The Research and Practice of the Theory of Mixed Learning in the Teaching of C-Language Course

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Abstract: C language is a popular basic course widely opened in various colleges and universities, and the traditional teaching of teaching has been unable to meet the needs of the students' increasingly diverse learning. The emerging network learning (mobile learning, general learning, turning in class, etc.) has made up the shortcomings of the traditional teaching, but it can't be replaced completely. This article explores how to introduce the theory of mixed learning into the teaching of C-language course, to use the existing teaching resources and technology to optimize the teaching links, to improve the quality of teaching and to achieve the purpose of learning.

1. Introduction

With the changing of Internet technology, many reforms in the field of education and learning have been launched. The traditional teaching of teaching has been unable to meet the needs of the students' increasingly diverse learning, and the students' desire and initiative are suppressed, leading to the “to learn and not to” of the students. Learning is a kind of deep learning, it is the perception of knowledge, it is the process of reconstruction of new and old knowledge. Learning will be effective only when students are experiencing real problems and actively solving them. Therefore, the new teaching idea and method must be introduced into the day-to-day teaching of the university, to promote the deep integration of the new technology and the higher education, to promote the modernization of the teaching content, the means and the method, to optimize the teaching environment and to improve the teaching effect.

2. The Present Situation of the Teaching of C-Language Course

C language is a popular public basic course widely opened in various colleges and universities. It is a general computer programming language, which involves extensive and content abstraction, and requires students to have the ability to program thinking and application. As a tool for solving practical problems, it can't be used as a course of pure theory [1]. In the course of traditional C-language course, the teacher is in the classroom to explain the grammar knowledge, and the students are fully in the passive indoctrination state. Even if the teacher used the multi-media technology in the classroom to replace the blackboard-board book, it was only a version of the Xuan Ke, and could not improve the original teaching method [2]. The teacher can not study the C language course, and the students' different situations can flexibly design different teaching plans, boring, single learning goals and learning forms, so that the teaching of the C language course lacks effective communication and innovation, Most of the students can only memorize all the knowledge points, so that the enthusiasm and autonomy of their study are suppressed. Similarly, in the practice teaching of C language course, students can only simulate and program some of the sample codes on the book, can't understand the language deeply, lack the ability to analyze and solve the problem from the actual project, can't train the ability of their independent hands-in programming, It is also not conducive to the development of thinking and innovation spirit [3, 4]. The present situation of these teaching is in violation of the original intention of the C language course of learning, and how

to introduce the new teaching idea and method into the day-to-day teaching, to provide the students with the individualized learning become an urgent task of the current C language course reform.

3. Mixed Learning Concept

With the popularization of information technology, there is an innovative teaching mode based on network learning. Making use of the advantages of the network to break through the bottleneck of the allocation of educational resources, combined with the current ubiquitous learning, micro-class, MOOC and other emerging technologies, more and more people can share high-quality teaching resources, and the environment of online learning has become increasingly mature [5]. However, pure and single online learning is not conducive to students' systematic learning and mastery of knowledge, as well as the communication and interaction between teachers and students, and also lacks effective monitoring of students' autonomous learning process. Although it makes up for the shortcomings of traditional teaching, it can not be completely replaced. Therefore, hybrid learning (B-Leaming) emerges as the times require. Mixed learning has a solid theoretical foundation, and its application in foreign colleges and universities is relatively mature. In our country, mixed learning has also been widely used in many aspects, such as language training, IT training and so on, but its application in university teaching is still in the exploratory stage. Professor Huang Ronghuai believes that the essence of mixed learning is “at the 'right' time, in line with the 'appropriate' learning means, to impart 'the right' knowledge to the 'appropriate' learners, so as to achieve the best learning effect.” Mixed learning combines different learning theories, learning resources, learning environment and learning methods, and organically integrates the dual advantages of classroom learning (C-Learning) and online learning (E-Learning). Through the complementarity of the two, they promote each other, optimize the teaching process and achieve the teaching objectives. The application of mixed learning to the teaching of C language course not only integrates the advanced nature of network teaching method, but also retains the advantages of traditional teaching method. Students can learn independently and individualized to achieve the best learning effect.

4. Mixed Teaching Practice of C Language Course

At present, college students have a strong sense of self-awareness and critical, and different levels of growth environment and knowledge level. For the teaching of C language courses, if the same class, even the same grade, according to the unified and standardized teaching progress, still only use the traditional teaching method supplemented by teachers'classroom teaching and students'computer verification, students with programming foundation will feel that the teaching progress is too slow, resulting in their lazy learning. Students who have never come into contact with a high-level language will be unable to keep up with the progress of teaching because of poor foundation, thus losing confidence in learning. But if the course only uses the network way to study, the student's self-restraint and the control ability is generally insufficient, also cannot get the timely communication and the solution when encounters the difficult topic, the content is very difficult to integrate, equally cannot achieve the teaching goal effectively. Therefore, personalized teaching needs gradually arise. Mixed learning integrates “online learning” and “traditional teaching” to help students understand and master knowledge points deeply and provide students with autonomous learning. It ensures teachers'guidance to the curriculum, inspiration and monitoring, as well as communication and feedback between teachers and students, and at the same time cultivates and stimulates students'own initiative, enthusiasm and creativity. Mixed learning is paid more and more attention in colleges and universities, so it is imperative to introduce it into the teaching reform of C language course.

We try to study the teaching reform based on the concept of mixed learning in the Internet environment, explore how to introduce mixed learning into the teaching of C language course, effectively integrate and use the existing teaching resources and technologies to optimize and reorganize the teaching links, provide multi-channel teacher-student interaction, carry out

cooperative learning, and put forward a new mode of mixed learning of C language course suitable for students in our school. Effectively improve the teaching quality of the course, to achieve the application of learning.

Mixed learning is a kind of comprehensive learning scheme using various forms of learning. It is necessary to first analyze the key factors that affect the teaching effect and provide the basis for the follow-up teaching. The students are the subject of the study, the different characteristics of the students, the existing knowledge and the skill, the learning style and the preference, etc. will directly affect the effect of the following classroom teaching and the self-learning. We take various forms of questionnaire, E-mail, talk and chat, and try to find out the real situation of all students through various channels. The survey shows that the students of our school are familiar with the computer and can operate the computer skillfully, but very few students contact or learn the programming language, and most of the students only use it as a kind of leisure mode, the self-control ability is poor. Therefore, how to guide different levels of students to use the appropriate way to study the C language, to improve the learning efficiency and the quality becomes the primary study.

Based on the different characteristics of students, according to the unique knowledge system of C language course, we analyze the curriculum characteristics, teacher conditions, existing teaching strategies and learning environment in detail, clarify the three-dimensional objectives of teaching, master planning and design of the curriculum. According to the different foundations and specialties of the teaching students, the roles and tasks that teachers and students should undertake are defined, and the strategies of information communication between teachers and students in the learning process are determined. At the same time, according to the learning needs and curriculum objectives, arrange the activity sequence of the corresponding teaching chapters, determine the practical items and organizational forms, gradually decompose the specific teaching contents into specific tasks, configure the time proportional relationship of classroom learning, online learning, practical teaching and cooperative learning, design the learning evaluation method, and provide the complete process of mixed teaching. According to the different emphasis, we carry on two kinds of practical teaching attempts respectively.

On the one hand, mixed learning mainly based on classroom teaching. According to the nature of the course and the distribution of knowledge points, the teacher adopts the method of teaching introduction to make students understand the content, objectives, ways and channels of the course comprehensively from the beginning of learning, so that the students can reasonably arrange the planning steps and focus of learning according to their different characteristics. Teachers share all relevant teaching documents(outline, teaching plans, courseware, etc.)and materials(audio, animation, video, etc.)to students in advance by using instant communication tools, network disk, cloud platform, MOOC, etc., and strive to use different mixed methods to guide and stimulate students' inquiry interests, so that suitable students can learn the appropriate content at the right time and environment, and realize personalized recommended learning, so that students can learn the teaching content and the knowledge points that need to be learned by themselves, and solve difficult problems independently. Teachers will emphasize the key points and difficulties of learning content, deepen the application of knowledge points, and explain the students' doubts through the interaction between teachers and students. Introduce high-quality and shared educational resources in the traditional classroom teaching. For the easy-to-understand learning content(such as sequence program, branch structure and other knowledge points), try to learn independently, gradually increase the learning difficulty, make the students gradually adapt to the rhythm of independent learning, strengthen the independent learning and cooperative learning in the network environment. For the learning content(such as array, pointer, file and other knowledge points)with strong theoretical and difficult to master, take the form of teaching or group discussion in the classroom, design the teaching content and case and realize the``internalized absorption'' of knowledge.

On the other hand, the mixed learning, which is dominated by students' autonomous learning, combines cooperative learning (Collaborative Learning) with classroom teaching by designing

effective practical activity units (such as information management system, achievement management system and other comprehensive topics). Students study in the form of group or team cooperation. The teacher arranges the specific rules (grouping, scheduling, assessment, etc.), and presents the task to the students through typical cases, so that the students can deeply understand the requirements, make the students react to each other, and improve the autonomous learning ability. Students study independently according to their different learning habits and rhythms, “mixed” and “integrated” online and offline resources, make use of past experience and existing knowledge, study and analyze topics, clarify key points, difficulties and key factors, reconstruct knowledge and find solutions. Group according to the theme, professional background, interests and personal wishes of the task, make plans and implementation steps, assign roles and time, and select a team leader to coordinate the work and write the report after the completion of the task. In this process, teachers pay close attention to the learning process of each group of students, organize and control the learning progress of each group at the right time, do not let it go, and make use of QQ groups, regular meetings and other “real” or “virtual” communication channels to ensure the coordination and communication of each group, to help students solve the practical problems encountered, share the harvest and experience, and complete the study of practical activity units. This teaching mode emphasizes “cooperation” and “interaction”, gives full play to students' own enthusiasm and initiative, promotes their competition with each other, draws lessons from each other, and trains team cooperation and negotiation ability.

5. Summary

The mixed teaching method combines the traditional face-to-face teaching and the virtual network learning, and melts the teachers and students, the class and the outside-class, the theory and the practice, the online and the offline, realizes the complementary advantages, and forms a brand-new teaching mode. We explore how to introduce mixed learning into the teaching and practice of C language course, make the learning resources, process and result more autonomous, strengthen the interactive communication between the students and the teachers, and promote the students to study actively and to improve the self-consciousness of the students. The self-control and innovation ability of the students are cultivated, and the learning effect of the optimization is brought to an increasing number of students.

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