

Research on the construction of training model for computer science and technology professionals based on OBE concept

Chunying Ji

Hankou University, Wuhan 430212, China

Abstract: With the rapid development of cloud computing and computer technology, in the continuous promotion and construction of “new engineering”, the computer science and technology specialty has become an important component of the university education system, further pushing the path of China’s computer science and technology research and development, the development of many outstanding talents for our country’s computer science fields. But because the computer science and technology specialty itself has a high difficulty and the discipline to leap, in the actual personnel training process in colleges and universities there are more problems and shortcomings to be solved. This paper deeply analyzes the current situation of college computer science and technology professional talent training, and further explores the path of computer science and technology professional talent training model construction based on the concept of OBE, hoping to provide some references to improve the quality of computer science and technology professional talent training.

Key words: OBE concept; Computer science and technology major; Personnel training mode

I. Current situation of personnel training for computer science and technology majors

In the current higher education, the construction time of computer science and technology major is relatively short, and no perfect personnel training system has been formed at present, and there are many problems in the actual personnel training process. First of all, in terms of personnel training mode, the design of personnel training carried out by teachers based on the content of professional courses is more theoretical, and the main way is to explain to teachers, combined with after-class homework training and some personnel training experiments. It can be seen that the participation of students is insufficient, and there is no space for practical application practice. The content they master is mainly based on concepts, theories, theorems and other knowledge, and they lack the cultivation of practical skills and the verification and exploration of experimental results. Such a form of talent training makes it impossible for students to deeply understand the core ideas and practical application skills of computer science and technology curriculum knowledge, let alone master the ability of algorithm programming or improvement and optimization. Secondly, for students, the difficulty of computer science and technology is relatively high. In the learning process, students need to spend more energy and time to understand and discuss, and lose the learning process of independent exploration and practice. In student evaluation, teachers can only make preliminary evaluation according to students’ achievements, and can not assess students’ performance from multiple directions. In this regard, colleges and universities should further improve the talent training mode and curriculum structure of computer science and technology majors, effectively promote the practice of OBE concept, so as to improve the effectiveness of talent training.

II. Based on the OBE concept of computer science and technology professional talent training model construction path

Based on the OBE concept, the talent training is mainly oriented to the learning outcomes of students, that is, the design of teaching activities at each stage should be centered on the learning outcomes that students can achieve, so as to ensure the high yield and efficiency of the talent training process.

1. Optimize the teaching content and clarify the goal of personnel training

In order to scientifically promote the implementation of OBE concept, teachers should first reform and optimize the teaching content of computer science and technology majors. First, teachers should fully integrate ideological and political elements into the curriculum, and correct students’ attitude towards computer science and technology with the help of ideological and political education. They should not only understand the national strategic policy in the direction of computer science and technology research and development, but also be aware of the moral and ethical issues in scientific research. Second, we should establish a comprehensive model of industry-learning integration, integrate the course content with the actual enterprise work content, and design practical teaching cases and training assessment projects accordingly, so that students can have more practical practice environment and content. Third, we should create computer science and technology double innovation project activities, so that students can learn and practice independently after class, and apply computer science related knowledge and technology into practice. Secondly, teachers should adjust the target of talent training. In classroom teaching, teachers should firmly implement the principle of students’ main body, create course forms based on students’ needs, and give full play to the advantages of teaching methods such as situation, case, project, task-driven and problem-guided. In the cultivation of talents, teachers should clarify the educational requirements at different levels, such as knowledge and skills, scientific research level and employment development, so as to ensure the diversity and complexity of talent development.

2. Improve teaching resources and upgrade the training of classroom talents

The realization of talent training mode under the guidance of OBE concept requires teachers to give full play to the role and function of teaching resources. Therefore, teachers need to change the traditional talent training mode centered on textbook resources, and should

develop and apply more guiding, exciting and practical resources to improve the enthusiasm of students to participate in learning and implement the orientation of students' learning results. First of all, teachers should make use of many media and network equipment resources. For the difficult and practical course content, teachers can use micro-lesson videos and other teaching resources to design pre-class preview content, so as to guide students to complete the knowledge learning process before class. Secondly, teachers should also give full play to the resource value of practical project cases. Teachers should take the application and mining practice of computer science and technology in real life as the basis, or combined with the application cases of computer science and technology in the actual study of enterprises, thus creating student learning or practical training project activities, so as to guide students to complete specific practical training and harvest the due learning results.

3. Deepen the evaluation system and implement multi-dimensional assessment

OBE concept of talent training mode also has higher requirements for teaching evaluation and assessment. In the traditional evaluation model, teachers use the score composition of the usual score (30%) and the final score (70%) for evaluation, the main body of which is the one-time score at the end of the semester, and the auxiliary content only includes students' attendance, class performance and homework, which fails to show the ability difference between students more clearly. However, under the OBE idea-oriented talent training model, teachers should further broaden the dimensions and content of student evaluation. On the one hand, they should pay attention to students' achievements in the learning process; on the other hand, they should pay attention to the achievements of students' practical projects; in addition, they should also pay attention to recording students' extracurricular learning achievements, such as various competitions, mass innovation experiments, and scientific research projects. In order to distinguish the difference in ability and specialty between different students.

III. Reform practice of Computer science and technology under OBE model

1. Preview design before class

In view of the difficulty of understanding computer science and technology majors, the practice of OBE concept needs to rely on the network platform. Through the guidance of pre-class preview resources, students can establish cognitive foundation in advance and get ready for learning in class. In this part, teachers are mainly responsible for designing and providing preview resources, publishing tasks and answering students' doubts online, and finally summarizing students' questions, so as to optimize the teaching design in class. Students are required to complete the preview and test tasks independently, put forward their own doubts and questions, and actively participate in the discussion and analysis through the network platform. For example, in the talent training of "cluster analysis" professional content, teachers can implement the preview goal through micro-lesson design. First of all, teachers should summarize the knowledge points of the course, and optimize the design according to the difficulties and key points. For example, animation and video materials should be used to explain the difference between "clustering" and "classification", so that students can understand the key concepts of the lesson. Secondly, the teacher should publish the preview tasks and assign the preview exercises or topics for the students. For example, through the selection, fill in the blank and other ways to test students' grasp of relevant knowledge, through the discussion questions such as "how to judge clustering method is the best method" to trigger students' thinking and discussion. At the same time, students should complete the preview task independently, complete the answers according to the test content and requirements, summarize the problems encountered in their study, and discuss them through the preview discussion post or discussion exchange area. Finally, teachers should summarize the results of students' preview. On the one hand, data such as the viewing time of the preview video and the scores of the preview exercises should be collected to analyze the students' overall learning cognition of the course and judge the difficulty of the students' learning. On the other hand, it is necessary to summarize all kinds of problems put forward by students, combine the results of student discussion, and then optimize and adjust the design of teaching activities in class to make it more in line with the learning needs of students.

2. The optimization of teaching in class

Based on the requirements of OBE concept, the classroom teaching design should be optimized and adjusted according to the pre-class situation. The teaching process in class can be divided into three stages. First of all, we should answer questions and solve doubts as the first link. The questions and doubts left by students in the preview are the primary problems to be solved urgently in class, and the teacher should be divided into two steps to answer the questions for students. First, by sorting out the content of students' questions before class, the teachers should summarize the common problems among students, and select the discussion results of students in the network platform to show and share, so that the students can further deepen their understanding under the guidance of their own discussion results. Second, for the special problems that the students fail to solve in the discussion, the teacher should select the key problems and set up topics. After that, the teacher can guide the students to set up a group to discuss and try to give the students' answers through discussion. Secondly, for the questions that are difficult for students to answer, they should enter the second learning stage. Teachers should use case situations to set up the application effects of computer science technology for students, and optimize students' understanding through practical situations. Then, in order to further implement the results-oriented learning mechanism, teachers should also organize students to carry out experimental activities, select relevant work cases that are easier for students to simulate and realize, and let students propose more perfect solutions to the issues in group practice and exploration based on the results and data of experimental simulation. Thirdly, summarizing and sharing activities should be carried out on the results of students' classroom learning, discussion and exploration. This stage is mainly divided into two links. First, students should be organized to take the initiative to share their learning results and group exploration process, and communicate with the audience to put forward suggestions and opinions in learning. Secondly, students should be guided to carry out reflection and summary

of learning in the group, and conduct self-evaluation and mutual evaluation. Through such activities, the effect of reflection learning can be achieved.

3. Improve after-school activities

Under the application of OBE concept, after-school activities also have important educational functions and values. Teachers should extend the scope of talent training and guide students to complete learning tasks after class. On the one hand, teachers should design the problems left over from class learning as expanding tasks or issues, release them through the network teaching platform, and require students to choose to consolidate and expand learning tasks independently, so as to provide a platform for students to divergent learning. On the other hand, teachers should also assign learning feedback tasks to students, asking them to summarize their learning, discussion, experiment, test and other processes in class, and put forward the difficulties encountered in learning and the situations in need of help, so as to provide suggestions and opinions for the reform of talent training mode. In addition, the construction of curriculum evaluation system should be further deepened after class. Teachers should make a comprehensive analysis of the OBE concept, and the assessment of students' performance is divided into three modules, which are composed of ordinary scores, experiment scores and examination scores respectively. Ordinary scores include pre-class performance (20%), in-class performance (60%) and after-class performance (20%). Mainly assess students' learning qualities in cooperation, communication, thinking, scientific research, practice and other aspects. In the evaluation of after-class performance, students' self-evaluation content and the evaluation results among group members should also be included, so as to show the differences among students in a more diversified way.

Epilogue: To sum up, the current computer science and technology major has important talent cultivation significance, and in view of the problems existing in the current talent training mode of computer science and technology major, teachers should actively integrate the OBE education concept to carry out optimization and reform, optimize teaching content, clarify talent training objectives, improve teaching resources, upgrade classroom talent training, and deepen the evaluation system. Implement multi-dimensional assessment and other ways to build OBE talent training model, and through the teaching optimization design in class, during class and after class, to achieve the goal of improving the training quality of computer science and technology professionals, thereby cultivating professional and practical talents for the society.

Reference literature:

- [1] Xiong Wu, Yu Wang. Research on the Construction of Computer Science and Technology Curriculum System under the concept of OBE [J]. *Wireless Internet Technology*, 2022, 19(04): 112-113.
- [2] Li Sun. Research on Teaching Reform of Computer Science and Technology Major under the influence of OBE Concept [J]. *Journal of Mudanjiang College of Education*, 2021, (08): 109-111.
- [3] Haihong Yun, Chengzhe Huang, Ya Li, Limin Qi. Exploration on Reform of Applied Talents Training Model for Computer Science and Technology Major under the Concept of OBE [J]. *Journal of Heilongjiang Institute of Technology*, 2019, 33(04): 74-76+80.