On the Teaching Mode of Artificial Intelligence General Course for Non-Computer Majors in the Vocational Higher Education Institution

Chen Chao

Jiangsu Vocational Institute of Architectural Technology, Xuzhou, Jiangsu 221116, China

Abstract: *Artificial intelligence general course is a general course set up by most higher vocational colleges at present. This subject focuses on the teaching of integrating theory with practice. The main teaching goal of this course is to focus on cultivating students' computer logical thinking ability and improving the application ability of artificial intelligence in their respective majors. However, it is more difficult for non-computer majors. To further consolidate the educational effect of artificial intelligence courses in general higher vocational colleges, it is necessary to design the courses as a whole and integrate each link in the teaching process reasonably. This paper focuses on the teaching reform of artificial intelligence general courses and puts forward the current situation and main problems of artificial intelligence general teaching in higher vocational colleges for non-computer majors. It also explored the main ideas of artificial intelligence course content construction, and expounded on the modular construction content of the new generation of artificial intelligence teaching course systems, hoping to give some help to relevant personnel.*

Keywords: *Non-computer; artificial intelligence; teaching*

1. Introduction

With the advent of the information age, the development and use of artificial intelligence technology have become relatively common. Accelerating the pace of research and development of new science and technology such as big data and artificial intelligence in China is an effective way for China's national economic development and social progress. It is also an important decision-making tool to seize the highland of China's economic and technological development in the future and is of vital significance to enhancing the comprehensive strength of China's Internet, manufacturing, and modern service industries. Higher vocational schools need to work hard on the basic knowledge of artificial intelligence theory and skill practice to train skilled personnel for society. First of all, it is necessary to deepen the construction of teachers and curriculum reform. Second of all, efforts should be made to build artificial intelligence general courses that benefit a wide range of areas, have widely applicable teaching content, and guaranteed quality. The general course of artificial intelligence should not only pay attention to the teaching of intelligent technology, but also to the intersection and integration of artificial intelligence and other disciplines. Through the general courses in artificial intelligence, students' thinking is enlightened and their creativity is stimulated. Professional empowerment through artificial intelligence can effectively promote the integrated development of non-computer majors and effectively cultivate more compound and innovative talents.[1]

2. The Main Problems in the Course of Artificial Intelligence for Non-computer Majors

In recent years, higher vocational schools have carried out the teaching of basic knowledge of artificial intelligence by the curriculum system based on the teaching of basic knowledge of artificial intelligence provided in "Several Opinions on Strengthening the General Course of Artificial Intelligence for Non-Computer Majors". At present, the new artificial intelligence general subjects generally set up in higher vocational schools include computer technology tutorials, VFP programming, VB programming, and basic network knowledge. Although the development of the above subjects has made gratifying achievements in popularizing computer technology knowledge, there are still many defects in the teaching of new artificial intelligence for non-computer majors in higher vocational schools.

2.1 The One-size-fits-all Model Ignores the Different Requirements for Artificial Intelligence Technology in Various Disciplines

There is such a situation in higher vocational schools, that is, no matter which major students are, the AI education they receive is the same. However, this "one-size-fits-all" teaching model ignores the different needs of students in various majors for artificial intelligence and is very untargeted. Firstly, the focus of the basic knowledge of artificial intelligence science required by students of different majors is different. For example, students majoring in liberal arts will use the document management system function of artificial intelligence more in their future work to manage a large number of documents and conduct document retrieval. Engineering majors need to use a large amount of data processing functions of artificial intelligence technology to simulate the experimental process, so the data structure major is also of great benefit to engineering students' research in this discipline. Secondly, because the depth of basic computer science knowledge required by students of different majors is also different, compared with science and engineering students, liberal arts students often require a wider range of basic computer science knowledge.

2.2 The Relationship between Synchronous Teaching Progress and Neglecting the Computer use Level of Higher Vocational Students

Before students enter the school, because of the differences in the local environment, family conditions, and personal hobbies, their computer technology application levels are very different. Generally, students from cities have a higher starting point in learning the general education of the new generation of artificial intelligence than students from remote areas due to the relatively developed technology in cities and more exposure to artificial intelligence technology. However, due to the current educational policy, all students are required to adopt the zero starting point method for education, which to a certain extent suppresses the learning enthusiasm of students with a certain amount of general knowledge of artificial intelligence.[2]

3. Thoughts on the Construction of a General Education Content System of Artificial Intelligence in Higher Vocational Colleges

3.1 Using Various Teaching Modes to Implement Modular Teaching

Modular education is the representative feature of general education in schools. A variety of teaching methods are used to set up multi-directional and deepened classroom teaching of general education of artificial intelligence to reduce teaching difficulties and cultivate students' learning enthusiasm. Since there are many disciplines of artificial intelligence technology, such as advanced geometry, graph theory, algorithms, programming, etc., which are very difficult basic courses for students in higher vocational colleges, how to carry out the new generation of artificial intelligence course education without students fully mastering sufficient disciplines is also a difficulty in the school curriculum system. The basic idea of modular education is to generalize disciplines into education systems in layers and batches and set up separate education stages in each teaching module to increase the teaching effect. In the new generation of artificial intelligence general education classes, various teaching methods, such as online and offline hybrid teaching methods, task-driven teaching modes, project teaching methods, and network teaching methods, are introduced to improve the learning effect of students.

3.2 Teaching Content Should Conform to Students' Career Planning

The teaching design of artificial intelligence general courses in higher vocational schools should conform to the skills training and career planning of students in various majors so that students can broaden their horizons and carry out effective career planning. The main content of the new artificial intelligence general education course is not generalized, but should be closely related to the professional knowledge of students, and should be reasonably set based on the characteristics of students in higher vocational colleges and career planning positioning. For example, in the new artificial intelligence general education courses carried out by industrial majors such as machinery manufacturing, course assignments can be used to make students more familiar with the use scenarios and technologies of new artificial intelligence in the industry, to help students correctly determine their career positioning and make career planning as soon as possible.

4. "Artificial Intelligence" General Course Modular Teaching Design

4.1 Curriculum Specialization

For non-computer major students, artificial intelligence teaching must be combined with the characteristics and development direction of the subject.[3]Therefore, for non-computer majors, the main purpose of learning artificial intelligence is not to explore its essence but to take artificial intelligence as a tool that can be reasonably used in future work. Each major has different learning requirements for artificial intelligence. Moreover, the learning ability of students in each school is different. It is very necessary to design courses reasonably after fully mastering the learning ability of students, and set up artificial intelligence disciplines closely related to the characteristics of disciplines and students' interests and needs.

4.2 Dynamic Teaching Content

As the most characteristic part of the human cognitive system, artificial intelligence knowledge has a very fast innovation speed. At present, the new generation of the artificial intelligence course content has seriously lagged behind the actual development level of the next generation of artificial intelligence, and the teaching content is gradually aging, so the course system and course teaching content need to be innovated. During the period of professional education for students, schools should gradually introduce artificial intelligence application software related to various professional fields of students, so that students can gradually master the use and management of the new generation of artificial intelligence in their majors, and gradually master the basic operation of the application. Schools need to choose courses that have a certain depth and are still practical in future teaching work.

4.3 Constructing a Formative Teaching Evaluation System

The teaching evaluation system is an important guide between teacher and student, and all teaching is carried out around it. A reasonable teaching evaluation system can not only bring positive and beneficial results to the teaching process, help teachers master teaching methods, but also help students correctly understand their teaching conditions and improve their learning quality, thus effectively promoting the achievement of curriculum objectives. Therefore, it is necessary to establish a rounded teaching evaluation system. The formative evaluation system is such a means of teaching evaluation. Through efficient formative scoring, each student can be provided with the content. At the same time, the content is grouped according to the type of course. Contentsare classified into 3-4 items. Each item is evaluated by the students. The evaluation methods include teacher comments, students' independent scores, peer evaluations, and even artificial intelligence evaluations. This project evaluation method, combined with multi-dimensional evaluation subjects, makes students become active participants, which can enhance students' initiative and efficiency in learning.

4.4 Modular Teaching Mode

The structure of the general courses textbook on artificial intelligence is set according to the principle of progressive difficulty levels, including four templates: basic template, application template, programming language module, and practice module. Among them, the basic template mainly describes the historical development process and theoretical basic knowledge of artificial intelligence. The application template mainly describes the practical application process and related technical research problems of artificial intelligence technology. The programming language module takes python programming language as an example to describe the basic method of artificial intelligence programming. The practice module takes the application cases of artificial intelligence technology such as UAV and intelligent simulation system as a basic teaching task, which guides students to digest and absorb the knowledge they have learned. Artificial intelligence teaching follows the order of basic module - Application module - programming language module, and the teaching task of the experimental model is interspersed in the learning process.[4]

In the modular curriculum, the contents of each system are not established but are selected and arranged by the teachers according to their professional knowledge and ability. The teaching methods adopted are by no means fixed. For example, the traditional teaching mode can be adopted in the basic module, or the flipped classroom may be adopted to let students go to the Internet for independent exploration teaching, and the case education may be adopted in the actual teaching module to let

students realize simulated classroom teaching. It may also adopt the task-driven teaching method to let students explore activities to answer practical problems, and may even hire enterprise technical experts to come to school to explain the most cutting-edge technical information and enterprise work skill knowledge. In a word, modular courses should pay attention to integrating theory with practice, and take students' learning needs and enterprise professional skills as a breakthrough to improve the course effect, to achieve a reasonable transition from classroom teaching to enterprise vocational technology.

5. Conclusion

All in all, in the new era, due to the ever-changing activities of social production, many simple and repetitive jobs will be gradually replaced by machines, and a new kinds of new occupations that are more suitable for people will also be created. A single professional training method is not conducive to the growth of graduates. Therefore, it is urgent to increase the general teaching of artificial intelligence and actively cultivate artificial intelligence plus X compound talents to meet the development needs of students' future jobs. The construction and optimization of the professional training structure of artificial intelligence have become an urgent task in the curriculum reform and professional setting of Chinese higher vocational schools. Therefore, it is a necessary task to establish a teaching system of AI general knowledge courses for different disciplines in higher education according to the characteristics of the majors. The implementation of artificial intelligence general course teaching mode in non-computer majors in higher vocational colleges, focusing on cultivating students' high-level thinking ability, is also a challenging post faced by various higher vocational schools in China.

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