of the teams, and gain a deeper understanding of the current status of world basketball. What's more, this approach will help cultivate student's enthusiasm for basketball, which in turn will encourage their love for China's national basketball team. In other words, it helps nurture patriotism as well as interest in sports.

C. The implication of constructivism for physical education

- First, a student-centered approach should be adopted in order to cultivate creative thinking. At present, the traditional teacher-centered mode still prevails in physical education throughout China. This approach is characterized by the dominance of teachers' instructions in the classroom where students are not fully engaged in learning due to a lack of interest and motivation. The constructivist theory is based on respect for students, and it emphasizes the role of students as the center of teaching and learning, and students' individual differences. In physical education, teachers should give up their control over students' learning and design the curriculum on the basis of students' needs and ideas. Students' independence and initiative should be encouraged and embraced.

The teaching and learning should be focused on the students' needs. It is the teachers' responsibility to help students become thinkers, creators or constructors by attaching more importance to students' practice instead of teachers' instructions. It is crucial to make the best of various factors that affect learning to encourage students' enthusiasm, initiative and creativity. Once the students regain the control over their learning, their learning efficiency will be multiplied.

- Second, the current evaluation system should be reformed so as to stimulate students' enthusiasm and confidence. While it is important for educators to evaluate students' academic performance through test results, it is of greater significance to provide students with support that they need to understand and construct knowledge. Therefore, instead of relying on test results as the only tool to judge how well students have learned, teachers should pay more attention to the process of learning and the students' performance during the process. As soon as all the pressure and strain associated with exams is removed, students will be fully committed to their study, with more passion and energy, which will effectively promote the comprehensive development of students' body and mind.
- Third, it is equally important to create a context of learning that is conducive to collaboration among the students^[6]. The constructivist theory pays particular attention to creating favorable learning conditions and guiding students through their collaboration with each other. According to constructivism, a favorable learning condition aids the students' construction of knowledge or meaning, and it is meant to replace the teachers' instructions, which, more often than not, may result in students' difficulties in constructing knowledge. Hence, teachers should try their best to create a context of learning that presents real-life scenarios to students and at the same time, is consistent with the curriculum. Besides, teachers should provide students with clues about the connection between the new and old knowledge, and help them construct meaning from the knowledge they are learning. One of the core concepts of constructivism is that the interaction between learners and their surroundings is the key to understanding the learning materials. This is particularly true for physical education where collaboration is more likely to improve students' ability to learn and practice, accordingly, the significance of collaboration in the process of knowledge construction should be fully acknowledged.

D. Potential disadvantages of the application of constructivism in physical education

There are different views among scholars as to the application of constructivism in physical education. In their academic paper "Constructivism: Please cogitate it deeply and apply it carefully on physical education", the authors,

Chai Jiao and Zhou Dengsong discuss the limitations of constructivism as a guiding theory in physical education and present their ideas^[7]. First, they elaborate on the nature of physical education, which in itself presents some restraints on its teaching and learning. To start with, the content knowledge in physical education is not closely connected with logic because of the abundance of content resources, various origins, and considerable differences in structure and technique between all kinds of sports skills. Take swimming and football for example, there is no apparent connection between them, and each has its own system of basic knowledge and skills. The experience students have gained from swimming cannot be transferred to the learning of football, which means a different system of knowledge and skills. As for the learning objectives in physical education, the author believes that without the teachers' guidance and expertise, it is unlikely for students to achieve the objectives by constructing knowledge all by themselves. Given the characteristics of students' learning at different stages in physical education, there is bound to be limitations if a certain theory is applied throughout all stages. It is believed that the approach characterized by transmission of knowledge from teacher to students works better for students at the lower level of learning while the constructivist approach is more effective for students at a higher level in that it helps students develop creativity.

IV. CONCLUSION

Due to the enduring influence of the deep-rooted exam-orientated education, physical education has been dominated by teacher's instruction and knowledge transmission. The role of teacher as the knowledge transmitter has been overrated, and the students have been treated as passive receivers of information. Teaching and learning activities are mainly centered upon teachers and their instructions. As a consequence, students have become used to passive learning, and have shown a poor awareness of how important their active participation is. Constructivism transforms the traditional pattern of teaching and learning where students learn passively into a new pattern where students are encouraged to learn autonomously. The role of students will come into full play in the teaching and learning process, which is not only a process to learn sports knowledge, techniques and skills, but more importantly, a process to tap into students' creativity. Meanwhile, a complete abandonment of the traditional approach of physical education is not recommended. The application of constructivism in the teaching and learning of specific sports should be combined with traditional teaching and learning so that they can complement each other. Further research on the feasibility of the application of constructivism in physical education reform is needed and to avoid the negative results of blind imitation, the application of the constructivist theory should be based on the reality of physical education in China.

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