

Supporting the Construction of New Liberal Arts and New Upgrading of Information Technology Ability Training

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Abstract:

The new liberal arts construction conference held by the Ministry of education in Shandong made a comprehensive deployment for the new liberal arts construction and officially sounded the assembly number of the new liberal arts construction. The "new" of the new liberal arts is mainly reflected in the integration of new technologies, new methods and new ideas, emphasizing interdisciplinary cross integration and comprehensive development. The rapid development of cutting-edge technologies such as data mining, blockchain and quantum communication has injected new vitality into the construction of new liberal arts and provided a way to solve the new problems of new liberal arts. As the main position of cultivating compound talents to adapt to the construction of new liberal arts, colleges and universities put forward new requirements and challenges for the ways and methods of talent cultivation. This paper analyzes the challenges faced by the cultivation of information technology ability under the background of the new liberal arts, and puts forward countermeasures and suggestions in combination with the construction of course system, the construction of virtual teaching and research room, the integration of course thought and politics, and the incentive of personality development. Taking the author's unit as an example, this paper expounds the reform and practical measures.

Keywords: *New liberal arts, Information technology capability, New upgrade, Cross fusion.*

I. INTRODUCTION

The further development of a new round of new technological and industrial revolution requires the application of science and technology to lead innovation drive, emancipate the mind and innovate thinking. Therefore, big data, internet of things, cloud computing, artificial intelligence and other technologies are increasingly penetrating into various fields of liberal arts and serving as core technologies for understanding and solving problems in the process of constructing new liberal arts. As an important part of the "Four News" strategy, the construction of new liberal arts pays more attention to multi-disciplinary cooperation, meeting the needs of modern society and integrating information technology than traditional liberal arts. In the digital age, it has become an inevitable trend to integrate information technology with humanities and social sciences, in which strengthening the cultivation of information skills is the basic

guarantee to ensure that students can effectively use modern technology tools to solve professional problems. Computer general education courses in colleges and universities, as the most direct carrier of talent cultivation, are of great significance to cultivate students' information literacy, computational thinking ability, interdisciplinary information technology application ability and innovation ability. With the proposal of the "four news" strategy, more and more scholars have carried out research on the reform of computer general education course. Han Zuosheng [1] et al. put forward the path of course system construction of general computer courses for financial college students combined with the concept of professional certification in engineering education. Bai Yue [2] et al. improved the liberal arts students' information literacy and social competitiveness from the aspects of course system construction and teaching scheme exploration. Zhou Baoling [3] et al. explored the ways to cultivate technical talents of liberal arts from the aspects of innovation of training methods and coordination of training resources.

II. CHALLENGES OF CULTIVATING STUDENTS' INFORMATION TECHNOLOGY ABILITY UNDER THE NEW LIBERAL ARTS BACKGROUND

2.1 Training Compound Talents in New Liberal Arts Requires Multi-dimensional Improvement of Students' Computational Thinking [4]

From the perspective of discipline, the "new" of the new liberal arts is mainly reflected in the interdisciplinary cross integration, of which the integration of the new liberal arts and the new information technology is the most important. The deep integration of new liberal arts construction and new technology will help to expand thinking, break down discipline barriers, and promote the intersection, integration and penetration between liberal arts and other disciplines, whose core lies in emphasizing the cultivation of students' computational thinking ability, requiring students to actively embrace new technological changes by using computer thinking, and paying attention to students' understanding and solving professional problems by using computer thinking. In the traditional computer general education course teaching, unified teaching is emphasized, while specialty and personality differences are neglected. The teaching content mainly focuses on the traditional theoretical knowledge teaching and basic skills training, which is out of touch with the times and unable to meet the professional needs. Moreover, the computational thinking has not been effectively constructed, and the students lack the ability to find and solve problems. Under the new liberal arts background, the teaching of computer general education should be employment-oriented, aim at cultivating students' computational thinking, strengthen the improvement of application ability, and build a three-system goal of "thinking cultivation+ ability cultivation+ application traction", so as to improve the "usefulness" of computer general education courses and change the "useless" state of course teaching.

2.2 Teaching Mode Needs to be Changed in the Era of Intelligence

Nowadays, there are the following problems in the teaching of computer general education. The students affected by the region have different basic computer skills. The "one-size-fits-all" teaching model

weakens the students' original motivation and enthusiasm. The single teaching mode affects students' personality development. Obviously, it is urgent to construct "golden course" of computer general education course under the background of new liberal arts, because it helps to break through the limitation of time and space, ensure the balance of educational resources, strengthen the connotation construction of the course and effectively improve the difficulty of the course. The construction of "golden course" requires that the teaching content should keep pace with the times and the teaching model should be able to effectively train students' autonomous learning ability and meet the needs of classroom interaction and students' personality development. In addition, it is necessary to actively carry out online and offline mixed teaching, build a platform to make full use of the advantages of online teaching, and increase students' access to knowledge. Through the release of exercises, questionnaires, discussions, announcements, group exercises and other modes, the effectiveness of "students busy, teaching live, management strict" can be truly achieved. Through the three-step spiral of "task-based autonomous learning before class → real-time classroom deepening guidance learning in class → solidification and evaluation after class", the online and offline mixed teaching is carried out. A closed-loop teaching quality assurance system of "problem discovery → timely feedback → agile response → effective improvement" is constructed with the help of big data real-time monitoring of teaching quality, comprehensive collection of teaching process data, timely tracking of after-class interaction and feedback.

III. ASSISTING THE CONSTRUCTION OF NEW LIBERAL ARTS AND REFORMING THE COMPUTER GENERAL EDUCATION COURSE

3.1 Creating a Demand-oriented Course System of "Wide +Specialized +Integrated" Mode

It is the core link of cultivating new liberal arts talents to integrate new technology into professional course teaching. Limited by the total credits of the talent cultivation program, it is not practical to include the new technology courses required by the major such as Data Structure and Computer Network Technology into the talent cultivation. Generally, the new technology involved is embedded in the teaching of professional courses. In order to make the new technology effectively embedded in the teaching of professional courses, students are required to have certain basic computer knowledge and skills as the foundation, which mainly depends on the teaching of computer general education courses. By integrating relevant cases of professional fields into the teaching of general computer courses, it paves the way for the subsequent professional courses to better embed new technical content. For example, in economics and management majors, students need to be trained to use modern data analysis methods to solve professional problems, have a keen sense of smell and quick thinking ability to solve professional problems, which requires the popularization of basic theoretical knowledge and tools of data mining in computer general education courses [1].

3.2 Empowering Professional Learning and Creating a Virtual Teaching and Research Section

The virtual teaching and research section is a brand-new platform for academic exchange and discussion between teachers, which fully applies the Internet information technology to carry out the

teaching activities of "online+ offline" and "virtual+ real", uses the network to share high-quality teaching resources, and breaks the dilemma of uneven distribution of teaching resources in the space-time dimension of the traditional teaching and research section. The interdisciplinary virtual teaching and research section for teachers is the key to guarantee the quality of new liberal arts construction, which will have an important impact on the interdisciplinary team construction under the background of new liberal arts. Relying on the virtual teaching and research section, a teaching team integrating computer general education course teachers with professional teachers is constructed, which is led by professional leaders or famous teachers and other influential personnel with charisma to enhance the cohesion of the virtual teaching and research section. Besides, teachers can realize the co-construction and sharing of resources, cross-border learning, give full play to their advantages in this field, integrate professional needs into the teaching process of computer general education in the form of projects, form a course content system oriented to professional application, and improve the professional pertinence of course teaching. Teachers of general computer courses should also feed back to the teaching of specialized courses, promote the upgrading of computer skills of specialized courses teachers to meet the requirements of information skills of teachers under the background of new liberal arts, and implement the system of "one course with multiple teachers" relying on virtual teaching and research section to realize the complementary advantages of teachers [5].

3.3 Integrating the Ideological and Political Theories Teaching in All Courses to Empower Morality Education

The ideological and political theories teaching in all courses, whose essence is to cultivate people by virtue, is an important force in the construction of new liberal arts, because it meets the thinking requirements of interdisciplinary education in the construction of new liberal arts, and is an important category for cultivating compound and innovative talents. Since higher requirements are put forward for the ideological and political theories teaching in computer general education under the background of new liberal arts, teachers should explore the actual teaching and professional characteristics of the course based on the requirements of new liberal arts personnel training, dig deep into the ideological and political elements contained in the course, reconstruct the course teaching content, redesign the teaching methods, integrate the course ideological and political theory into the whole teaching process, and effectively implement the ideological and political theories teaching. In addition, teachers, as the leading role of course ideological and political education, must have a profound theoretical foundation, and should improve their own ideological and political awareness and ideological and political education ability, in order to seamlessly integrate the ideological elements with the course content. In addition, after the introduction of course ideological and political education, the course evaluation system and evaluation criteria should be optimized and improved simultaneously, and the course ideological and political education should be included in the evaluation system and evaluation category, so as to stimulate the enthusiasm of students to participate in the course ideological and political education.

3.4 Enriching the Way of Course Implementation and Stimulating Personality Development

With the rapid development of educational informatization, the blended teaching based on mobile platform has been widely promoted. The interactivity and interesting performance of the learning resources on the mobile platform greatly improve students' learning enthusiasm and attention, provide students with an immersion learning environment, change students' change from "passive" learning to "active learning", and provide good soil for students' personalized development in computer general education courses. [6] Discipline competition, as an important part of the second class, can cultivate students' ability to think and solve problems independently, and enhance their interest and enthusiasm for the knowledge in their own professional fields. Besides, the extracurricular computer science and technology competition activities can stimulate students' interest in computer general education courses, cultivate their awareness of independent research and team cooperation, use computer skills to solve professional problems, and lay the foundation for the cultivation of new liberal arts talents. Innovation and entrepreneurship education opens a new way of thinking for computer general education courses to cultivate students' information literacy and innovative spirit. It can stimulate students' innovative thinking and entrepreneurial ability by reconstructing teaching content and expanding course design. During the implementation process, students are encouraged to participate in extracurricular activities of innovation and entrepreneurship, and the concept of innovation and entrepreneurship education is integrated into the whole process of course teaching.

IV. HELPING THE CONSTRUCTION OF NEW LIBERAL ARTS AND THE PRACTICE OF TEACHING REFORM IN FUZHOU UNIVERSITY OF INTERNATIONAL STUDIES AND TRADE

4.1 Reform of Computer General Education

The school attaches great importance to the course reform of computer general education, and has issued the Implementation Plan for the Course Reform of Computer General Education in the Teaching Development Center of Fuzhou University of International Studies and Trade (for Trial Implementation), setting up the reform thinking of "taking students as the center, ability as the foundation, and deepening professional integration". Based on the principle of application-oriented and practice-oriented, the teaching of computer general education was comprehensively reformed, researched and explored. Through the reform of teaching content, course design, teaching methods, course assessment, achievement recognition and management, the teaching quality and level of computer general education courses have been improved, diversified, modular, networked and differentiated teaching has been realized, students' information literacy has been improved in an all-round way, and their ability to solve real-life problems with computers has been improved to meet the new requirements of college students' computer ability under the background of new liberal arts.

4.2 Shaping the Characteristics of "Information Technology Plus" Talent Cultivation

In order to meet the new challenges posed by the new round of scientific and technological revolution and industrial revolution, and to comprehensively promote the quality and efficiency of talent cultivation, the school issued the Implementation Plan of Fuzhou University of International Studies and Trade on Further Showing the Characteristics of "Information Technology Plus" Talent cultivation, and made efforts to build an interactive, shared, open, cooperative and efficient talent cultivation complex with the cooperation and infiltration of arts and sciences. The "information technology plus" element has been integrated into the talent cultivation program to strengthen the integration of information technology and professional ability, and the "information technology plus" course group has been constructed, greatly increasing the cross-integrated course proportion of "information technology plus" majors. The major of "information technology plus" has been set up to achieve full coverage of all disciplines. Finally, the compound training of "IT plus" has been deepened by taking the experimental class as the starting point.

4.3 Strengthening the Improvement of Teachers' Interdisciplinary Ability and Building a "IT+" Teaching and Research Team

The school has strengthened the reserve of information technology teachers, strengthened the introduction of high-level talents with educational backgrounds such as big data analysis and mining and artificial intelligence, accurately positioned the direction of teachers' professional development, built a teaching and research team with clear main lines, outstanding features and strong joint forces, carried out a series of information skills upgrading training, and enabled information technology to help teachers' professional level. In addition, it has promoted the cross-integration of liberal arts and engineering by breaking the barriers of disciplines, applied modern information technology to help the construction of new liberal arts, and built a group of teaching teams in first-class courses, innovation and entrepreneurship, and subject competitions. Moreover, it has built a number of school-level interdisciplinary, inter-college, inter-school and dynamic open virtual teaching and research sections, in order to break through the conventional boundaries, realize resource sharing, interconnection and complementary advantages, and set up a cross-disciplinary pilot "One Course with Multiple Teachers" system to effectively promote the collaborative research, teaching and evaluation of courses.

4.4 Building an Integrated Platform to Promote Interdisciplinary Collaboration

In order to strengthen practical education and promote the construction of "information technology+ platform", 16.1 million yuan was invested in the construction of big data and information technology application research center, to expand the professional connotation of digital logistics, digital finance, intelligent management, digital media, digital literature creation, etc., and to build an interdisciplinary experimental practice platform. Relying on the Application Research Center of Big Data and Information Technology, the barriers between disciplines, majors, departments and teachers have been broken, and course resources and experimental resources have been integrated, so as to share high-quality teachers,

experimental practice facilities and equipment, give full play to the superposition and coupling effects of multiple platforms and resources, and realize complementary resource advantages among specialties. By focusing on talent cultivation, scientific research and social services, with projects, progress and effectiveness, the school has created a practical "big data + major" integrated research and collaborative innovation platform, and truly realized the alliance between giants, resource sharing, collaborative progress and cluster development.

V. CONCLUSION

As the new technology is changing people's lives, it is an important task for the construction of new liberal arts to cultivate technical talents with new technology. With the idea of "subject fusion, information accomplishment and practice first", the new technology is combined with the construction of the liberal arts to promote the interdisciplinary integration and realize the integration and innovation of technical science and liberal arts education. Attention should be paid to the reform of computer general education to improve students' computational thinking, innovative ability and scientific literacy. Besides, the reform of computer general education course teaching can meet the needs of the new liberal arts construction. Moreover, the deep integration of new technology and new liberal arts education will help cultivate new liberal arts talents with the ability of integration and innovation and meeting the development requirements of the new era. Efforts should be made to promote the deep cross-integration of disciplines and to promote the development of personnel training from single to multi-disciplinary integration.

ACKNOWLEDGEMENTS

This paper was financially supported by the Research Project of School-level Education and Teaching Reform in Fuzhou University of International Studies and Trade (Exploration and Practice of Teaching Reform of "Fundamentals of Computer Application" Based on the Multi-Channel Integration of "Teaching, Learning, Management and Evaluation" Project No.: JF2020001); The school level course teaching team of Fuzhou Institute of Foreign Studies and foreign trade ("1 + X" Python teaching team Project No.: TD2021002) and the fund support of Fujian major teaching reform project (Research on the reform of big data excellent talent training system of integrated, open and adaptive private colleges and universities Project No.: FBJG20200310).

REFERENCES

- [1] Han Zuosheng, Lin Peiguang. Construction of University Computer Courses for Financial and Economic Universities under the New Liberal Arts Background. *China University Teaching*, 2021, (2): 69-74.
- [2] Bai Yue, Zhu Min, Chen Zhiyun. Reform and Practice of Computer Teaching in New Liberal Arts to Improve Data Literacy. *Computer Education*, 2021 (9): 91-94+95.
- [3] Zhou Baoling, Zheng Wolin. Cultivation of Technical Talents of Liberal Arts under Background of New Liberal Arts. *Heilongjiang Researches on Higher Education*, 2021 (11): 13-17.

- [4] Tang Yanjun, Jiang Cuizhen. Cross-Border Integration: A New Way to Cultivate New Liberal Arts Talents in the New Era. *Contemporary Educational Science*, 2020 (2): 71-74.
- [5] Zhan Dechen, Nie Lanshun, Tang Dekai, Zhang Lijie. Virtual Teaching and Research Section: A New Form for Collaborative Teaching and Research. *Modern Educational Technology*, 2022, 32 (3): 23-31.
- [6] Miao Jingyi. *Design and Practice of Blended Teaching of Computer Foundation Course Based on Mobile Learning*. Liaoning: Liaoning Normal University, 2020.