

# *Exploration of Ideological and Political Education on Interchangeability and Technical Measurement Course in Transportation Industry Education Colleges*

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**Abstract:** The interchangeability and technical measurement course, rooted in the transportation industry, establishes the foundational knowledge necessary for cultivating competent industry engineers. The fundamental issue of education lies in determining the type of individuals to cultivate, how to cultivate them, and who will benefit from this education. By continuously enhancing the content of the ideology and politics in the interchangeability and technical measurement course, as well as exploring ways to integrate professional basic courses with industry-specific institutions' ideology and politics elements, we can align the shaping of ideal values, the instruction of professional knowledge, and the development of students' innovation and practical skills. In our teaching, we strive to seamlessly merge the teaching of professional basics courses with ideological and political education, truly achieving the harmonious integration of knowledge transmission and value guidance.

## 1. Introduction

To ensure students are prepared for the demands of the future society, colleges and universities must prioritize ongoing teaching reform. This entails exploring strategies to seamlessly integrate knowledge education with ideological and political education, as well as reinforcing the connection between these two essential components.<sup>[1]</sup>

The essence of ideological and political education in the curriculum lies in "Never Forget the Initial Mind and Keep the Mission in Mind". China's transportation industry has achieved its present accomplishments through the relentless efforts of countless predecessors. However, there are still numerous key technologies that need to be developed in the future.<sup>[2]</sup> Consequently, Therefore, extracting the exemplary achievements associated with the interchangeability and technical measurement course from the extensive materials, and subsequently formulating the

ideological and political plan for the course, have become pressing issues that need to be resolved.<sup>[3]</sup>

According to the characteristics of the ideological and political construction of the basic course "Interchangeability and Technical Measurement" in mechanical specialties in colleges and universities, with a focus on the transportation industry, the inclusion of elements of ideological and political education in the course teaching is introduced.<sup>[4]</sup> This aims to cultivate students' engineering scientific thinking and improve their innovative abilities. With the purpose and requirements of the course in mind, this paper intends to optimize the curriculum and improve the curriculum teaching design. The goal is to achieve the integration of ideological and political education in the course of "Interchangeability and Technical Measurement" based on the characteristics of the compulsory course and the requirements of professional training. This will be accomplished by emphasizing "knowledge teaching" as the core and making "curriculum ideological and political" the objective.

## 2. Construct an evaluation system for achieving the goal of ideological and political education

In the teaching process, it is essential to thoroughly explore and integrate ideological and political elements into professional knowledge points in order to enhance students' political understanding within their professional education. It is necessary to design ideological and political cases that correspond to the course, fostering students' ability to develop correct design concepts and solve practical engineering problems. This will help them gain the necessary knowledge and skills of precision design and engineering detection as future engineering and technical professionals, while also contributing to their moral development.<sup>[5]</sup> The optimization of ideological and political teaching cases is achieved by aligning them with the characteristics of transportation engineering discipline and the actual construction of mechanical engineering discipline at Chang'an University.

Contrasting the required chapters and practical teaching materials of the "Interchangeability and Technical Measurement" course, as well as the important topics covered in the teaching and the key points of student assessment, the course assessment method has been reformed, and an innovative teaching evaluation system for ideological and political education in the professional basic course has been developed. The objective is to integrate the goals of ideological and political education into the curriculum and establish a multi-factor evaluation system for the "Interchangeability and Technical Measurement" course, as indicated in Figure 1.

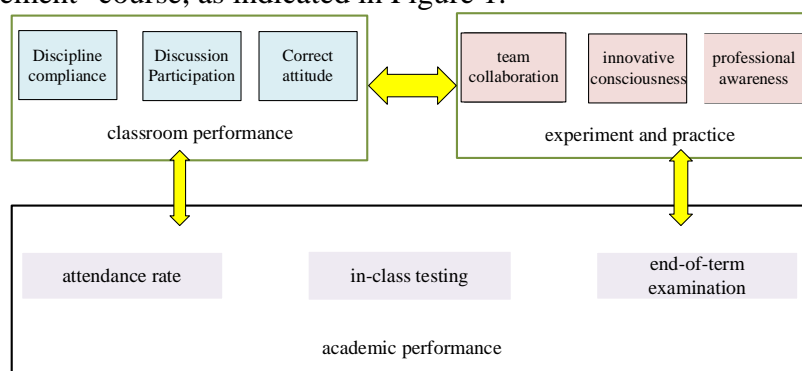


Figure 1: Introducing the multi-factor evaluation system of ideological and political education

The ideological and political education aims to clarify the integration points of ideological and political education, specifically focusing on emotions related to one's home and country, national self-confidence, cultural identity, and innovative ideas. Combining the actual teaching content of the course "Interchangeability and Technical Measurement". In addition, engineering cases that include elements of ideological and political education will be seamlessly integrated with classroom

knowledge. The ultimate goal is to strengthen the presence of the party's guiding ideology and elements of ideological and political education within the classroom setting. Reform teaching methods and career channels, refine the teaching objectives of the course, incorporate ideological and political education into the course's objectives, optimize and adjust the syllabus, and create teaching courseware that aligns with the newly revised syllabus. By exploring specific methods to evaluate the effectiveness of integrating ideological and political education into teaching, we can achieve a true organic connection and integration of ideological and political education with professional basic curriculum education.

### **3. Refine the content of curriculum knowledge and skills and ideological and political elements**

In the process of teaching, it is important to pay attention to the close integration of theoretical teaching content with practical teaching content. Chang'an University takes "applied technology" as its characteristic advantage. Most teachers have experience collaborating with enterprises, so they can incorporate their own personal growth experiences into the course, as well as incorporate teachers' practical experiences, research project results, ideological and political cases, and their understanding of Marxist standpoint, viewpoint, method, and Chinese traditional culture into their teaching. This approach allows for more effective implementation of ideological and political education. The case studies, including the turbine parts manufacturing process of a science and technology company in Xuzhou, the hydraulic cylinder and piston rod manufacturing case of a hydraulic parts company in Xuzhou, the gear manufacturing case of a heavy industry company in Changzhou, and the hydraulic cylinder processing method and equipment selection case of a small and micro enterprise, are all derived from the teacher's research results on enterprises.

Considering the background of interchangeability and standardization, as well as the development process of digital design in China, along with the evolution of industrial technology in the country, it is crucial to cultivate students' national self-confidence and pride, while strengthening their cultural identity. In the introduction to dimensional accuracy design methods, combined with the ongoing development of China's machinery manufacturing industry, we aim to promote the 'craftsman spirit' and highlight the mission of socialist builders and successors. Additionally, we will emphasize advanced, efficient, robust, and accurate solutions. When explaining tolerance and coordination, we will emphasize the importance of recognizing the primary contradictions in things, extending choices in life and the concept of 'giving up and giving up'. Moreover, we will guide students to dedicate their primary energy to learning scientific and cultural knowledge. In the field of special training, it is important to enhance confidence and determination when faced with setbacks and failures. Additionally, it is essential to improve problem-solving abilities and cultivate resilience in overcoming difficulties.

By refining curriculum knowledge and skills, integrating ideological and political elements into the content, it can provide value guidance and foster the growth of students.

### **4. Promote the reform and innovation of teaching mode integrating curriculum ideology and politics**

Currently, the teaching approach for ideological and political courses in the "Interchangeability and Technical Measurement" course is relatively monotonous and tedious. It primarily relies on traditional teaching methods and lacks innovative teaching approaches. This not only hampers the effectiveness of classroom teaching, but also hinders students from utilizing their prime learning period, ultimately diminishing their enthusiasm and engagement in the subject. Consequently, the classroom environment lacks liveliness and student participation. In order to address these issues, it

is essential to critically analyse and reflect upon the teaching problems in ideological and political courses, and pioneer a more integrated and innovative teaching model<sup>[6]</sup>.

Through school-enterprise cooperation, we aim to create a platform for professional practice cooperation projects and practical activities. This collaboration involves renowned enterprises such as Shaanxi Fast Auto Drive Group Co., Ltd., Shanxi Automobile Group Co., Ltd., Hande Axle and others, with the guidance of the main teacher and the support of the province of Foster. Furthermore, we intend to enhance students' knowledge teaching and ideological and political education practice effects by participating in various competitions, exchanges, practical exercises, and other activities, such as the Challenge Cup, mechanical innovation competition, and college students' innovation and entrepreneurship training projects.

Using MOOC online learning platform resources, enrich the diversified teaching methods of ideological and political course teaching, improve the application mode of course teaching, and supplement the content of ideological and political elements on the basis of excellent online courses in Shaanxi Province. Play the role of classroom discussion, cultivate students' initiative and consciousness<sup>[7]</sup>. Through group learning, cultivate students' team consciousness and cooperation consciousness. In the teaching process, combined with the use of modern technical means, using VR, WeChat group and QQ group, public number and some related teaching software, students can receive professional teaching guidance at any time, and pass on the correct outlook on life, values and positive energy to students. Through the combination of online and offline, the continuation of curriculum ideological and political education outside classroom teaching is realized<sup>[8]</sup>. It can also record representative ideological and political demonstration videos of courses, display them on the online teaching platform, and promote the traditional advantages of ideological and political work to be highly integrated with new media and new technologies.

## **5. Promote the construction of curriculum team and teaching material**

The teaching materials for this course have been selected from the national unified textbooks. Every chapter's content has been meticulously organized, ensuring the inclusion of moral education materials and the integration of ideological and political aspects. Our objective is to promote the ideological and political development through this course. The teaching syllabus needs to be revised according to the ideological and political requirements of the course. Students cultivate their moral character through vivid stories, and establish a correct outlook on life and values. Teachers conduct classroom discussions in conjunction with current political trends to enhance students' sense of mission and responsibility, and inspire patriotism. Teachers improve students' knowledge application and cooperation abilities through practical teaching. Students enhance their awareness of norms and self-discipline by studying national standards.

Under the leadership of the renowned head of teachers in Shaanxi Province, efforts are being made to strengthen the construction of the teaching team for the course "Interchangeability and Technical Measurement." Teachers are expected to thoroughly grasp the fundamental principles of Marxism, actively engage with current affairs and politics, and continuously enhance their pedagogical skills. It is essential to clarify the moral education objectives in course instruction, strengthen the awareness of nurturing individuals, and identify effective approaches for fostering personal growth.

Invite experienced ideological and political teachers to join the team in order to fulfil the purpose of guiding professional teachers in ideological and political education. Through thorough exploration of the ideological and political content within professional courses, a specialized ideological and political education team for this course will be established. With the assistance of regular collective lesson preparation and joint participation in curriculum ideological and political training, professional teachers will identify the ideological and political elements of the course and design the corresponding teaching materials. Ideological and political teachers will review and enhance the theoretical aspects of the content. Both sides will engage in exchanges and discussions

regarding exemplary cases of curriculum ideology and politics, resulting in the formation of a curriculum ideological and political resource package. Additionally, a curriculum ideological and political "gas station", workshops, and other resources will be established to create a platform for sharing and exchanging resources between ideological and political courses and professional course teachers.

## 6. Conclusions

This paper presents a multi-factor learning effect evaluation system that incorporates the objective of ideological and political education. By exploring elements of ideological and political education such as patriotism, craftsmanship, the legal system, rule consciousness, struggle, innovation, responsibility, and accountability, a curriculum-based ideological and political education system is developed. This system allows for the evaluation of the effectiveness of ideological and political education construction in the curriculum across multiple dimensions. The ideological and political elements of the course, based on the background of the transportation industry, are the innovative aspects of this topic. This represents a significant advancement in the teaching methods and content of industry-specific colleges and universities, aimed at training engineers in accordance with the demands of the current era. It incorporates ideological and political education into every aspect of curriculum teaching, establishes an integrated teaching mode and method, and implements the notion of giving equal attention to both theoretical and experimental courses. Furthermore, it emphasizes the distinctive features of teaching content, as well as the inclusion of ideological and political cases within vehicle engineering, engineering machinery, transportation, and other specialized areas. This accomplishes the harmonious integration of ideological and political education with the education of fundamental professional knowledge.

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