Teaching reform and exploration of vocational python programming course based on OBE

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Abstract: Based on the OBE education concept and following the principle of "reverse design and forward implementation", this paper proposes a targeted reform design and exploration on the teaching objectives, teaching content, teaching methods and teaching effect evaluation of python course. In the teaching process of python course, the results-oriented online and offline mixed teaching mode is adopted, so that students can have a clear understanding of the teaching objectives of the course and the ability it should have, which can stimulate students' learning interest and improve the teaching quality and learning effect of python programming course. This paper also discusses the expansion and reflection of the course.

Key words: python; OBE; And mixed online and offline teaching

1. Introduction

In the Notice on the issuance of the National Vocational Education Reform Implementation Plan, it is proposed that the work to promote the development of the industry should be focused on cultivating high-quality workers and technical talents, so as to better serve the society. The idea of results-oriented (OBE) education is a results-oriented, student-centered, and constantly improving educational concept. In the period of vigorous development of higher vocational education in China, under the background of "new engineering", it is a very significant thing to apply OBE technology to the teaching of higher vocational colleges. Therefore, in the process of higher vocational education, it is necessary to clarify students' learning objectives and effectively help students to obtain learning results. In order to cultivate the students' thinking of program design, we take the freshman students of software technology major as an example. According to the students' learning situation, there are the following problems in the programming language course:

1. Take the freshmen majoring in software technology as an example, the foundation of mathematics English is weak, the learning habit is weak, the boring programming language will hurt their confidence in learning, which leads to the transfer of their interest;

2. It is difficult to get started with zero foundation in the early stage of programming language, which leads to giving up;

3. After class programming homework can not be completed on time, resulting in the failure to achieve the expected learning effect;

4. Most of the small program design tasks in class are classroom cases, which are disconnected from the actual cases of enterprises, resulting in poor teaching effect as students are unable to learn and use programming theories to solve practical problems;

In summary, the author puts forward the teaching reform ideas of "python Programming" course for software technology major in our school from the aspects of teaching content design, teaching case analysis, course evaluation, teaching reflection and so on.

2. Python programming teaching design

1. Advantages of python language

python language syntax is simple, in recent years by more and more software engineers favor. Compared with Java, C++, python language light syntax, pay attention to problem solving, in the teaching content is more suitable for the relatively weak foundation of vocational students to learn. Students do not need to spend a lot of energy on grammar learning, which is more conducive to cultivating their logical thinking and problem-solving ability.

The Python language is completely open source, and the innovation of Python is carried out according to a set of standard and constrained procedures, which are the reasons for the continuous progress of the Python language, which makes it very attractive and competitive in commercial applications. In September 2018, the term "secondary Python" was included in the subject of the national computer proficiency test, thus laying the status of Python in our country. Therefore, many universities have begun to open Python programming courses, whether it is on the basis of computers, or in the teaching of professional courses, Python has a great advantage.

2. Teaching mode of python programming course

When learning a new language programming course, students with zero foundation should be gradually guided to learn step by step. Learning a new programming language consists of six steps: understanding the language, reading the program, imitative programming, independent programming, problem solving, and hands-on operation. In the python programming class, through the learning of the theoretical knowledge of programming, in the practice class to solve problems independently, effectively improve the teaching effect of python programming course. Because of the simple grammar structure of the Python language, students do not need to spend a lot of time and energy to conduct in-depth research on grammar. In the limited class hours, more courses can be introduced to solve practical problems, which can greatly stimulate students' interest in learning. At the same time, if students have strong hands-on ability and more active thinking ability, then you can combine excellent teaching cases with students' interest, so as to more effectively stimulate students' enthusiasm for learning, which will definitely make programming teaching achieve twice the result with half the effort.

The use of online + offline mixed teaching mode can effectively improve the teaching effect of python Programming course. The basic theory of "python Programming" is taught online, and the author uses the intelligent vocational education platform to teach. Video recording of key and difficult points before teaching helps students review and review after class. In online teaching, the teacher uploads pre-class task list, PPT, teaching content, teaching syllabus, key and difficult videos and other related auxiliary learning materials on the smart vocational education platform in advance, and students can preview online in time and complete the corresponding preview tasks. After class, homework will be assigned, and students will submit homework in smart vocational education. The teacher can receive the completion of homework in real time, understand the doubts and difficulties of students, and adjust the teaching content in time, so as to improve the teaching effect.

Offline teaching includes two parts: theory teaching and practice teaching. The course is also combined with the application of artificial intelligence. In class, case-based + project-based teaching is the main method. Students practice in the computer room in groups. Each student assumes a different role in the group and completes the corresponding role tasks. The focus of practice class is to test students' ability to solve practical problems by using theoretical knowledge.

3. Python programming course teaching content design

From the perspective of OBE, this paper puts forward the Python programming course to cultivate students' comprehensive vocational skills as the focus, combining theory and practice organically. In the teaching process of theoretical courses, in addition to the design of basic courses, task-based courses are also designed to train students' modular, structured and process-oriented computer thinking and improve their problem-solving ability. Starting from the needs of the project, let the students have an overall perceptual understanding of the project, and in the process of completing the project, the theoretical knowledge will be applied, summarized and improved. At the beginning of each project, the basic requirements are given uniformly, and each group can add innovative design according to their own understanding, so as to make the project more reasonable. When selecting tasks, add more interesting program modules. For example, developing "CS" games can be effective in stimulating students' interest and enthusiasm. In the process of project practice teaching, in addition to students' mastery of python programming related knowledge and skills, they also pay attention to the cultivation of students' comprehensive professional qualities such as learning attitude, teamwork, innovation consciousness and communication ability. In the implementation of the project cases, students have a deeper understanding and experience of python programming knowledge, thus broadening their professional vision and enhancing their practical innovation ability. For example, the project of garage scanning code system is introduced into training and teaching, and the basic programming of Python is used to solve practical problems in daily life around. Through the practical training project teaching to mobilize the enthusiasm of students to learn python programming, stimulate their interest.

3. Python programming teaching expansion and reflection

1. python programming teaching expansion

In the information age, python skills competition and other competitions have brought new demands and new development directions to the training of computer professionals in higher vocational colleges. At the same time, driven by the OBE teaching concept, it is also an inevitable demand for education development to let students apply what they learn. Therefore, in the teaching process of "python Programming", the introduction of cases related to the contest can, on the one hand, allow students to learn better, on the other hand, can also lay a good foundation for the future competition.

2. Reflection on python programming teaching

Although Python's framework is simple, it does not mean that the teacher's teaching burden can be reduced, and the teacher's skills are more demanding. Especially in the era of "big data", combined with the background of The Times, technological development, skill innovation, etc., continue to improve their teaching ability, and put forward higher requirements for teachers. For the online + offline mixed teaching mode, the first thing to do is to select excellent teaching projects + cases, and prepare high-quality teaching resources. At the same time, we should be good at using the open source advantages of Python language to continuously learn and continuously improve personal language writing ability and innovation consciousness, and combine it with our own education and teaching, encourage students to carry out open innovation and continuous learning, so as to improve students' ability to analyze and solve problems.

When evaluating students, based on the OBE teaching concept, we should not only pay attention to the assessment of basic knowledge and programming ability, but also the corresponding practical tasks based on the assessment, and the completion of practical tasks will be included in the final comprehensive evaluation. In the assessment process, a number of evaluation task points are established and the problems are analyzed, and corresponding solutions are given. Through the construction of a multi-dimensional assessment system such as basic knowledge, project task assessment, and usual performance, it reflects students' learning attitude, teamwork, mastery of theoretical knowledge, and ability to analyze and solve projects. According to the students' evaluation results, the teaching plan and content are constantly adjusted to improve the teaching quality.

4. Conclusion

It is a significant work to apply the OBE education thought to the curriculum construction of python programming. In the "Internet +" and the rapid development of computer technology today, how to train and improve the professional quality of college students is the subject faced by every professional computer educator. It is very necessary to design python programming courses based on OBE, students' learning

needs and social development needs.

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