Construction of a Resource Database of Course Ideology and Politics for Software Quality Assurance and Testing Course

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Abstract

For the purpose of implementing on ideological and political education in the teaching field of software engineering, the research is devoted to exploring and constructing of a feasible resource database of course ideology and politics. As an example of software quality assurance and testing course, the development of resource database is based on the technology of XML, and standardized cases in this resource database are developed continuously for reusable application process of ideological and political education positively. In addition to mastering professional knowledge of software quality assurance and testing, students are conscious of the promising development of software testing industry positively in China by accessing the resource database of course ideology and politics, which stimulates and promotes their national pride. Furthermore, further work of improvement of the cultivation of teachers' course ideology and politics quality and development of a visible management information system to integrate with the resource database for blended learning are put forward in the future.

Keywords: *construction of resource database; technology of XML; standardized case; reusable application process; software quality assurance and testing; visible management information system; ideological and political education*

1.INTRODUCTION

Course ideology and politics is a new idea for covering all aspects of ideological and political education in the practical process of teaching, by organically coupling professional courses with the traditional ideological and political education, we can break the phenomena of "two pieces of skin" between teaching truth and teaching knowledge, and it can perform the innovations of morality education [5]. "Course ideology and politics" cannot be seen as the ideological and political courses for teaching simply, but during the course of teaching process of specialized courses, ideological and political elements, cultural elements and value elements should be extracted and refined deeply, which they should be organically integrated into classroom teaching for establishing a correct outlook on human beings, world outlook and values by students. Teachers need to realize the effective integration of professional knowledge and value guidance in the teaching process of specialized courses positively [6], and pour more attention to cultivating students into innovative talents with both ability and political integrity actually.

At present, a multitude of teachers have doubts or difficulties in course ideology and politics in actual teaching. Firstly, a multitude of teachers have misunderstanding of course ideology and politics. It is considered that content of ideology and politics for teaching is the responsibility of counselors which is nothing to do with specialized course teachers. Adding elements of course ideology and politics for specialized course will affect the teaching quality and effect on specialized courses. Secondly, quite a few teachers do not know how to mine and extract elements of course ideology and politics positively. One-sided understanding of "course ideology and politics" content

is the content of ideological and political courses such as basic principles of Marxism, ideological and moral cultivation and legal basis, and modern revolution history of China [6]. The essence of course ideology and politics is a curriculum proposition, with socialist core values and excellent traditional Chinese culture education as the soul, and deeply excavating the ideological and political education elements which are contained in each specialized course and the functions of ideological and political education. Teachers need to integrate ideological and political education into all aspects of specialized course teaching, promoting the combination of knowledge imparting, ability training and education of ideals, beliefs, values, and moral concepts, so as to realize morality and cultivate people [3] [10].

The structure of the paper is organized as the following: Section 2 describes the teaching mode for conducting ideological and political education. Section 3 descripts the construction of the resource database and application for the software quality assurance and testing course. Section 4 concludes the paper and puts forward the further work.

2. MODE OF SOFTWARE QUALITY ASSURANCE AND TESTING COURSE FOR CONDUCTING IDEOLOGICAL AND POLITICAL EDUCATION

Software quality assurance and testing course is highly comprehensive and practical, requiring students understanding the importance, principle, method, standardization, and management process of modern software testing on the basis of mastering an object-oriented programming language (Java, C++, C#, Python, etc.) [4][8]. Students are familiar with the basic workflow of software testing and able to use the corresponding testing tools proficiently in a specific testing environment for agile testing. Furthermore, Students are required to have the abilities of positive teamwork, interaction, and writing categories of standardized test documents.

2.1. Focal Points of Ideological and Political Education

Although the software quality assurance and testing course is based on the engineering point of view, it is oriented to the software agile testing process from the two aspects of technical implement and management process. According to the teaching content of the course, focal points of course ideology and politics are demonstrated as Table 1 Consequently, the teaching content which incorporates elements of course ideology and politics is carefully designed.

Table 1: Focal points of course ideology and politics.

Focal points	Description
National confidence	Cultivate students' patriotism and the pride of the Chinese nation.
The core values of Chinese socialism	Encourage students to participate in social and economic construction positively and realize that China is to be constructed of a prosperous, democratic, civilized and harmonious socialist country.
Scientific quality	Cultivate students' work attitude of serious, rigorous and dedication.
Innovation awareness	Cultivate students to think, explore, innovate, develop their thinking, and stimulate the motivation of active learning.
Moral quality and legal literacy	Cultivate students' awareness of modern intellectual property rights and improve their academic on moral quality and legal literacy.
Teamwork ability	Cultivate students' teamwork spirit and skills of good interaction and management.
Life philosophy	Explain the philosophy of life and affairs for students, cultivate students' humanistic feelings, and improve social adaptability.

2.2. Teaching Content Design Which Incorporates Elements of Ideological and Political Education

There are a multitude of "ideological and political elements" of patriotism and humanistic spirit in the course of software quality assurance and testing. In the design of teaching content, it is indispensable to introduce my country's achievements in major projects and outstanding scientific research consciously, consequently students can understand about the crucial contributions to national construction and development by Chinese scientists, which stimulate students' enthusiasm for patriotism and insist on pursuing the spirit of scientific truth [3].

According to the teaching content of the course, the knowledge points which incorporate the content of ideological and political education with the content of course knowledge will be designed, and the moral education connotation is extracted indispensable. As an example, ideological and political education with teaching content of "overview of software testing" unit is demonstrated as Table 2.
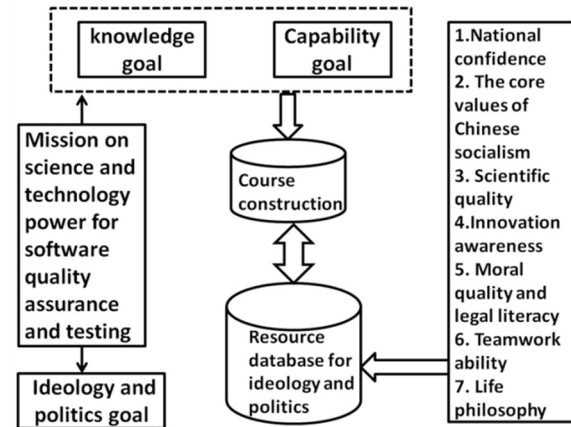
Table 2: Ideological and political education with teaching content of "overview of software testing" unit.

Knowledge points	Incorporate content of ideological and political education	Focal points of course ideology and politics
Importance of software testing	Serious consequences due to incomplete software testing, and a multitude of affairs need to be checked early, to find problems early, to solve them early.	Life philosophy
Software bug	Don't be sloppy about anything, otherwise, a slight bug will also make you paying an irreparable price.	Scientific quality/Life philosophy
Software testing method	In order to quickly respond to changes and realize the rapid delivery of software, students can better understand the idea of agile testing, Chinese speed and teamwork spirit can be felt by students to enhance the pride of the Chinese nation [7].	The core values of Chinese socialism/ Teamwork ability
Introduce on achievements of Software testing	Crucial projects on medical field, technology field, etc. which are self-developed in domestic need to undergo strict software testing process.	National confidence/ Innovation awareness
Writing on test documents	Cultivate students' work attitude of serious, rigorous and dedication.	Scientific quality
Software quality assurance	Introduce a complete set of research and development processes for software products, and improve students' academic ethics and legal literacy.	Moral quality and legal literacy
Software testing profession	There is no perfect individual at work, only a perfect team. Everyone should learn from others and works together for a collective goal.	Teamwork ability

3. CONSTRUCTION OF RESOURCE DATABASE OF COURSE IDEOLOGY AND POLITICS

It is indispensable to construction of a resource database of course ideology and politics for software quality assurance and testing. It could ensure discipline standardization and the professionalism of the students, and also help with the ultimate goal of cultivating talents with good virtue [2]. Figure 1 demonstrates the scheme on the resource database of course ideology and politics for the course.

Figure 1: Scheme on resource database construction for the cases of course ideology and politics.

3.1. Relevant Technology for Development of This Resource Database

XML database is a data persistence software system that allows data to be specified, and sometimes stored, in XML format [4]. XML database is developed and applied for construction of the resource database of course ideology and politics in this study, and as an independent database, it can be interconnected with the course platform or learning resources conveniently. Moreover, this data can be queried, transformed, exported and returned to a calling system [4]. Data processing requirements can be implemented by XML database directly, and it also has a function of UI interface friendly [9]. It provides a pleasurable convenience in designing, invocation, modification and combination of relevant course resource for website and platform.

3.2. Standardized Format of Cases for Course Ideology and Politics

The content of ideological and political education on the course needs to be reflected through specific cases. Table 3 demonstrates the development of cases which incorporates elements of ideological and political

education for the content of "overview of software testing" unit. From the perspective of case storage in resource database, Table 4 demonstrates a standardized case format for course ideology and politics which is based on relevant knowledge points.

Table 3: Cases of "overview of software testing" unit for ideological and political education.

Knowledge points	Cases for ideological and political education
Importance of software testing	International cases of major software defects in history
Software bug	Y2K, Metric and the NASA's Mars climate orbiter, Pentium floating point division error, etc.
Software testing method	Agile development and testing of "Health QR code" in Hangzhou city
Introduce on achievements of software testing	Large passenger aircraft "C919", intelligent EMU of "Fuxing", etc.
Writing on test documents	The citizen were abided by social conventions and social rules, they stayed at home and made great contribution to the victory over Covid-19 [7].
Software quality assurance	Software product quality on Enterprise of "HUAWEI", "Alibaba Group", "Tencent", etc.
Software testing profession	Microsoft's research and development team of nearly 1,000 people finished developing the Windows 7 jointly.

Table 4: A standardized case format for course ideology and politics.

Case ID	027	Version ID	2.0
Knowledge point(s)	Introduce on achievements of software testing		
Focal points of course ideology and politics	National confidence		
Case description	China BeiDou navigation satellite system		
Creation data	25/08/2021		
Reuse area(course)	Software engineering		
Times of reuse	5		
Attachment	Website of http://www.......		

3.3. Development of Reusable Process of the Resource for Course Ideology and Politics

In the process of ideological and political education, cases should be updated and reused continuously in resource database during the process of construction and Figure 2 demonstrates the reusable process of cases. More and more reusable cases could be designed and reused for ideological and political education in other similar courses to improve the level of course ideology and politics.
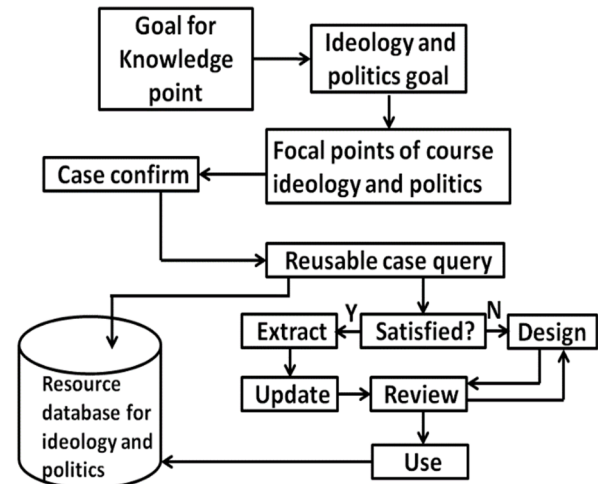

Figure 2: Reusable process of cases for ideological and political education.

4.APPLICATION AND FURTHER WORK

At present, the group of software quality assurance and testing course in Anhui Sanlian University has completed the revision and improvement of the course syllabus on the basis of ideological and political education. The revised teaching syllabus has completed the teaching content design that reflects the ideological and political characteristics of the course and as a category learning resource, a resource database of course ideology and politics was developed actively, which positive effect is achieved.

During the process of course learning, on the basis of mastering professional knowledge, students can understand the promising development of software testing industry entirely in China, which enhance their national pride. By accessing the resource database of course ideology and politics, students realize the basic process of standardized operation of agile testing projects in modern software companies and the importance of technical document writing. Students also recognized the indispensability of teamwork and were proud of the improvement of software testing industry in China, which the purpose of ideological and political education in course of software quality assurance and testing is achieved positively.

For better research and practice of ideological and political education in software quality assurance and testing course, from my own perspective, further work will be done in the future.

A multitude of teachers have profound and professional knowledge, but they cannot combine knowledge of software testing with the content of ideological and political education effectively. Therefore, teachers need to improve their political theory continuously, pour more attention into current political affairs in domestic and abroad, and expand the scope of knowledge positively. Teachers pour more attention into cultivating students' patriotism and exploration spirit in spite of difficulties actively [1]. In actual teaching section, students should be guided into enterprise practice, and the teaching and research activities of software quality assurance and testing are rooted in Chinese software enterprises, which serves for solving Chinese problems.

In the first place, focusing on the mission on the field of science and technology power for software quality assurance and testing in China which combines with the ideological and political education of the course, the cases of course ideology and politics are searched, collected and processed to form a case resource database by teachers [7] (). There is one more point, teachers integrate appropriate ideological and political cases into the content of the course and continue to optimize cases in the process of teaching practice for resource database supplement. The last but not the least, development of a visible management information system for the resource database for the cases of course ideology and politics, which can be integrated into the course resource flexible for blended learning based on the combination of online and offline.

5.CONCLUSIONS

Through the construction of the resource database, it points out the direction for the ideological and political education in software quality assurance and testing course. On one hand, it solves the problem of "two pieces of skin" for professional course content and course ideology and politics. According to the objective of talent cultivation on modern software testing, the corresponding ideological and political education content is fully extracted from the teaching content to promote the collaborative education mechanism positively. On the other hand, through the construction of the resource database, the ideological and political literacy of professional teachers has been improved. Teachers can select significant ideological and political education cases conveniently and taking appropriate methods of teaching and evaluation, so as to improve the effect of reform on course ideology and politics.

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