Pisco Med Publishing

Original Research Article

Discussion on the Teaching Method of "Python Programming" for Business Studies in Higher Vocational Education

Yi Peng

School of Economics, Shenzhen Polytechnic, Shenzhen 518055, Guangdong, China

Abstract: Programming is the ability to read and write in the era of artificial intelligence. The development of society requires more talents who understand programming. Compound talents is needed in Business Studies in Higher Vocational Education, and Python has been included in compulsory courses. This article analyzes the problems in the teaching of Python Programming for business studies, and proposes Python programming need to be combined with majors, to conduct hierarchical teaching, and to adopt formative assessments, hoping to promote the teaching of Python programs for business studies in higher vocational education.

Keywords: Teaching Method; "Python Programming"; Business Studies

Introduction

The advent of the artificial intelligence era has caused tremendous changes in people's lives. The speed of information generation and dissemination in modern society has reached an unprecedented level. Various mobile terminal devices in life have become popular, and the software such as online office and online education has begun to be used. The concepts of politics, economy, and culture based on geographic location have been impacted by the Internet, and human society has become an information society which is highly dependent on the Internet.

Programming is the ability to read and write in the era of artificial intelligence, and the future development of society requires more talents who understand programming. The learning of programming courses can cultivate computational thinking, improve logical thinking ability, and increase innovation awareness of students in business studies, which is conducive to improving students' ability to solve practical problems and to improve work efficiency.

1. The reasons why choose Python language

The TIOBE index has announced the programming language rankings in May 2021. The Python was in second place, C language was in first place, and the Java is in third place. C language and the Java are losing popularity, and perhaps the Python will soon rise to the top of the list. The index mainly reflects the popularity of programming languages, and to a certain extent, also reflects the popularity of programming languages.

The Python language is relatively easy to be used to learn for students in business studies. The Python language syntax is relatively simple and prac tical, while C and the Java syntax requirements are relatively strict. The Python language has a rich library, general-purpose numpy, pandas, matplotlib with high efficiency. The Python language is used in artificial intelligence, data mining, data analysis and other fields, which has a wide range of applications. Both majors and programming are needed for students in business studies. Python language is suitable as an introductory programming language due to its own advantages. Business studies in higher vocational colleges have set up Python courses, and the big data and accounting majors in higher vocational colleges include the basics of Python in the core curriculum.

2. The Problems in the teaching of Python programming courses for business studies

2.1 The emphasis on logical thinking in the course is contradictory to the weak logical thinking of students in business studies

Programming requires logical thinking. Programming is used to solve complex problems, which is necessary to specify the complex problems first, clarify the specific input and output, decompose the problem to be processed into multiple small problems with logical relations, sort out the processing process of specific small problems, and then pass the code compilation to express problem-solving process in computer language, which realized by a computer. In this process, logical thinking is very important. However, most of the students in business studies in higher vocational colleges are liberal arts students, and these students have strong image recognition skills but weak logical thinking skills who are not good at decomposing problems through logical thinking.

2.2 The theory and application are separated

Traditional python programming courses are aimed at computer majors, focusing on the study of grammar and the explanation

doi: 10.18282/l-e.v10i2.2247

of algorithms, while pure theoretical knowledge is too difficult for students majoring in business studies, causing students to find the courses difficult and discouraging students' enthusiasm for learning. And the learning content is too theoretical, which will make students feel that there is no place to use this course, and thus lose their interest in learning.

2.3 The case is partial to mathematics while the students' base is weak

The cases in existing textbooks are usually mathematics and science topics, such as the verification of Goldbach's conjecture and the decomposition of prime factors of positive integers. Business students in higher vocational colleges are mainly liberal arts students, who have relatively poor mathematical and physical foundations and find it more difficult to encounter mathematical problems. The cases were originally used to stimulate students' interest, made students be willing to participate in it, and let students learn actively, while mathematics and science cases increased the difficulty of students' learning which cannot effectively mobilize students' enthusiasm.

3. The suggestions on Python programming for business studies

3.1 The professional combination

Business studies include economics, management, accounting and finance, etc., and the Python teaching needs to be carried out for students' majors. The Python teaching content can be divided into basic knowledge and advanced knowledge, and there are differences in the way the two are combined with majors.

The basic knowledge of Python mainly includes Python coding specifications, process controlling structures, typical data structures, functions and modules, and file input and output. Basic knowledge of the Python is the foundation of the Python course and all majors need to learn it. The way of the content combined with the major is mainly through the professionalism of the case. For example, the accounting profession can combine the process control structure with the management of sales orders, and the typical data structure can be combined with the management and procurement system. Introducing the basic knowledge of the Python through the professional scenes that students are familiar with will help students master Python related knowledge points faster, and feel that this knowledge can be applied to future work and increase their interest in learning.

Advanced knowledge of Python is oriented to different fields of use, including data analysis, machine learning, image processing, and network programming, etc. This part of the content has a wide range of uses, teachers can choose the content of teaching according to their professional needs. For example, the accounting major should focus on data analysis and network programming, combining with financial analysis. Firstly, obtaining data through the network programming function of Python, capturing the financial data of listed companies, and then using the data analysis function of Python to clean, to process and to analyze data. The learning of advanced knowledge needs to simulate professional scenes for teaching, simulate the real scenes of business studies, turn programming courses into intuitive work scenes, and improve teaching efficiency.

3.2 The hierarchical teaching

Among the existing vocational students, some of them come from secondary vocational schools have learned "Scratch Programming" at the secondary vocational stage, and have carried out preliminary training on programming thinking mode with a good foundation. The other part comes from ordinary high schools, who have not been exposed to programming in ordinary high school class courses. There are great differences in student groups, and how to make students progress is a question worth considering.

In this case, hierarchical teaching is a good method. The hierarchical teaching model is to divide students into groups of similar levels according to their current knowledge and skills, and teach them according to their actual abilities, so that students can better improve their abilities. The theoretical basis of the hierarchical teaching model includes the theory of teaching students in accordance with their aptitude and the theory of success or failure. The stratification of students and teaching content is based on the characteristics of students. If students can make progress, the students' abilities can be improved, and students can experience the joy of learning.

In the process of implementing hierarchical teaching, students must be stratified first. A test is conducted during the first class of the course. Students are divided into three categories including good, medium, and poor according to the test results. And then the students are further divided into mutual aid groups, each of which contains one good, medium, and poor student. Students in the same group can help each other, consolidate, improve together, and cultivate the spirit of teamwork. In the teaching process, it is also necessary to carry out stratification, and set appropriate tasks for students of different levels, so that each student can be fully practiced. When practicing each knowledge point, we will give basic training questions and improve training questions. Basic training problems must be completed by everyone, while improving training problems require students with good foundation or strong learning ability to complete. Through the stratification of students and exercises, students at different levels can obtain ways to improve themselves, and can fully mobilize everyone's enthusiasm and initiative.

3.3 Adopting formative assessment

There is close contact among the knowledge of the Python programming course. The content learned in the front is the basis of the content in the back, and it is often combined to achieve certain functions. Therefore, if the previous knowledge points are not well mastered, it will affect future learning. If there is only final exam, students may not study and are temporarily carmming at the final exam, which is not conducive to knowledge accumulation.

Formative assessment is an assessment of the entire learning process, allowing students to study seriously in normal times and gradually master various knowledge points, without affecting the subsequent learning because the previous knowledge points are not mastered. According to the characteristics of the Python course, evaluation includes performance evaluation and summative evaluation, which are divided into attendance performance, classroom performance, and graded assignments. Through the formative assessment, the relevant materials of various students' various performances can be collected, and dynamic and complete portraits of students can be carried out to show students' hard work, progress and growth in the learning process, so that teachers can grasp the learning situation of students, which can provide more targeted guidance and can be more conducive to the growth of students.

4. Conclusion

The Python programming course has become a compulsory course for business studies, and it is a demand for talent training under the background of artificial intelligence. The article analyzes the problems in the teaching of Python programming courses for finance and economics, including the contradiction between the emphasis on logical thinking in the course and the weak logical thinking of business students, the separation of theory and application, and the contradiction between the partial mathematical theory of the case and the difference in the mathematical foundation of students. It is suggested that the Python programming courses need to be combined with majors, hierarchical teaching, and formative assessment methods, hoping effectively improving the teaching quality of python programming.

References:

[1] Chuang Yuelong, Guo Wenping. The Python teaching content design for non-computer students [J]. Journal of Taizhou University, 2018, 40(03): 56-60.

[2] Yi Peng , Yanan Chen, Bowen Li. Teaching Reform of “Python Programming” for Accounting in the Context of Artificial Intelligence — Discussion on Project Driven Teaching Mode[J]. Advances in Higher Education, 2021, 5(2).