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# Teaching Reform and Exploration of Constructing Invisible Ideological Education in Java Language Programming with SPOC Support

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## Abstract

after in-depth understanding of ideological and political education and SPOC, combined with the characteristics of the course "Java Language Programming", the basic idea of teaching reform based on SPOC-based "Java Language Programming" to construct invisible ideological education is proposed. Guide students to establish a correct outlook on life and world, cultivate the spirit of artisans, conduct more in-depth discussions, flip students' study habits, increase discussion and practice, and then develop students' comprehensive ability to solve problems and express opinions, and stimulate academics, enhance students' learning initiative.

## Keywords

Ideological Education; Teaching Reform; SPOC.

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## 1. Introduction

The National College Ideological and Political Work Conference is aimed at the current practical problems of university personnel training. For the first time, it refers to the question of "who cultivates people" and "what kind of people to train". This is the party's central level from the strategic height to "people" and " Only a new understanding of the problem. How to effectively integrate ideological and political work into the teaching of professional courses is a hot topic in current teaching research reform.

As an applied undergraduate pilot university, we must cultivate the craftsmanship spirit of college students. We must adhere to the connotative development path centered on quality improvement, deepen the reform of education and teaching, and aim at classroom teaching reform; we must renovate classroom teaching concepts. The teaching method and reform curriculum evaluation method are the main line, in order to achieve a comprehensive improvement of teachers' classroom teaching ability, and improve students' self-learning, engineering practice application ability and application innovation ability.

It can be seen that it is extremely urgent to change the current lack of innovative spirit and professionalism of college students through teaching reforms, and to improve the ability to think independently and solve practical problems.

The Java Language Programming course is a major professional course in the fields of Internet of Things, electrical engineering, automation, and automation. Today's society is an information-based society. Mastering a programming language is an essential skill for engineering students. The "Java Language Programming" course has fewer hours and more content, and it has both rigorous and profound theories and strong practicality. The "Java Language Programming" course has an important role in improving the overall quality of college students and cultivating composite and applied engineering talents that cannot be replaced by other courses. The existing "Java Language

Programming" teaching still adopts the traditional teaching mode, which causes students to not move their minds in class, do not work under the class, and finally lose interest in the course.

Therefore, in response to the characteristics of the "Java Language Programming" course, the curriculum teaching reform, scientific and reasonable construction of SPOC-based courses, in the teaching process to achieve the goal of education. By closely linking the ideological content with the professional curriculum, students can develop their scientific literacy, humanistic literacy and engineering awareness; through the use of learning sheets, help students to sort and accumulate knowledge; by constructing an automatic scoring system Detailed scoring results and fine-grained feedback to improve students' knowledge and skills.

The cultivation of craftsmanship in college students' training goals is consistent with the ideological and political education in colleges and universities. Therefore, the effective integration of professional courses and ideological and political education has positive significance for improving the teaching effect of the curriculum, improving students' ability to analyze and solve problems, and cultivating innovative ability. It is not only conducive to the future development of college students themselves, but also conducive to the development of socialism with Chinese characteristics.

## 2. Classroom reform ideas

After a deep understanding of ideological and political education and SPOC, combined with the characteristics of the course "Java Language Programming", the basic idea of developing the teaching reform of invisible ideological and political education based on SPOC-based "Java Language Programming" is proposed. Explain as follows:

Select appropriate course chapters to conduct SPOC-based invisible ideological education teaching reform pilot SPOC-based "Java language programming" invisible ideological education teaching research is an exploratory teaching research, explore the SPOC-based "Java language program "Design" classroom teaching reform program, it is not appropriate to directly carry out the teaching reform of the whole course, but should first select the appropriate course chapter to carry out the teaching reform pilot. After selecting the course chapters for the pilot reform of teaching, an important task is to properly divide the online teaching content and offline teaching content for the selected chapters, so that the two can be closely and naturally connected. The teacher and student can naturally transition from online teaching to offline teaching during the teaching process.

Through online reading, help students establish their goals in life and establish a correct outlook on life and world. It is not easy for college students to accept direct teaching. We can use the small stories of outstanding Chinese scientists in the computer field to place online materials for students to read and help students to read and master related stories through the study list. For example, Wang Xuan, Yao Zhizhi, Li Kaifu, Wu Jun, Lei Jun, etc., they are not only technology experts, successful entrepreneurs, but also true patriots. By reading these character stories, students can not only get access to some new scientific and technological knowledge, but also help them build a correct outlook on life and world through the power of role models.

In the online teaching, in the process of debugging the program, teach the craftsman spirit for the students. The professionalism, innovative spirit and creative spirit of the craftsman spirit are reflected in the programming content. According to the content of the course, the design of the specific knowledge unit should be re-designed, the content of the ideological and political content, the arrangement of the offline teaching content, the organization of the offline teaching process, the control of the quality of the offline teaching, and the connection of the online and offline teaching process. Other aspects should be embodied in the teaching plan. Effective measures should be taken to control the quality of students' online self-learning, improve the enthusiasm and initiative of students to participate in offline teaching, improve the depth of offline teaching, and enhance the teaching effect of invisible ideological and political education.

According to the teaching characteristics of SPOC-based invisible ideological education, the curriculum evaluation method is adjusted. The invisible ideological education based on SPOC adopts

a hybrid teaching mode combining online and offline, which determines the assessment method and traditional assessment of students. The method should be different. The flexible and diversified evaluation system should be designed to fully reflect the students' online self-learning performance in the flipping classroom mode, the offline classroom teaching participation level and the comprehensive learning effect, and encourage students to complete the software through continuous trial and collaboration. Project development enables students to have a comprehensive evaluation of their performance in online and offline teaching.

Develop SPOC curriculum resources, build SPOC curriculum platform, establish a teaching content knowledge unit system according to the new syllabus and teaching plan, fragment and redesign the knowledge according to the characteristics of SPOC teaching, shoot with basic knowledge points, and produce course teaching. Video, supplemented by the collection and integration of relevant video resources from existing online and international online course resources. According to the characteristics of the course and the teaching needs, we produce rich digital resources, such as teaching documents, rich media teaching courseware, problem solving library, and operation library. Use the existing cyberspace and video website platform to build a simple and practical SPOC course platform, upload course resources, and establish an effective course access mechanism to ensure the small-scale and restrictive features of the SPOC course.

Carry out SPOC-based invisible ideological and political education teaching practice, evaluate teaching effects, improve teaching reform program based on SPOC course platform, carry out "Java language programming" online teaching and offline teaching combined with invisible ideological teaching, evaluate teaching effect And adjust and improve the teaching reform program. It is an important and meaningful work to carry out SPOC-based "Java language programming" invisible ideological education teaching reform. It needs to be based on the characteristics of "Java Language Programming" and combine the characteristics of ideological and political education and SPOC. How to adjust the syllabus, design the teaching plan, adjust the course assessment method, develop the SPOC curriculum resources, and carry out the teaching practice based on the online teaching platform of Cangzhou College. The author will carry out the above-mentioned teaching reform research and teaching practice work in a deeper and more specific way.

### **3. Curriculum reform implementation plan**

#### **3.1 Teacher preparation**

It mainly focuses on how to apply basic theories to solve practical problems, and selects them from engineering practice, supplemented by life practice, student science and technology innovation topics and teacher research topics. The actual teaching process is based on typical cases. The cases are analyzed according to the actual working process, and this is the main line, and the relevant knowledge is reasonably organized to ensure clear logic, hierarchy and enforceability. Upload the case and related materials to the online teaching platform.

#### **3.2 Pre-class case study**

##### **1) Teacher activities**

Through the feedback of students, teachers analyze online Q&A and discussion, obtain online teaching effects and discover students' problems.

##### **2) Student activities**

Students learn and think through the online teaching platform within the specified time before the class, participate in online Q&A, discussion and other aspects to complete the cases provided by the teachers, and realize the pre-learning of knowledge (skills); students can choose to complete the relevant content according to their actual situation. , but the completion of the content is related to the final evaluation.

### 3.3 In-class seminar

#### 1) Teacher activities

First, the teacher summarizes and comments on the whole preparation process: including the degree of participation in group cooperative learning, the division of labor between members, the autonomy of learning; the ability to use network resources, and the ability to collect and process information; absorb knowledge, apply knowledge, and solve The ability to ask questions; the ability to communicate and the spirit of cooperation.

Then solve the problems collected by the teachers in the pre-school stage, and organize inquiry or discussion classes according to the type of questions.

After completing the question and answer, the teacher sets a typical task, according to the difficulty level of the student or self-exploration or group collaborative learning, the teacher either observes the student's operation or communicates with the student, and the teacher conducts appropriate individual counseling or collective explanation; Complete tasks to form learning works and realize the construction and internalization of knowledge (skills).

#### 2) Student activities

According to the feedback of the preview, students are selected to introduce the introduction, plan and results, introduce the problems encountered in the pre-course practice, communicate with the discussion, explore solutions, and share the experience.

### 3.4 Practice after class

#### 1) Teacher activities

Teachers can pay attention to students' self-learning status through the online education platform of the course, so as to communicate in time, guide students to summarize, exchange learning feelings, and solve problems in time. This will help students to link classroom teaching with real life and help students migrate and apply their learning.

The teacher collects the expansion of the learning resources related to the teaching content and expands the task. The students of different degrees selectively complete the expansion task to realize the consolidation and expansion of the knowledge (skills).

#### 1) Student activities

According to the requirements of the assignments or research tasks arranged by the teachers, actively consolidate the knowledge, search for relevant materials, timely discuss the problems in the group, and feedback to the teachers, teachers and students to discuss. Students can also further expand their studies after class according to their own interests and hobbies.

## 4. Conclusion

Through the implementation of this project, the enthusiasm and initiative of students' learning has been strengthened. Invisible ideological education, cultivate students' craftsmanship spirit, students pre-learn the core content of teaching independently, teachers will spend more time and energy in the classroom to explain doubts, in-depth discussions, organize team learning or other teaching activities, to achieve Teaching students in accordance with their aptitude and improving the effectiveness of classroom teaching. Realize the transformation from "I want to learn" to "I want to learn", highlight the main status of students, and improve students' practical ability and innovative ability. Teachers' teaching ability is improved, teaching methods are diversified, and online teaching resources are more abundant.

The research results of this project can be extended to the teaching of other professional courses, and the expansion is strong, and the typical teaching situation can be set according to the teaching needs.

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## References

- [1] Studies on biomechanics of skeletal muscle based on the working mechanism of myosin motors:An overview[J]. YIN YueHong, GUO Zhao, CHEN Xing & FAN YuanJie State Key Laboratory of Mechanism System and Vibration, Institute of Robotics, Shanghai Jiao Tong University, Shanghai 200240, China. Chinese Science Bulletin. 2012(35)
- [2] Actin and nuclear myosin I are associated with RNAP II and function in gene transcription[J]. ZHU XiaoJuan, HUANG BaiQu, WANG XingZhi, HAO Shui & ZENG XianLu \* Institute of Genetics and Cytology, Northeast Normal University, Changchun 130024, China. Chinese Science Bulletin. 2007(06)
- [3] The Special Feature of Calponin on Myosins Phosphorylated by MLCK and PKA Respectively[J]. Jingxian Yang<sup>1</sup>, Shuyuan Li<sup>1</sup>, Guozhu Han<sup>1</sup> and Yuan Lin<sup>1()</sup> Department of Pharmacology, Dalian Medical University, Dalian 116027, China.. Journal of Nanjing Medical University. 2005(03)
- [4] Role of plant myosins in motile organelles: Is a direct interaction required?[J]. Limor Buchnik, Mohamad Abu-Abied, Einat Sadot. Journal of Integrative Plant Biology. 2015(01)
- [5] 5DFRXXL region of long myosin light chain kinase causes F-actin bundle formation[J]. YANG Chunxiang<sup>1,2</sup>, WEI Dongmei<sup>1,3</sup>, CHEN Chen<sup>1</sup>, YU Weiping<sup>2</sup> & ZHU Minsheng<sup>1</sup> 1. Model Animal Research Center, Nanjing University, Nanjing 210061, China; 2. Medical College, Southeast University, Nanjing 210009, China; 3. Nanjing Normal University, Nanjing 210097, China. Chinese Science Bulletin. 2005(18)