The Course Research for the Software Program Based on the Constructivism Teaching Theories

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Abstract

The theory of constructivism teaching emphasizes that: firstly, the center of teaching should be students; secondly, teaching should cultivate the student’s character of autonomy and cooperation. The constructivism teaching gets rid of some disadvantage in the traditional teaching. Through using constructivism teaching theories to instruct programming course, it can liven up the lesson mood and cultivate the independent study; improve the team spirit and the ability of programming software for students.

1. Introduction

The Constructivism, the first person who puts forward it should trace back to J.Piaget who is Swiss. He thought that human’s cognitive structure should construct from the interaction with environment gradually and the human’s cognitive structure develop by the internal and external cause. Based on J.Piaget’s theory, Kohlberg studied deeply the intensive properties and the environment for development of the human’s cognitive structure; Subsequently, Sternberg and Katz emphasized that the key roles in which the individual initiative played in the construction process of cognitive, explored earnestly how to play to the individual subjectivity in the cognitive process. In addition, Vgotsky founded that “the cultural history development theory” which emphasized the importance of the social cultural history background in human’s cognitive structure, on the basis of this theory, the Social-Cultural-Historical School, explored deeply the importance of the “activity and social interaction” in the development of the human’s advanced mental function. All this studies enrich and promotes the Constructivism to develop, which create the conditions for practical application in the teaching process. We may explain the Constructivism basic theory from two aspects: one aspect is “the meaning of the study” (What is the study); one aspect is “the method of the study” (How to study).
2. Research Background

The American, George Michael KeLei, used the Constructivism theory to design teaching template around the student's learning and curriculum standard, which conclude six teaching steps: designing the study situation, organizing the study group, setting up the learning bridge, making sure the learning task, arranging the study results show, guiding learning reflection. He instructed the teacher how to play a guide to the students' learning role, promote their independent development, and make the teaching efficiency achieve twice the result with half the effort. The Constructivism theory treat teaching as a learning organization, not design teaching in advance, because we focus that what will the student do in the class and what will the teacher do to encourage and support the student. As well as known, student don’t take participation in the class, just only listen the teacher’s teaching. Because the student doesn’t think and discuss with his classmate about the knowledge in the class, so this situation leads to the student’s academic failure and low rate employment. In addition, as the internet developed quickly, some students indulge in the network game and virtual environment. They don’t make use of the computer to study the software program, and forget the knowledge gradually, so they don’t know how to program the software for the company. At present, the computer talent who should have comprehensive knowledge, technical skills and team cooperation spirit is popular in the talent market. After graduation from the university, most students not engage in the computer industry. The reasons of the low rate employment in the computer industry include: the reduced post and the personal quality. The main reason is that the student has bad academic and be lack of the cooperation spirit, so he don’t know how to design software, maintain computer and debugging program. Therefore, we should change the traditional teaching method, which is the mandatory classroom teaching mode, teacher inculcated the knowledge upon students. It is very important for us to seek for a new teaching method to culture student’s initiative and cooperation spirit.

3. The Disadvantage of the Tradition Software Program Teaching Method

At present, the student who study in the traditional software program teaching method don’t adapt to the computer employment market. The traditional software program teaching method has two disadvantages.

3.1 The Classroom Atmosphere Are Depressing and the Thought of the Student Are Not Active

The center of the traditional teaching are “teacher, books and classroom”, students are ordered to obey discipline and sit straightly in the class. As student was in a passive learning environment all the time, they don’t have the initiative in the class and their thought are entrapped into a set, in other words, they only have the concentrated thinking, no divergent thinking. It leads to that students’ thinking are not active, no critical spirit and questioned spirit in the classroom. As a result, the atmosphere in the classroom is depressing and students' thinking are not active, they lose the confidence to ask question in the class.

3.2 The Low Interest in Learning, the Weak Team Spirit.

In traditional teaching, teacher emphasizes too much the intellectual education development of student and understanding of knowledge master, neglecting to culture student’s moral, emotional, cooperation of the training, student’s study motive and study interest. Student doesn’t have interest and motive to study the knowledge. As the student studies the knowledge passively, never explores it by himself, he has been
accustomed to study under the supervision of his teacher. If things go on like this, the student will master knowledge slowly, have more pressure in the study, lose study interest, lack the cooperation spirit. At last, the student hates to study the software program lesson, not to mention that working with colleagues to program software and finish the work. Therefore, in the current teaching lesson, we need to change the traditional teaching method and adopt the new teaching method to culture student. The Constructivism teaching method may make up for the disadvantages of the traditional teaching method with the concept that “the Research-Based Learning” by taking student as the center in the class,\cite{5} emphasizing to culture student’s self-study ability, stimulating student’s interest to study, giving play to student’s initiative and cooperation spirit. So that the student can get interest and develop himself in the software program teaching lesson.

4. The New Ways in Software Program Teaching Method Based on the Constructivism Theory.

The Constructivism emphasizes that the student is the center in the class and the teacher is the guide for the student’s significance construction. It puts forward the concept that teacher should enhance the student’s initiative, enthusiasm and interest in the study and let student construct the significance by himself. The main idea of the Constructivism should be as follows:

4.1 The Ways of Independent Learning Method of Student and Teacher’s Language Communication

The teacher would not impart knowledge into the student but enlighten the student to construct the significance of the knowledge by himself. Therefore, we should design the lesson teaching according to the law of the student’s cognitive construction, especially in the teaching situation and cognitive conflict. The teacher instructs the student by words to interpret the concept and explain the examples and analyze the knowledge of the computer. In addition, teacher also uses this way to instruct the student the history of the computer development and the new computer technology. The teacher use language to teach the student the knowledge and skill, which not only avoid the “stuffing” type of teaching, “duck-stuffing” type of teaching, “daunted” type of teaching, but also make the lesson convincing and attraction. In addition, it emphasizes the relativity of the knowledge, in another words, student gets meaning of the knowledge after combing with his existing knowledge and experience. It emphasizes the student’s autonomy, initiative which refer to student find problem by himself and collect, analyze or organize related material by himself. Then, student combines the new knowledge with their existing knowledge and experience, next, they construct new meaning of the knowledge. Under the teacher’s instruction, student read the text, collect the information independently, think and explore the serial question designed by teacher, so that, they can use their own brain to find question and put forward the question. The teacher carries out the group discussion to exchange the information of student in the class. With the center of student, the teacher is the guide of the student and leads the student to play initiative and enthusiasm in the activity.

Each student can speak out his view, and listen to all kinds of different views. The student draws on the wisdom of the masses, inspire mutually, deepen the understanding and improve together. The Constructivism teaching method avail for developing the student’s independent thinking and the spirit to explore the truth and create something.

4.2 The Cooperative Learning Method Which Based on the Practical Training

The practical training is the source for the student to increase the perceptual knowledge, also is the important ways to acquire and validate the information. Through the experiment and practice, the student
does not only get the reliable information, but also culture the habit to use the hand and brain, also culture the ability of searching information. The essence of the practical training is the active participation of the individual in the whole teaching process that make the student be active to the maximum limit, actively to use the hand, use the mouth, use the eye, use the brain. The teaching process becomes the student’s independent activities. Therefore, teacher should use the modern education teaching means in the class, carrying out the cooperation study in the lesson. The cooperation learning is that the student has a clear responsibility division of mutual learning to complete common task in the group or the team. Except that, cooperation learning concludes another point: effective communication between student, the spirit of the helping each other in the team, believing other people in the team, changing the competition between individual into the group. So that the cooperation learning can make up for the inadequate teaching which one teacher teach so many students in the class. It is good for the student to improve their quality. If we adopt the cooperation learning teaching method in the software program course, we will have good teaching effect.

Through the method mentioned above, the Constructive teaching method change the traditional teaching concept, realizing the initiative, effective teaching, making the student study actively, carrying out the cooperation learning. It can culture the high quality talent who have the team spirit and practice ability.

5. Conclusion

The Constructivism teaching method demands the teaching activity center on the student. It has a positive effect to change the traditional teaching mode, which is the passive acceptance, simple imparted and it contributes to give full play to the initiative in the students’ learning activities and team spirit. Based on the Constructivism, the software program teaching mode will train more and more the high quality talents. However, with the development of the computer technology and the standard of the computer talents, we should use the dialectical point of the view to study and utilize the Constructivism teaching method. Therefore, we construct our study and teaching theory by adopting the reasonable method from the Constructivism.

References